

TABLE OF CONTENTS OF SPECIAL PROVISIONS

Note: This Table of Contents has been prepared for the convenience of those using this contract with the sole express purpose of locating quickly the information contained herein; and no claims shall arise due to omissions, additions, deletions, etc., as this Table of Contents shall not be considered part of the contract.

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August 26, 2020
FEDERAL AID PROJECT NO. 0395(015)
STATE PROJECT NO. 0103-0266

**REHABILITATION OF BRIDGE NOS. 06795, 06796 & 06797 I-395 OVER HAMMER
BROOK, BYRON BROOK AND UNNAMED BROOK**

Town of Norwich
Federal Aid Project No. 0395(015)

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016, as revised by the Supplemental Specifications dated July 2020 (otherwise referred to collectively as "ConnDOT Form 817") is hereby made part of this contract, as modified by the Special Provisions contained herein. Form 817 is available at the following DOT website link <http://www.ct.gov/dot/cwp/view.asp?a=3609&q=430362>. The current edition of the State of Connecticut Department of Transportation's "Construction Contract Bidding and Award Manual" ("Manual"), is hereby made part of this contract. If the provisions of this Manual conflict with provisions of other Department documents (not including statutes or regulations), the provisions of the Manual will govern. The Manual is available at the following DOT website link <http://www.ct.gov/dot/cwp/view.asp?a=2288&q=259258>. The Special Provisions relate in particular to the Rehabilitation of Bridge Nos. 06795, 06796 & 06797 I-395 over Hammer Brook, Byron Brook and Unnamed Brook in the Town of Norwich.

CONTRACT TIME AND LIQUIDATED DAMAGES

In order to minimize the hazard, cost and inconvenience to the traveling public and pollution of the environment, it is necessary to limit the time of construction work, which interferes with traffic as specified in Article 1.08.04 of the Special Provisions.

There will be two assessments for liquidated damages and they will be addressed in the following manner:

1. For this contract, an assessment per day for liquidated damages, at a rate of One Thousand Five Hundred Dollars (\$1,500.00) per day shall be applied to each calendar day the work runs in excess of the Two Hundred Forty Four (244) allowed calendar days for the contract.
2. For this contract, an assessment per hour for liquidated damages shall be applied to each hour, or any portion thereof, in which the Contractor interferes with normal traffic operations during the restricted hours given in Article 1.08.04 of the Special Provisions. The liquidated damages shall be as shown in the following tables entitled "Liquidated Damages Per Hour" for each hour, or any portion thereof, in

which the Contractor interferes with normal traffic operations during the restricted hours.

For the purpose of administering this contract, normal traffic operations are considered interfered with when:

1. Any portion of the travel lanes or shoulders is occupied by any personnel, equipment, materials, or supplies including signs.
2. The transition between the planes of pavement surfaces is at a rate of one inch in less than fifteen feet longitudinally.

LIQUIDATED DAMAGES PER HOUR**Project No. 103-266**

Route I-395 Northbound 2 Lane Section Bridge Nos. 06795, 06796 and 06797		
If Working Periods Extends Into	A.M. 1 Lane Closure	P.M. 1 Lane Closure
1st Hour of Restrictive Period	\$ 500	\$ 10,000
2nd Hour of Restrictive Period	\$ 500	\$ 30,000
3rd Hour or any Subsequent Hour of Restrictive Period	\$ 500	\$ 40,000

The above liquidated damages apply to those hours shown on the Limitation of Operations charts designated with a "2" for 2-lane sections or "E".

For each hour shown on the Limitation of Operations charts designated with an "E", liquidated damages of \$500 shall apply for each hour, or part thereof, if all available shoulder widths are not available to traffic.

Liquidated damages in the amount of \$500 shall apply for each hour, or part thereof, that the Contractor interferes with existing traffic operations on any ramps or turning roadways during the non-allowable hours.

LIQUIDATED DAMAGES PER HOUR**Project No. 103-266**

Route I-395 Southbound 2 Lane Section Bridge Nos. 06795, 06796 and 06797		
If Working Periods Extends Into	A.M. 1 Lane Closure	P.M. 1 Lane Closure
1st Hour of Restrictive Period	\$ 5000	\$ 500
2nd Hour of Restrictive Period	\$ 10,000	\$ 500
3rd Hour or any Subsequent Hour of Restrictive Period	\$ 15,000	\$ 500

The above liquidated damages apply to those hours shown on the Limitation of Operations charts designated with a "2" for 2-lane sections or "E".

For each hour shown on the Limitation of Operations charts designated with an "E", liquidated damages of \$500 shall apply for each hour, or part thereof, if all available shoulder widths are not available to traffic.

Liquidated damages in the amount of \$500 shall apply for each hour, or part thereof, that the Contractor interferes with existing traffic operations on any ramps or turning roadways during the non-allowable hours.

NOTICE TO CONTRACTOR - PRE-BID QUESTIONS AND ANSWERS

Questions pertaining to DOT advertised construction projects must be presented through the CTDOT Pre-Bid Q and A Website. The Department cannot guarantee that all questions will be answered prior to the bid date. **PLEASE NOTE - at 9:00 am Monday (i.e. typical Wednesday Bid Opening) the project(s) being bid will be closed for questions, at which time questions can no longer be submitted through the Q and A Website.**

Answers may be provided by the Department up to 12:00 noon, the day before the bid. At this time, the Q and A for those projects will be considered final, unless otherwise stated and/or the bid is postponed to a future date and time to allow for further questions and answers to be posted.

If a question needs to be asked the day before the bid date, please contact the Contracts Unit staff and email your question to dotcontracts@ct.gov immediately.

Contractors must identify their company name, contact person, contact email address and phone number when asking a question. The email address and phone number will not be made public.

The questions and answers (if any) located on the Q and A Website are hereby made part of the bid/contract solicitation documents (located on the State Contracting Portal), and resulting contract for the subject project(s). It is the bidder's responsibility to monitor, review, and become familiar with the questions and answers, as with all bid requirements and contract documents, prior to bidding. By signing the bid proposal and resulting contract, the bidder acknowledges receipt of, and agrees to the incorporation of the final list of Q and A, into the contract document.

Contractors will not be permitted to file a future claim based on lack of receipt, or knowledge of the questions and answers associated with a project. All bidding requirements and project information, including but not limited to contract plans, specifications, addenda, Q and A, Notice to Contractors, etc., are made public on the State Contracting Portal and/or the CTDOT website.

NOTICE TO CONTRACTOR - COMPASS SUBMITTALS

Upon execution of the Contract, the Contractor acknowledges and agrees that contractual submittals for this Project shall be submitted and handled through the Department's project management system, COMPASS.

Contractor submittals including, but not limited to, Shop Drawings, Working Drawings, Product Data, RFIs, and RFCs shall be generated and delivered by the Contractor in accordance with the Department's [COMPASS Contractor's User Manual](#). The administering District office will inform the Contractor of other deliverables required to be similarly submitted.

Access credentials for COMPASS will be provided free of charge to the Contractor.

The Department shall not be held responsible for delays, lack of processing or responses to submittals that do not follow the specified guidelines in the COMPASS Contractor's User Manual.

NOTICE TO CONTRACTOR - FEDERAL WAGE DETERMINATIONS (Davis Bacon Act)

The following Federal Wage Determinations are applicable to this Federal- Aid contract and are hereby incorporated by reference. During the bid advertisement period, it is the bidder's responsibility to obtain the latest Federal wage rates from the US Department of Labor website, as may be revised 10 days prior to bid opening. Any revisions posted 10 days prior to the bid opening shall be the wage determinations assigned to this contract.

Check Applicable WD# (DOT Use Only)	WD#	Construction Type	Counties
	CT1	Highway	Fairfield, Litchfield, Middlesex, New Haven, Tolland, Windham
X	CT2	Highway	New London
	CT3	Highway	Hartford
	CT5	Heavy Dredging (Hopper Dredging)	Fairfield, Middlesex, New Haven, New London
	CT6	Heavy Dredging	Statewide
	CT13	Heavy	Fairfield
	CT14	Heavy	Hartford
	CT15	Heavy	Middlesex, Tolland
	CT16	Heavy	New Haven
	CT17	Heavy	New London
	CT26	Heavy	Litchfield, Windham
	CT18	Building	Litchfield
	CT19	Building	Windham
	CT20	Building	Fairfield
	CT21	Building	Hartford
	CT22	Building	Middlesex
	CT23	Building	New Haven
	CT24	Building	New London
	CT25	Building	Tolland
	CT4	Residential	Litchfield, Windham
	CT7	Residential	Fairfield
	CT8	Residential	Hartford
	CT9	Residential	Middlesex
	CT10	Residential	New Haven
	CT11	Residential	New London
	CT12	Residential	Tolland

The Federal wage rates (Davis-Bacon Act) applicable to this Contract shall be the Federal wage rates that are current on the US Department of Labor website (<http://www.wdol.gov/dba.aspx>) as may be revised 10 days prior to bid opening. The Department will no longer physically include revised Federal wage rates in the bid documents or as part of addenda documents. These applicable Federal wage rates will be incorporated in the final contract document executed by both parties.

If a conflict exists between the Federal and State wage rates, the higher rate shall govern.

To obtain the latest Federal wage rates, go to the US Department of Labor website (link above). Under Davis-Bacon Act, choose "Selecting DBA WDs" and follow the instruction to search the latest wage rates for the State, County and Construction Type.

NOTICE TO CONTRACTOR - ALL-INCLUSIVE DRAINAGE

ADDED SECTIONS:

2.86 – DRAINAGE TRENCH EXCAVATION

ROCK IN DRAINAGE TRENCH EXCAVATION

5.86 – CATCH BASINS, MANHOLES AND DROP INLETS

6.86 – DRAINAGE PIPES

DRAINAGE PIPE ENDS

This Contract contains the above-noted Special Provisions for all-inclusive drainage, developed to replace the following Sections in their entireties:

- Section 5.07 – *Catch Basins, Manholes and Drop Inlets*
- Section 6.51 – *Culverts*
- Section 6.52 – *Culvert Ends*

The Section 5.86 and 6.86 items include excavation and bedding material in the drainage structure, pipe and pipe end unit prices.

Section 2.05 *Trench Excavation* may be included for miscellaneous trenching, where necessary, but will not be used with all-inclusive drainage items.

Other Standard Specifications, Supplemental Specifications or Special Provisions may contain references to Articles or Subarticles from previous versions of Sections 5.07, 6.51 and 6.52 which are no longer valid.

The following Standard Specifications Sections or Supplements contain references to Articles or Subarticles from Section 2.05 which shall remain in effect:

- Section 2.06 – *Ditch Excavation*
- Section 5.06 – *Retaining Walls, Endwalls and Steps*
- Section 7.51 – *Underdrains and Outlets*
- Section 10.01 – *Trenching and Backfilling*

‘Rock in Drainage Trench Excavation’ is now defined in Section 2.86. ‘Rock in Trench Excavation’ will remain in Section 2.05 and may be used with trenching not associated with all-inclusive drainage items.

Any references to Articles beginning with “5.07,” “6.51,” or “6.52” shall refer to the pertinent topic or materials in the new Special Provisions contained herein.

NOTICE TO CONTRACTOR – MINIMUM CONCRETE COMPRESSIVE STRENGTH

The concrete strength or allowable design stress specified in the General Notes is for design purposes only. The minimum compressive strength of concrete in constructed components shall comply with the requirements of Section 6.01 Concrete for Structures.

NOTICE TO CONTRACTOR - PORTLAND CEMENT CONCRETE (PCC) MIX CLASSIFICATIONS

SECTIONS 6.01 and M.03 MIX CLASSIFICATION EQUIVALENCY

Sections 6.01 *Concrete for Structures* and M.03 *Portland Cement Concrete* are herein revised to reflect changes to item names and nomenclature for standard Portland Cement Concrete (PCC) mix classifications. Other Special Provisions, standard specifications, plan sheets and select pay items in this Contract may not reflect this change. Refer to the Concrete Mix Classification Equivalency Table below to associate the Concrete Mix Classifications with Former Mix Classifications that may be present elsewhere in the Contract.

Concrete Mix Classification Equivalency Table

New Mix Classification (Class PCCXXYZ ¹)	Former Mix Classification
Class PCC03340	Class “A”
Class PCC03360	Class “C”
Class PCC04460 ²	Class “F”
Class PCC04462 ²	High Performance Concrete
Class PCC04481, PCC05581	Class “S”

Table Notes:

1. See Table M.03.02-1, Standard Portland Cement Concrete Mixes, for the new Mix Classification naming convention.
2. Class PCC04462 (low permeability concrete) is to be used for the following cast-in-place bridge components: decks, bridge sidewalks, and bridge parapets.

Where called for in the Contract, **Low Permeability Concrete** shall be used, as specified in Sections 6.01 and M.03. Please pay special attention to the requirements for Class PCC04462, including:

- Submittal of a mix design developed by the Contractor and a concrete supplier **at least 90 days prior to placing the concrete**
- Testing and trial placement of the concrete mix to be developed and discussed with the Department

The Department will not consider any requests for change to eliminate the use of Low Permeability Concrete on this Project.

NOTICE TO CONTRACTOR - ARCHITECTURAL AND INDUSTRIAL MAINTENANCE COATINGS

This Contract includes the application of materials subject to the Volatile Organic Compounds (VOC) content limits stated in the Regulations of Connecticut State Agencies (RCSA) Sections 22a-174-41 and -41a. All architectural and industrial maintenance (AIM) coatings and applications of such coatings must comply with these regulations.

The Contractor shall submit a Material Safety Data Sheet/Safety Data Sheet or Product Technical Data Sheet developed by the manufacturer of each material that may be subject to the Regulations. The submittal must verify both the type of AIM and its VOC Content. VOC content shall be determined based on the formulation data supplied by the materials manufacturer.

The Contractor may only use AIM coatings that contain VOCs below the respective coating category Phase II limits specified in Table 1 if either:

- a) the coating was manufactured on or after May 1, 2018, **or**
- b) the coating is being applied after April 30, 2021.

The Contractor may use AIM coatings that contain VOCs exceeding the respective coating category Phase II limits specified in Table 1 only if all of the following four conditions are met:

- a) the coating is being applied on or before April 30, 2021,
- b) the coating contains VOCs below the applicable Phase I limits specified in Table 1,
- c) the coating was manufactured prior to May 1, 2018, **and**
- d) the coating container(s) are dated (or date coded) as such.

For any coating that is not categorized within Table 1, the Contractor shall classify the coating as follows and apply corresponding limits in Table 1.

- Registers gloss <15 on an 85-degree meter or <5 on a 60-degree meter) – Flat Coating,
- Registers gloss of ≥ 15 on an 85-degree meter and ≥ 5 on a 60-degree meter) - Nonflat Coating,
- Registers gloss of ≥ 70 on a 60-degree meter - Nonflat-High Gloss Coating.

The Contractor must close all containers of coating and solvent when not in use.

Coating container labels must display the date the coating was manufactured, the manufacturer's recommendation regarding thinning with solvent, and the coating's VOC content in grams per liter (g/L) of coating. Certain coating categories as noted in Table 1 have additional labeling requirements.

The Contractor may add additional solvent to a coating only if such addition does not cause the coating to exceed the applicable VOC limit specified Table 1. The Contractor must adhere to type(s) of solvent and maximum amount of solvent recommended by coating manufacturer. VOC content of a thinned coating shall be the VOC content as listed by the manufacturer after thinning in accordance with its recommendation.

TABLE 1		
Coating Category	Phase I	Phase II
	manufactured prior to May 1, 2018 VOC content limit (g/L)	manufactured on or after May 1, 2018 VOC content limit (g/L)
Aluminum roof coating	--- ¹	450
Antenna coating	530	--- ¹
Antifouling coating	400	--- ¹
Basement specialty coating	--- ¹	400
Bituminous roof coating	300	270
Bituminous roof primer	350	350
Bond breaker	350	350
Calcimine recoater	475	475
Clear wood coating - Clear brushing lacquer ²	680	275
Clear wood coating - Lacquer ^{2,3}	550	275
Clear wood coating - Sanding sealer ^{2,4}	350	275
Clear wood coating - Varnish ²	350	275
Concrete curing compound	350	350
Concrete or masonry sealer/ Waterproofing concrete or masonry sealer	400	100
Concrete surface retarder	780	780
Conjugated oil varnish	--- ¹	450
Conversion varnish	725	725
Driveway sealer	--- ¹	50
Dry fog coating	400	150
Faux finishing coating ²	350	350
Fire resistive coating	350	350
Fire retardant coating - Clear	650	--- ¹
Fire retardant coating - Opaque	350	--- ¹
Flat coating	100	50
Floor coating	250	100
Flow coating	420	--- ¹
Form-release compound	250	250
Graphic arts coating (sign paint)	500	500
High temperature coating	420	420
Impacted immersion coating	780	780
Industrial maintenance coating ²	340	250
Industrial maintenance coating	340	250
Low solids coating	120	120
Magnesite cement coating	450	450
Mastic texture coating	300	100
Metallic pigmented coating	500	500

TABLE 1		
Coating Category	Phase I	Phase II
	manufactured prior to May 1, 2018 VOC content limit (g/L)	manufactured on or after May 1, 2018 VOC content limit (g/L)
Multi-color coating	250	250
Nonflat coating	150	100
Nonflat high gloss coating²	250	150
Nuclear coating	450	450
Pre-treatment wash primer	420	420
Primer, sealer and undercoater	200	100
Quick-dry enamel	250	--- ¹
Quick-dry primer, sealer and undercoater	200	--- ¹
Reactive penetrating carbonate stone sealer²	--- ¹	500
Reactive penetrating sealer²	--- ¹	350
Recycled coating	250	250
Roof coating	250	250
Rust preventive coating²	400	250
Shellac Clear	730	730
Shellac Opaque	550	550
Specialty primer, sealer and undercoater²	350	100
Stain	250	250
Stone consolidant²	--- ¹	450
Swimming pool coating	340	340
Thermoplastic rubber coating and mastic	550	550
Traffic marking coating	150	100
Traffic marking coating	150	100
Tub and tile refinish	--- ¹	420
Waterproofing membrane	--- ¹	250
Waterproofing sealer	250	--- ¹
Wood coating²	--- ¹	275
Wood preservative	350	350
Zinc-rich primer²	--- ¹	340

1 Classify as follows and apply corresponding limits in Table 1.

- Registers gloss <15 on an 85-degree meter or <5 on a 60-degree meter) – Flat Coating,
- Registers gloss of ≥15 on an 85-degree meter and ≥5 on a 60-degree meter) – Nonflat Coating
- Registers gloss of ≥70 on a 60-degree meter – Nonflat-High Gloss Coating

2 Container must be appropriately labeled. See RCSA 22a-174-41a

3 “Clear Wood Coating – Lacquer” includes lacquer sanding sealer

4 “Clear Wood Coating - Sanding Sealer” does not include lacquer sanding sealer

-END-

NOTICE TO CONTRACTOR – USE OF STATE POLICE OFFICERS

The Department will reimburse services of State Police Officers as a direct payment to the Department of Emergency Services and Public Protection. Payment for State Police Officers must be approved by the Engineer. Any State Police Officers used by the Contractor for its convenience is the responsibility of the Contractor. A separate payment item for State Police Officers is not included in this Contract.

Any costs associated with coordination and scheduling of State Police Officers shall be included in the lump sum bid price for Item No. 0971001A – Maintenance and Protection of Traffic.

NOTICE TO CONTRACTOR - PROCUREMENT OF MATERIALS

Upon award, the Contractor shall proceed with shop drawings, working drawings, procurement of materials, and all other submittals required to complete the work in accordance with the contract documents.

NOTICE TO CONTRACTOR - ELECTRONIC ENGINEERING DATA (EED)

The EED is an assembly of engineering data files that were used to produce the Contract plans.

Electronic Engineering Data (EED) is provided for information purposes only. In case of conflict between the EED and the Contract plans and specifications, the contract plans and specifications shall govern. The EED has been reviewed by the Department for quality control purposes, but it is the Contractor's responsibility to build the Project per the contract plans and specifications.

The EED is being provided to the Engineer for GPS/RTS inspection. The Contractor may use the EED to assist in bidding, layout and Automated Machine Control/Guidance.

The EED includes geospatially-correct 2D CAD files and may include horizontal and vertical alignment data files, 3D surface model files (break-line features and triangles) and a preference file. The data is being provided in two formats:

- Native Format
 - Bentley MicroStation CAD files (dgn)
 - Bentley SS2 InRoads Alignment Files (alg)
 - Bentley SS2 InRoads Digital Terrain Models (dtm)
 - Bentley SS2 InRoads Preference File (xin)
- Converted Format (for use in GPS/RTS Site equipment)
 - AutoCAD CAD files (dxf)
 - Alignment files (xml)
 - Surface Models (xml)

For a complete list of EED files, see the EED file manifest (PDF) located in the EED_0103-0266.zip file (0103-0266 is the project number) which is posted with the contract PS&E's on the State Contracting portal.

NOTICE TO CONTRACTOR - 1.05 CONTROL OF THE WORK

1.05.03 - CONFORMITY WITH PLANS AND SPECIFICATIONS (INCLUDING QUALITY CONTROL)

The Contractor is hereby notified that a Quality Management Plan will be required for this Project in conformance with Standard Specifications (Supplemented July 2019) Article 1.05.03 – “Conformity with Plans and Specifications (including Quality Control).”

**NOTICE TO CONTRACTOR – GLOBAL POSITIONING SYSTEM (GPS)
COORDINATES FOR SIGNS**

The Contractor shall obtain and provide to the Engineer sign installation data, including Global Positioning System (GPS) latitude and longitude coordinates, for all new State owned and maintained signs. The Engineer shall forward the sign data to the Division of Traffic Engineering for upload into the Highway Sign Inventory and Maintenance Management Program (SIMS). Sign data submissions or questions relating to SIMS or GPS shall be sent to DOT-SignInventory@ct.gov. Refer to the special provision for Section 12.00 General Clauses For Highway Signing.

NOTICE TO CONTRACTOR – PROTECTION OF EXISTING UTILITIES

The utilities within the limits of the station are shown on the contract plans. It should be noted that the Contractor's activities may overlap the activities of the contractors engaged in the execution of the other projects, as well as the activities of State of Connecticut and utility company personnel.

The Contractor shall completely coordinate his operations with the affected utility companies and/or agencies, and ensure that his work is coordinated with that of other contractors. The coordination of the work is the complete responsibility of the Contractor. When the work required under his contract is in conflict with work being carried out by another contractor or agency, it is the responsibility of the Contractor to notify the Engineer immediately of the conflict.

Existing utilities shall be maintained during construction except as specifically stated herein and/or noted on the Construction Documents and as coordinated with the utilities. The Contractor shall verify the location of underground, structure mounted and overhead utilities. Construction work within the vicinity of utilities shall be performed in accordance with current safety regulations.

The Contractor shall notify “Call Before You Dig”, telephone 1-800-922-4455 for the location of public utility, in accordance with Section 16-345 of the Regulations of the Department of Utility Control. Refer to NOTICE TO CONTRACTOR – UNDERGROUND UTILITIES for additional information.

Representatives of the various utility companies shall be provided access to the work by the Contractor.

Contractors are cautioned that it is their responsibility to verify locations, conditions, and field dimensions of all existing features, as actual conditions may differ from the information shown on the Contract Documents or contained elsewhere in the specifications. Verifications may require the excavation of exploratory test pits.

The Contractor shall notify the Engineer prior to the start of work and shall be responsible for all coordination with the Department. The Contractor shall allow the Engineer complete access to the work.

The Contractor shall be liable for all damages or claims received or sustained by any persons, corporations or property in consequence of damage to the existing utilities, their appurtenances, or other facilities caused directly or indirectly by the operations of the Contractor.

Any damage to any existing private or public utility, as a result of the Contractor's operations, shall be repaired to the Utility's and the Engineer's satisfaction at no cost to the State or the Utility, including all materials, labor, etc., required to complete the repairs.

The Contractor's attention is directed to the requirements of Section 1.07.13 – "Contractor's Responsibilities for Adjacent Property, Facilities and Services".

Prior to opening an excavation, effort shall be made to determine whether underground installations, i.e., water, sanitary, gas, electric ducts, communication ducts, etc., will be encountered and, if so, where such underground installations are located. Also see the special provision/item "Non-Destructive Utility Investigation". When the excavation approaches the estimated location of such an installation, the exact location shall be determined by careful probing or hand digging, and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation, as noted above.

NOTICE TO CONTRACTOR – VERIFICATION OF PLAN DIMENSIONS AND FIELD MEASUREMENTS

The Contractor is responsible for verifying all dimensions before any work is begun. Dimensions of the existing structures shown on the plans are for general reference only; they are not guaranteed. The Contractor shall take all field measurements necessary to assure proper fit of the finished work and shall assume full responsibility for their accuracy. When shop drawings and/or working drawings based on field measurements are submitted for approval and/or review, the field measurements shall also be submitted for reference by the reviewer.

In the field, the Contractor shall examine and verify all existing and given conditions and dimensions with those shown on the plans. If field conditions and dimensions differ from those shown on the plans, the Contractor shall use the field conditions and dimensions and make the appropriate changes to those shown on the plans as approved by the Engineer. All field conditions and dimensions shall be so noted on the drawings submitted for approval.

There shall be no claim made against the Department by the Contractor for work pertaining to modifications required by any difference between actual field conditions and those shown by the details and dimensions on the contract plans. The Contractor will be paid at the unit price bid for the actual quantities of materials used or for the work performed, as indicated by the various items in the contract.

SECTION 1.02 - PROPOSAL REQUIREMENTS AND CONDITIONS

1.02.01—Contract Bidding and Award:

After the first sentence of the third paragraph, add the Following:

In accordance with the provisions of the Construction Contract Bidding and Award Manual, bidders must be prequalified for **Group No. 8 Minor Bridges** to be eligible to bid on this project. Bidders that are not prequalified for this work classification will not be approved to bid on this project.

Article 1.02.04 – Examination of Plans, Specifications, Special Provisions and Site of Work:

Replace the third sentence of the last paragraph with:

The Department cannot ensure a response to inquiries received later than ten (10) days prior to the original scheduled opening of the related bid.

SECTION 1.03 - AWARD AND EXECUTION OF CONTRACT

Article 1.03.08 - Notice to Proceed and Commencement of Work:

Change the first paragraph to read as follows:

The Contractor shall commence and proceed with the Contract work on the date specified in a written Notice to Proceed issued by the Engineer to the Contractor. The Contractor is hereby put on notice that it is the Department's intent to issue the **Notice to Proceed on or about April 1, 2021**.

SECTION 1.05 - CONTROL OF THE WORK

Replace Article 1.05.02 with the following:

1.05.02—Plans, Working Drawings, Shop Drawings, Product Data, Submittal Preparation and Processing - Review Timeframes, Department’s Action:

1. Plans: The plans prepared by the Department show the details necessary to give a comprehensive idea of the construction contemplated under the Contract. The plans will generally show location, character, dimensions, and details necessary to complete the Project. If the plans do not show complete details, they will show the necessary dimensions and details, which when used along with the other Contract documents, will enable the Contractor to prepare Working Drawings, Shop Drawings or Product Data necessary to complete the Project.

Project submittals shall be delivered to the Department using the Department’s project management system COMPASS. The Contractor shall acquire and maintain access to COMPASS for the delivery of submittals as listed herein. The delivery processes and document tracking procedures shall be performed in accordance with this specification and the [COMPASS Contractor's User Manual](#).

2. Working Drawings: When required by the Contract or when ordered to do so by the Engineer, the Contractor shall prepare and submit the Working Drawings, signed, sealed and dated by a qualified Professional Engineer licensed to practice in the State of Connecticut, for review. The Working Drawings shall be submitted sufficiently in advance of the work detailed, to allow for their review in accordance with the requirements specified in 1.05.02-5 (including any necessary revisions, resubmittal, and final review). There will be no direct payment for furnishing any Working Drawings, procedures or supporting calculations, but the cost thereof shall be considered as included in the general cost of the work.

The Contractor is only required to deliver paper copies that have been stamped with “No Exceptions Noted” or “Exceptions as Noted.” Guidance to the Contractor for the number of properly sized paper copies will be provided by the Department.

All Working Drawing submission documents shall conform to the following requirements:

A. Drawings:

- i. Delivered in a single multi-page PDF file.
- ii. Shall be sized ANSI D (34 inches × 22 inches).
- iii. Contain a border, title block and a rectangular box, 2.25 inches wide × 1.75 inches high, in the lower right hand corner for the Department’s stamp.
- iv. Text height and width shall be 0.125 inch.
- v. All letter characters shall be uppercase.
- vi. Shall be searchable.
- vii. Shall be black and white.
- viii. Cover Page - shall be digitally signed by the Contractor’s Professional Engineer.

- ix. All pages shall include a watermark of the Professional Engineer's stamp in a common area.
- B. Calculations:
- i. Delivered in a single PDF file
 - ii. Shall be sized ANSI A (8.5 inches × 11 inches).
 - iii. Cover Page shall be digitally signed by the Contractor's Professional Engineer.
- C. Supporting Documentation:
- i. Delivered as an independent single PDF file
 - ii. Shall be sized ANSI A (8.5 inches × 11 inches).
- a. Working Drawings for Permanent Construction: The Contractor shall supply to the Department a certificate of insurance in accordance with 1.03.07 at the time that the Working Drawings for the Project are submitted.
- The Contractor's designer, who prepares the working drawings, shall secure and maintain at no direct cost to the State a Professional Liability Insurance Policy for errors and omissions in the minimum amount of \$2,000,000 per error or omission. The Contractor's designer may elect to obtain a policy containing a maximum \$250,000 deductible clause, but if the Contractor's designer should obtain a policy containing such a clause, they shall be liable to the extent of at least the deductible amount. The Contractor's designer shall obtain the appropriate and proper endorsement of its Professional Liability Policy to cover the indemnification clause in this Contract, as the same relates to negligent acts, errors or omissions in the Project work performed by them. The Contractor's designer shall continue this liability insurance coverage for a period of
- (i) 3 years from the date of acceptance of the work by the Engineer, as evidenced by a State of Connecticut, Department of Transportation form entitled "Certificate of Acceptance of Work," issued to the Contractor; or
 - (ii) 3 years after the termination of the Contract, whichever is earlier, subject to the continued commercial availability of such insurance.
- b. Working Drawings for Temporary Construction: The Contractor shall submit drawings, calculations, procedures and other supporting data to the Department in accordance with this Specification, with the exception of requirements defined under a. Working Drawings for Permanent Construction.

3. Shop Drawings: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver Shop Drawings to the Department for review.

Shop Drawings shall be submitted sufficiently in advance of the work detailed, to allow for their review in accordance with the requirements specified in 1.05.02-5 (including any necessary revisions, resubmittal, and final review). There will be no direct payment for furnishing any Shop Drawings but the cost thereof shall be considered as included in the general cost of the work.

The Contractor is only required to deliver paper copies that have been stamped with “No Exceptions Noted” or “Exceptions as Noted.” Guidance to the Contractor for the number of properly sized paper copies will be provided by the Department.

Shop Drawing submission documents shall conform to the following requirements:

- A. Delivered in a single multi-page PDF file.
- B. Shall be sized ANSI D (34 inches × 22 inches).
- C. Contain a border, title block and a rectangular box, 2.25 inches wide × 1.75 inches high, in the lower right hand corner for the Department’s stamp.
- D. Text height and width shall be 0.125 inch.
- E. All letter characters shall be uppercase.
- F. Shall be searchable.
- G. Shall be black and white.

4. Product Data: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver Product Data to the Department for review.

Product Data shall be submitted sufficiently in advance of the work detailed, to allow for their review in accordance with the requirements specified in 1.05.02-5 (including any necessary revisions, resubmittal, and final review). There will be no direct payment for furnishing any Product Data but the cost thereof shall be considered as included in the general cost of the work.

The Contractor shall submit the Product Data in a single submittal for each element of construction.

The Contractor shall mark each copy of the Product Data submittal to show applicable choices and options. Where Product Data includes information on several products that are not required, copies shall be marked to indicate the applicable information. Product Data shall include the following information and confirmation of conformance with the Contract to the extent applicable: manufacturer’s printed recommendations, compliance with recognized trade association standards, compliance with recognized testing agency standards, application of testing agency labels and seals, notation of coordination requirements, Contract item number, and any other information required by the individual Contract provisions.

The Contractor is only required to deliver paper copies that have been stamped with “No Exceptions Noted” or “Exceptions as Noted.” Guidance to the Contractor for the number of properly sized paper copies will be provided by the Department.

Product Data submission documents shall conform to the following requirements:

- A. Delivered in a single PDF file
- B. Shall be sized ANSI A (8.5 inches × 11 inches).
- C. Marked to indicate applicable choices and options.
- D. Where non-applicable information and products are included, notations shall be made to clearly delineate applicable from non-applicable information.

5. Submittal Preparation and Processing – Review Timeframes: If the Department deems a submittal incomplete or unacceptable because not all the required documents were attached, documents are incomplete, or are in the incorrect format, the Department will send the submittal back to the Contractor before reviewing. When a submittal is sent back as incomplete, the associated documents have not been reviewed and the review process and any associated timeframe requirements have not begun.

The Contractor shall allow 30 calendar days for submittal review by the Department, from the date receipt is acknowledged by the Department. For any submittals stamped with “Revise and Resubmit” or “Rejected,” the Department is allowed an additional 20 calendar days for review of any resubmissions.

An extension of Contract time will not be authorized due to the Contractor’s failure to transmit submittals sufficiently in advance of the work to permit processing.

The furnishing of Shop Drawings, Working Drawings or Product Data, or any comments or suggestions by the Designer or Engineer concerning Shop Drawings, Working Drawings or Product Data, shall not relieve the Contractor of any of its responsibility for claims by the State or by third parties, as per 1.07.10.

The furnishing of the Shop Drawings, Working Drawings and Product Data shall not serve to relieve the Contractor of any part of its responsibility for the safety or the successful completion of the Project construction.

6. Department’s Action: The Department will review each submittal, mark each with a self-explanatory action stamp, and return the stamped submittal promptly to the Contractor. The Contractor shall not proceed with the part of the Project covered by the submittal until the submittal is marked “No Exceptions Noted” or “Exceptions as Noted” by the Department. The Contractor shall retain sole responsibility for compliance with all Contract requirements. The stamp will be marked as follows to indicate the action taken:

- a. If submittals are marked “No Exceptions Noted,” the Designer or Engineer has not observed any statement or feature that appears to deviate from the Contract requirements. This disposition is contingent on being able to execute any manufacturer’s written warranty in compliance with the Contract provisions.
- b. If submittals are marked “Exceptions as Noted,” the considerations or changes noted by the Department’s Action are necessary for the submittal to comply with Contract requirements. The Contractor shall review the required changes and inform the Department if they feel the changes violate a provision of the Contract or would lessen the warranty coverage.
- c. If submittals are marked “Revise and Resubmit,” the Contractor shall revise the submittals to address the deficiencies or provide additional information as noted by the Department. The Contractor shall allow an additional review period as specified in 1.05.02-5.

- d. If submittals are marked “Rejected,” the Contractor shall prepare and submit a new submittal in accordance with the Department’s notations. The resubmissions require an additional review and determination by the Department. The Contractor shall allow an additional review period as specified in 1.05.02-5.

SECTION 1.07 – LEGAL RELATIONS AND RESPONSIBILITIES

Delete Article 1.07.07 in its entirety and replace it with the following:

1.07.07—Safety and Public Convenience: The Contractor shall conduct the Project work at all times in such a manner as to ensure the least possible obstruction to traffic. In a manner acceptable to the Engineer, the Contractor shall provide for the convenience and interests of the general public; the traveling public; parties residing along or adjacent to the highway or Project Site; and parties owning, occupying or using property adjacent to the Project Site, such as commuters, workers, tenants, lessors and operating agencies.

Notwithstanding any other Contract provision, the Contractor shall not close to normal pedestrian or vehicular traffic any section of road, access drive, parking lot, sidewalk, station platform, railroad track, bus stop, runway, taxiway, occupied space within a Site, or occupied space within a building, except with the written permission of the Engineer.

All equipment, materials, equipment or material storage areas, and work areas must be placed, located, and used in ways that do not create a hazard to people or property, especially in areas open to public pedestrian or vehicular traffic. All equipment and materials shall be placed or stored in such a way and in such locations as will not create a hazard to the traveling public or reduce sight lines. In an area unprotected by barriers or other means, equipment and materials must not be stored within 30 feet of any traveled way.

The Contractor must always erect barriers and warning signs between any of its work or storage areas and any area open to public, pedestrian, or vehicular traffic. Such barriers and signs must comply with all laws and regulations, including any applicable codes.

The Contractor must arrange for temporary lighting, snow and ice removal, security against vandalism and theft, and protection against excessive precipitation runoff within its Project work and storage areas, and within other areas specifically designated in the Contract.

In addition to meeting the requirements of Section 9.71, the Contractor shall take all precautions necessary and reasonable for the protection of all persons, including, but not limited to, employees of the Contractor or the Department, and for the protection of property, until the Engineer notifies the Contractor in writing that the Project or the pertinent portion of the Project has been completed to the Engineer's satisfaction.

The Contractor shall comply with the safety provisions of applicable laws, including building and construction codes and the latest edition of the CFR. The Contractor must make available for reference in its field office, throughout the duration of the Project, a copy of the latest edition and all supplements of the CFR pertaining to OSHA.

The Contractor shall make available to the Contractor's employees, subcontractors, the Engineer, and the public, all information pursuant to OSHA 29 CFR Part 1926.59 and The Hazard Communication Standard 29 CFR 1910.1200, and shall also maintain a file on each job site containing all MSDS for products in use at the Project. These MSDS shall be made available to the Engineer upon request.

The Contractor shall observe all rules and regulations of the Federal, State, and local health officials. Attention is directed to Federal, State, and local laws, rules, and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to the worker's health or safety.

Safety Plan: Before starting work on the Project, the Contractor shall submit to the Engineer a written Safety and Health Plan (hereinafter referred to as the "Plan"). The Plan shall meet or exceed the minimum requirements of this Subsection and any applicable State or Federal regulations.

The Plan shall apply to any work under the Contract whether such work is performed, by way of example and not limitation, by the Contractor's forces, subcontractors, suppliers, or fabricators.

The Plan shall be prepared by the Contractor and submitted to the Engineer for review before the actual start of work on the Project. Within ten (10) calendar days of receipt, the Engineer will determine whether or not the Plan meets the requirements of this Specification. If the Plan does not meet the requirements of this Specification, it will be returned for revision. Work on the Project may not proceed until the Engineer has accepted the Plan. Nothing herein shall be construed, however, to relieve the Contractor from responsibility for the prosecution of the Project.

The Plan shall conform to the following general format:

1. General Introduction.

- a. Description.** The general introduction of the Plan shall include a statement by the Contractor describing its commitment to maintain a safe work environment for its employees, Department representatives, and the public. Implementation procedures and company policies relative to safety shall be summarized or referenced in the Plan.
 - i. The Plan shall include the names, addresses, and telephone numbers of the Contractor's Project Manager, Project superintendent and/or its designee for safety oversight, all competent persons, and the traffic control coordinator. Any changes to the safety management and oversight for the Project shall be promptly communicated to all concerned.
 - ii. The Plan shall provide guidelines for protecting all personnel from hazards associated with Project operations and activities.

- iii. The Plan shall establish the policies and procedures that are necessary for the Project to be in compliance with the requirements of OSHA and other State and Federal regulatory agencies with jurisdiction, rules, regulations, standards, or guidelines in effect at the time the work is in progress.
- b. Responsibility, Identification of Personnel, and Certifications.** The Contractor is solely responsible for creating, implementing, and monitoring the Plan.
- i. The Contractor shall identify and designate on-site supervisory level personnel who shall be responsible for implementing and monitoring the Plan at all times throughout the duration of the Project and shall have authority to take prompt corrective measures to eliminate hazards including the ability to stop work activities.
 - ii. Documentation of training provided to the on-site supervisory level personnel shall be included as part of the Plan.
 - iii. For any work activities wherein the Contractor has identified a competent person as defined by OSHA, that person shall be capable of identifying existing and predictable hazards and have the authority to take prompt corrective measures to eliminate the hazards, including the ability to stop work activities.
 - iv. Documentation of the qualifications of such competent persons identified, including any certifications received, shall be included as part of the Plan.
 - v. The Contractor shall further identify the qualified safety professional responsible for developing the Plan and shall provide that person's qualifications for developing the Plan which shall include, but not be limited to, education, training, certifications, and experience in developing this type of Plan.
 - vi. The Plan shall contain a certification executed by the qualified safety professional that developed the Plan, stating that the Plan complies with OSHA and other applicable State and Federal regulatory agencies with jurisdiction, rules, regulations, standards, or guidelines in effect at the time the work is in progress.
- 2. Elements of the Plan.** The Plan shall address, but not be limited to, the following elements:
- a. Management Safety Policy and Implementation Statement.**
 - i. The Plan shall describe in detail the means by which the Contractor shall implement and monitor the Plan. Implementation and monitoring shall also mean that the Plan shall be a document with provision for change to update the Plan with new information on a yearly basis at a minimum and shall include new practices or procedures, changing site and environmental conditions, or other situations that could adversely affect site personnel. The Plan shall provide guidelines for protecting all personnel from hazards associated with Project operations and activities.
 - b. Emergency Telephone Numbers.**
 - c. Personnel Responsibilities.**
 - i. Management responsibilities
 - ii. Responsibilities of Supervisor(s)
 - iii. Site safety officer(s) responsibilities

- iv. Employee responsibilities
- v. Competent person(s) as defined by OSHA responsibilities
- d. Training.**
 - i. Regulatory
 - ii. Documentation
 - iii. Site hazard assessment -Daily employee awareness of site operations
- e. Safety Rules.**
 - i. General safety rules
 - ii. Personal protective equipment
 - iii. Housekeeping
- f. Safety Checklists.**
 - i. Project safety-planning checklist
 - ii. Emergency plans and procedures checklist
 - iii. Documentation checklist
 - iv. Protective materials and equipment checklist
- g. Traffic Control Coordinator Inspections.**
 - i. Responsible person
 - ii. Frequency
 - iii. Documentation of actions taken
- h. Record Keeping.**
 - i. OSHA 200 log
- i. Reporting.**
 - i. Accident(s)
 - ii. On site
 - iii. Legal notice requirement
 - iv. Public liability
 - v. Property damage
 - vi. Department of Labor
 - vii. Hazard Communications
- j. Additional Procedures for Project Specific Situations as Applicable.**
 - i. Compressed gas cylinders
 - ii. Confined spaces
 - iii. Cranes
 - iv. Crystalline silica (stone, masonry, concrete, and brick dust)
 - v. Electrical
 - vi. Equipment operators
 - vii. Fall protection
 - viii. Hand and power tools
 - ix. Hearing conservation
 - x. Highway safety
 - xi. Lead health and safety plan
 - xii. Lock out/tag out
 - xiii. Materials handling, storage, use, and disposal
 - xiv. Areas of environmental concern

- xv. Night work
- xvi. Personal protective equipment
- xvii. Project entry and exit
- xviii. Respiratory protection
- xix. Sanitation
- xx. Signs, signals, and barricades
- xxi. Subcontractors
- xxii. Trenching

3. Appendix for Environmental Health and Safety Plan (HASP). If environmental hazards are identified in the Contract, an Environmental HASP shall be included in an appendix to the Plan, or in a separate document. References to any Environmental HASP shall be included within the Plan, where appropriate.

The Plan shall be kept on the site and shall apply and be available to all workers and all other authorized persons entering the work site. Copies of all updates to the Plan shall be promptly supplied to the Engineer.

If at any time during the Project the Engineer determines that the Contractor is not complying with the requirements of this provision or the updated Plan, the Contractor shall correct such deficiencies immediately. Failure to remediate such deficiencies may result in suspension of the Contractor's operations until the deficiencies have been corrected. Suspensions ordered due to safety deficiencies will not be considered compensable or excusable delays.

The Contractor is responsible for implementation of the Plan. Pursuant to Article 1.07.10, the Contractor shall indemnify, and save harmless the State from any and all liability related to the Plan in proportion to the extent that the Contractor is held liable for same by an arbiter of competent jurisdiction.

The Contractor shall allow onto the Project site any inspector of OSHA or other legally responsible agency involved in safety and health administration upon presentation of proper credentials, without delay and without the presentation of an inspection warrant.

Article 1.07.11 Opening of Section of project to Traffic or Occupancy:

Add the following sentence to the last paragraph:

“In cases in which guiderail is damaged by the traveling public, repair or replacement will be reimbursable as contained elsewhere herein.”

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.04 - Limitation of Operations - Add the following:

In order to provide for traffic operations as outlined in the Special Provision "Maintenance and Protection of Traffic," the Contractor will not be permitted to perform any work which will interfere with the described traffic operations on all project roadways as follows:

Interstate 395

The Contractor shall not perform any work that will interfere with traffic operations during the below State observed Legal Holidays and Legal Holiday Periods.

A. On the following State observed Legal Holidays:

New Year's Day	Labor Day
Good Friday	Thanksgiving Day
Memorial Day	Christmas Day
Independence Day	

B. During the following Legal Holiday Periods:

- i. When an above Legal Holiday is celebrated on a Sunday or Monday: From 6:00 a.m. the immediately preceding Friday to 6:00 a.m. the immediately following Tuesday.
- ii. When an above Legal Holiday is celebrated on a Tuesday, Wednesday, or Thursday: From 6:00 a.m. the day before to 6:00 a.m. the day after, except Thanksgiving (see below for Thanksgiving specific restrictions).
- iii. When an above Legal Holiday is celebrated on a Friday or Saturday: From 6:00 a.m. the immediately preceding Thursday to 6:00 a.m. the immediately following Monday.
- iv. Thanksgiving: From 6:00 a.m. the Wednesday before to 6:00 a.m. the Monday after.

During all other times:

- A. The Contractor shall maintain and protect traffic as shown on the accompanying "Limitation of Operations" charts, which dictate the maximum number of lanes allowed to be closed and the allowable hours for implementing a rolling roadblock operation for each day of the week.
- B. Bridge 06797 – Stage 1,2,4, & 5: The Contractor will only be allowed to perform this stage construction work during the allowable period. The allowable period will be a 58-hour window between 7 p.m. Friday and 5 a.m. Monday. Restore I-395 to 2 lanes at end of stage.
- C. The Contractor will be allowed to halt traffic for a period not to exceed 10 minutes to actively perform lifting of box culverts as approved by the Engineer, between 12:01 a.m. and 5:00 a.m. during all non-Legal Holiday Periods.

**Limitation of Operations Chart
Maximum Number of Lanes to Be Closed**

Route: I-395 NB Location: Within Project Limits Number of Through Lanes: 2								Route: I-395 SB Location: Within Project Limits Number of Through Lanes: 2							
Hour Beginning	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Hour Beginning	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mid	1	1	1	1	1	1	1	Mid	1	1	1	1	1	1	1
1 AM	1	1	1	1	1	1	1	1 AM	1	1	1	1	1	1	1
2 AM	1	1	1	1	1	1	1	2 AM	1	1	1	1	1	1	1
3 AM	1	1	1	1	1	1	1	3 AM	1	1	1	1	1	1	1
4 AM	1	1	1	1	1	1	1	4 AM	1	1	1	1	1	1	1
5 AM	1	1	1	1	1	1	1	5 AM	1	1	1	1	1	1	1
6 AM	1	1	1	1	1	1	1	6 AM	E	E	E	E	E	1	1
7 AM	1	1	1	1	1	1	1	7 AM	E	E	E	E	E	1	1
8 AM	1	1	1	1	1	1	1	8 AM	E	E	E	E	E	1	1
9 AM	1	1	1	1	1	1	1	9 AM	0	0	0	0	0	0	1
10 AM	1	1	1	1	1	1	1	10 AM	0	0	0	0	0	0	0
11 AM	1	1	1	1	1	1	1	11 AM	0	0	0	0	0	0	0
Noon	1	1	1	1	0	1	1	Noon	0	0	0	0	0	0	0
1 PM	0	0	0	0	0	1	1	1 PM	0	0	0	0	0	0	0
2 PM	0	0	0	0	0	0	0	2 PM	0	0	0	0	0	0	0
3 PM	E	E	E	E	E	0	0	3 PM	E	E	E	E	E	0	0
4 PM	E	E	E	E	E	0	0	4 PM	E	E	E	E	E	0	0
5 PM	E	E	E	E	E	0	0	5 PM	E	E	E	E	E	0	0
6 PM	0	0	0	0	0	0	0	6 PM	0	0	0	0	0	0	1
7 PM	1	1	1	1	0	1	0	7 PM	1	1	1	1	0	1	1
8 PM	1	1	1	1	1	1	0	8 PM	1	1	1	1	1	1	1
9 PM	1	1	1	1	1	1	0	9 PM	1	1	1	1	1	1	1
10 PM	1	1	1	1	1	1	1	10 PM	1	1	1	1	1	1	1
11 PM	1	1	1	1	1	1	1	11 PM	1	1	1	1	1	1	1

On Holidays and within Holiday Periods, all Hours shall be ‘E.’

‘E’ = maintain existing traffic operations = all available travel lanes, including exit only lanes, climbing lanes and all available shoulder widths shall be open to traffic during this period

I-395 Ramps

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.

Additional Restrictions:

The Contractor will be allowed to halt traffic for a period not to exceed 10 minutes to perform necessary work to remove and install traffic patterns, mobilization of equipment and deliver materials, as approved by the Engineer, between 12:01 a.m. and 5:00 a.m. on all non-Holiday days. The Contractor shall notify the Engineer at least 14 days in advance of the start of the closure.

The Contractor shall not be allowed to close the Ramp during a Legal Holiday or Legal Holiday Period.

Additional Lane Closure Restrictions

It is anticipated that work on adjacent projects will be ongoing simultaneously with this project. The Contractor shall be aware of those projects and anticipate that coordination will be required to maintain proper traffic flow at all times on all project roadways, in a manner consistent with these specifications and acceptable to the Engineer.

The Contractor will not be allowed to perform any work that will interfere with traffic operations on a roadway when traffic operations are being restricted on that same roadway, unless there is at least a one mile clear area length where the entire roadway is open to traffic or the closures have been coordinated and are acceptable to the Engineer. The one mile clear area length shall be measured from the end of the first work area to the beginning of the signing pattern for the next work area.

SECTION 2.86 - DRAINAGE TRENCH EXCAVATION, ROCK IN DRAINAGE TRENCH EXCAVATION

2.86.01—Description

2.86.03—Construction Methods

2.86.04—Method of Measurement

2.86.05—Basis of Payment

2.86.01—Description: Drainage trench excavation consists of the excavation necessary for the proper installation of drainage structures, pipes, pipe ends and any other incidental drainage items.

It shall include earth and rock excavation, removal of existing pipes, dewatering, backfill, and disposal of materials; to the trench limits described herein, to the dimensions shown on the plans, or as directed by the Engineer.

Classifications:

- (1) **Drainage Trench Excavation** will include only the excavation necessary for the construction of the drainage items and the removals specified above.
- (2) **Rock in Drainage Trench Excavation**, insofar as it applies to drainage trench excavation, shall be defined as **1/2 cubic yard or more** in volume of the following obstructions removed from the limits of the drainage trench:
 - (a) rock in definite ledge formation
 - (b) boulders, or portions of boulders
 - (c) cement masonry structures
 - (d) concrete or reinforced concrete structures
 - (e) reinforced concrete pipe
 - (f) subsurface concrete pavement or concrete base

The removal shall be as indicated or directed from within the limits defined in 2.86.03 for drainage trench excavation.

2.86.03—Construction Methods:

(1) Drainage Trench Excavation Limits:

Horizontal Limits: Trench widths for pipes, pipe ends, pipe-arches, and drainage structures shall be as follows:

- (a) 2 feet greater than the nominal inside diameter of circular pipe or nominal inside span of elliptical pipe or pipe-arch for such diameters or spans of less than 30 inches
- (b) 3 feet greater than the nominal inside diameter of circular pipe or the nominal inside span of elliptical pipe or pipe-arch for such diameters or spans that are 30 inches or greater
- (c) 4 feet greater than the nominal inside diameter or nominal horizontal inside span for pipe-arches fabricated from structural plates
- (d) 2 feet beyond the neat lines of all exterior or foundation walls of drainage structures

Vertical Limits: Trench depths shall extend vertically as follows:

- (a) From the bottom of the trench to the bottom of the roadway excavation, or in areas away from roadway excavation, to the top of existing ground surface.

(b) Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

- (2) **Drainage Trench Excavation:** Drainage trench excavation shall be made in conformity with the requirements of the plans, or as directed by the Engineer. The Contractor shall furnish and employ such shores, braces, pumps, or ancillary equipment as needed for the proper protection of property, proper completion of the work, as well as safety of the public and employees of both the Contractor and the Department. All bracing and shoring shall be removed when no longer required for the construction or safety of the work. When required, the Contractor shall provide or have on the Site at all times any OSHA certification for equipment to be used, per 1.07.07. For support of trenches greater than 10 feet in depth, working drawings shall be submitted, in accordance with 1.05.02. The Contractor shall control erosion and sedimentation at trench locations and ensure that pumped water from the drainage excavation is discharged in accordance with the requirements of 1.10.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved backfill, thoroughly compacted in lifts not to exceed 6 inches, for the full trench width. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

After the excavation is complete, the Contractor shall notify the Engineer and no drainage structure or material shall be placed in the excavated area until the Engineer has approved the depth of excavation and the character of the foundation material.

- (3) **Rock in Drainage Trench Excavation:**

- (a) Rock in Drainage Trench Excavation - Ledge: When rock in definite ledge form is encountered, the Contractor shall excavate a minimum of 12 inches below the bottom of the proposed pipe or drainage structure; and this depth shall be filled with bedding material (as specified in M.08.03-1) below the proposed pipe; or granular fill (as specified in M.02.01) below the proposed drainage structure, which shall be thoroughly compacted in lifts not to exceed 6 inches.
- (b) Rock in Drainage Trench Excavation - Boulders: When boulders are encountered, the Contractor shall remove them from the trench and if backfill is required, the void shall be filled with bedding material, surplus excavated material (as specified in 2.02.03-8) or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.
- (c) Rock in Drainage Trench Excavation –Structures: When cement masonry, concrete or reinforced concrete structures are encountered within the drainage trench limits, the Contractor shall remove the structure in its entirety or as directed by the Engineer, and if backfill is required, the void shall be filled with bedding material, surplus excavated material or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

- (4) **Backfill:** Suitable material excavated from the drainage trench shall be used as backfill material prior to consideration of using any other source of backfill. Backfill material used shall be of a quality satisfactory to the Engineer and shall be free from large or frozen lumps, wood and other extraneous material. Rock fill or stones larger than 5 inches shall not be placed within 1 foot of the drainage structure or pipe. The grading shall be

completed to the lines shown on the plans, or as ordered, by refilling to the required elevation with approved material, placed in layers not to exceed 6 inches in depth after compaction, which shall be thoroughly compacted with equipment approved by the Engineer.

All surplus or unsuitable material shall be removed and disposed of as directed. Should additional material be required for backfilling, it may be obtained from the Project surplus excavation in accordance with 2.02.03-8 or from borrow pits, gravel pits, or elsewhere as directed by the Engineer.

2.86.04—Method of Measurement:

Drainage Trench Excavation: Drainage trench excavation will not be measured for payment.

If granular fill or borrow is required to replace unsuitable material it will be measured for payment as directed by the Engineer.

Rock in Drainage Trench Excavation: If any material meeting the definition of Rock in Drainage Trench Excavation is encountered, the Contractor shall strip it of sufficient overlying material to allow for proper measurement and shall then notify the Engineer that the rock surface is ready for measurement. If the Contractor fails to give such notice, the Engineer will presume that the measurements taken at the time the Engineer first saw the material in question will give the true quantity of excavation.

Rock in Drainage Trench Excavation will be measured according to the classification provided in 2.86.01 and within the drainage trench excavation limits provided in 2.86.03.

For the removal of underground obstructions, as classified in 2.86.01-2, the measurement shall be the actual volume of rock removed (1/2 cubic yard or more) as approved by the Engineer.

Rock in Drainage Trench Excavation will not be measured for payment in fills.

Bedding Material or other suitable fill, as specified in 2.86.03(3), used to fill voids after rock is excavated will not be measured for payment.

2.86.05—Basis of Payment:

Drainage Trench Excavation: There will be no direct payment for drainage trench excavation required for the installation of drainage pipes, pipe ends, catch basins, drop inlets, manholes, and other drainage structures, or any other incidental drainage work including materials, tools, equipment and labor necessary to complete the drainage trench excavation in conformity with the plans or as directed by the Engineer.

There will be no direct payment for backfill or disposal of surplus material necessary for the satisfactory completion of this work.

There will be no direct payment made for shoring, bracing, dewatering, or for material or equipment necessary for the satisfactory completion of the work.

Where called for on the plans to install temporary earth retaining systems for the support of existing facilities, pavement, utilities, or for other constraints, payment will be made in accordance with such items in the Contract.

If granular fill or borrow is used to replace unsuitable material, payment will be made at the respective Contract unit prices, or in the absence of such items in the Contract, as Extra Work in accordance with 1.04.05.

Rock in Drainage Trench Excavation: When rock, conforming to the description in 2.86.01 is encountered within the limits of drainage trench excavation, its removal will be classified and

paid for at the Contract unit price per cubic yard for "Rock in Drainage Trench Excavation 0' – 10' Deep," or "Rock in Drainage Trench Excavation 0' – 20' Deep," as the case may be.

Those portions of drainage trench excavation classified and paid for as "Rock in Drainage Trench Excavation" of the various depths will be the actual volumes of rock excavated within the limits for drainage trench excavation, at the applicable bottom depth price.

Where no item or items for "Rock in Drainage Trench Excavation" at the applicable depth appear in the proposal and rock is encountered in drainage trench excavation, its removal will be paid for as Extra Work in accordance with 1.04.05.

When excavation is necessary in fill, no such excavation will be paid for as "Rock in Drainage Trench Excavation."

When excavation is necessary for any purpose other than drainage-related items, no such excavation will be paid under this item.

Bedding material or any other suitable material used to fill voids vacated by excavated rock will not be paid for but shall be included in the unit price per cubic yard for "Rock in Drainage Trench Excavation."

Pay Item	Pay Unit
Rock in Drainage Trench Excavation 0' - 10' Deep	c.y.
Rock in Drainage Trench Excavation 0' - 20' Deep	c.y.

SECTION 4.06 - BITUMINOUS CONCRETE

Section 4.06 is being deleted in its entirety and replaced with the following:

4.06.01—Description

4.06.02—Materials

4.06.03—Construction Methods

- 1. Material Documentation**
- 2. Transportation of Mixture**
- 3. Paving Equipment**
- 4. Test Section**
- 5. Transitions for Roadway Surface**
- 6. Spreading and Finishing of Mixture**
- 7. Longitudinal Joint Construction Methods**
- 8. Contractor Quality Control (QC) Requirements**
- 9. Temperature and Seasonal Requirements**
- 10. Field Density**
- 11. Acceptance Sampling and Testing**
- 12. Density Dispute Resolution Process**
- 13. Corrective Work Procedure**
- 14. Protection of the Work**
- 15. Cut Bituminous Concrete Pavement**

4.06.04—Method of Measurement

4.06.05—Basis of Payment

4.06.01—Description: Work under this Section shall include the production, delivery, placement and compaction of a uniform textured, non-segregated, smooth bituminous concrete pavement to the grade and cross section shown on the plans.

The following terms as used in this specification are defined as:

Bituminous Concrete: A composite material consisting of prescribed amounts of asphalt binder and aggregates. Asphalt binder may also contain additives engineered to modify specific properties and/or behavior of the composite material. References to bituminous concrete apply to all of its forms, such as those identified as hot-mix asphalt (HMA) or polymer-modified asphalt (PMA).

Bituminous Concrete Plant (Plant): A structure where aggregates and asphalt binder are combined in a controlled fashion into a bituminous concrete mixture suitable for forming pavements and other paved surfaces.

Course: A continuous layer (a lift or multiple lifts) of the same bituminous concrete mixture placed as part of the pavement structure.

Density Lot: The total tonnage of all bituminous concrete placed in a single lift which are:

PWL density lots = When the project total estimated quantity per mixture is larger than 3,500 tons

Simple Average density lots = When the project total estimated quantity per mixture is 3,500 tons or less

Disintegration: Erosion or fragmentation of the pavement surface which can be described as

polishing, weathering-oxidizing, scaling, spalling, raveling, or formation of potholes.

Dispute Resolution: A procedure used to resolve conflicts between the Engineer and the Contractor's results that may affect payment.

Hot Mix Asphalt (HMA): A bituminous concrete mixture typically produced at 325°F.

Job Mix Formula (JMF): A recommended aggregate gradation and asphalt binder content to achieve the required mixture properties.

Lift: An application of a bituminous concrete mixture placed and compacted to a specified thickness in a single paver pass.

Percent Within Limits (PWL): The percentage of the lot falling between the Upper Specification Limit (USL) and the Lower Specification Limit (LSL).

Polymer Modified Asphalt (PMA): A bituminous concrete mixture containing a polymer-modified asphalt binder and using a qualified warm mix technology.

Production Lot: The total tonnage of a bituminous concrete mixture from a single source that may receive an adjustment.

Production Sub Lot: Portion of the production lot typically represented by a single sample.

Quality Assurance (QA): All those planned and systematic actions necessary to provide CTDOT the confidence that a Contractor will perform the work as specified in the Contract.

Quality Control (QC): The sum total of activities performed by the vendor (Producer, Manufacturer, and Contractor) to ensure that a product meets contract specification requirements.

Superpave: A bituminous concrete mix design used in mixtures designated as "S*" Where "S" indicates Superpave and * indicates the sieve related to the nominal maximum aggregate size of the mix.

Segregation: A non-uniform distribution of a bituminous concrete mixture in terms of gradation, temperature, or volumetric properties.

Warm Mix Asphalt (WMA) Technology: A qualified additive or technology that may be used to produce a bituminous concrete at reduced temperatures and/or increase workability of the mixture.

4.06.02—Materials: All materials shall meet the requirements of Section M.04.

1. Materials Supply: The bituminous concrete mixture must be from one source of supply and originate from one Plant unless authorized by the Engineer.

2. Recycled Materials: Reclaimed Asphalt Pavement (RAP), Crushed Recycled Container Glass (RCRG), Recycled Asphalt Shingles (RAS), or crumb rubber (CR) from recycled tires may be incorporated in bituminous concrete mixtures in accordance with Project Specifications.

4.06.03—Construction Methods

1. Material Documentation: All vendors producing bituminous concrete must have Plants with automated vehicle-weighting scales, storage scales, and material feeds capable of producing a delivery ticket containing the information below.

- a. State of Connecticut printed on ticket.
- b. Name of Producer, identification of Plant, and specific storage silo if used.
- c. Date and time.
- d. Mixture Designation, mix type and level. Curb mixtures for machine-placed curbing must state "curb mix only."

- e. If WMA Technology is used, “-W” must be listed following the mixture designation.
- f. Net weight of mixture loaded into the vehicle. (When RAP and/or RAS is used, the moisture content shall be excluded from mixture net weight.)
- g. Gross weight (equal to the net weight plus the tare weight or the loaded scale weight).
- h. Tare weight of vehicle (daily scale weight of the empty vehicle).
- i. Project number, purchase order number, name of Contractor (if Contractor other than Producer).
- j. Vehicle number - unique means of identification of vehicle.
- k. For Batch Plants: individual aggregate, recycled materials, and virgin asphalt max/target/min weights when silos are not used.
- l. For every mixture designation: the running daily and project total delivered and sequential load number.

The net weight of mixture loaded into the vehicle must be equal to the cumulative measured weights of its components.

The Contractor must notify the Engineer immediately if, during production, there is a malfunction of the weight recording system in the automated Plant. Manually written tickets containing all required information will be allowed for no more than 1 hour.

The State reserves the right to have an Inspector present to monitor batching and/or weighing operations.

2. Transportation of Mixture: The mixture shall be transported in vehicles that are clean of all foreign material, excessive coating or cleaning agents, and that have no gaps through which material might spill. Any material spilled during the loading or transportation process shall be quantified by re-weighing the vehicle. The Contractor shall load vehicles uniformly so that segregation is minimized. Loaded vehicles shall be tightly covered with waterproof covers acceptable to the Engineer. Mesh covers are prohibited. The cover must minimize air infiltration. Vehicles found not to be in conformance shall not be loaded

Vehicles with loads of bituminous concrete being delivered to State projects must not exceed the statutory or permitted load limits referred to as gross vehicle weight (GVW). The Contractor shall furnish a list and allowable weights of all vehicles transporting mixture. The State reserves the right to check the gross and tare weight of any vehicle. If the gross or tare weight varies from that shown on the delivery ticket by more than 0.4%, the Engineer will recalculate the net weight. The Contractor shall correct the discrepancy to the satisfaction of the Engineer.

If a vehicle delivers mixture to the Project and the delivery ticket indicates that the vehicle is overweight, the load may not be rejected but a “Measured Weight Adjustment” will be taken in accordance with Article 4.06.04.

Vehicle body coating and cleaning agents must not have a deleterious effect on the mixture. The use of solvents or fuel oil, in any concentration, is prohibited for the coating of vehicle bodies.

For each delivery, the Engineer shall be provided a clear, legible copy of the delivery ticket.

3. Paving Equipment: The Contractor shall have the necessary paving and compaction equipment at the Project Site to perform the work. All equipment shall be in good working order and any equipment that is worn, defective, or inadequate for performance of the work shall be repaired or replaced by the Contractor to the satisfaction of the Engineer. During the paving operation, the use of solvents or fuel oil, in any concentration, is strictly prohibited as a release agent or cleaner on any paving equipment (i.e., rollers, pavers, transfer devices, etc.).

Refueling or cleaning of equipment is prohibited in any location on the Project where fuel or solvents might come in contact with paved areas or areas to be paved. Solvents used in cleaning mechanical equipment or hand tools shall be stored clear of areas paved or to be paved. Before any such equipment and tools are cleaned, they shall be moved off of areas paved or to be paved.

Pavers: Each paver shall have a receiving hopper with sufficient capacity to provide for a uniform spreading operation and a distribution system that places the mix uniformly, without segregation. The paver shall be equipped with and use a vibratory screed system with heaters or burners. The screed system shall be capable of producing a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Pavers with extendible screed units as part of the system shall have auger extensions and tunnel extenders as necessary. Automatic screed controls for grade and slope shall be used at all times unless otherwise authorized by the Engineer. The controls shall automatically adjust the screed to compensate for irregularities in the preceding course or existing base. The controls shall maintain the proper transverse slope and be readily adjustable, and shall operate from a fixed or moving reference such as a grade wire or floating beam (minimum length 20 feet).

Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Roller types shall include steel wheeled, pneumatic, or a combination thereof. Rollers that operate in a dynamic mode shall have drums that use a vibratory or oscillatory system or combination. Vibratory rollers shall be equipped with indicators for amplitude, frequency, and speed settings/readouts to measure the impacts per foot during the compaction process. Oscillatory rollers shall be equipped with frequency indicators. Rollers can operate in the dynamic mode using the oscillatory system on concrete structures such as bridges and catch basins if at the lowest frequency setting.

Pneumatic tire rollers shall be equipped with wide-tread compaction tires capable of exerting an average contact pressure from 60 to 90 psi uniformly over the surface. The Contractor shall furnish documentation to the Engineer regarding tire size, pressure and loading to confirm that the proper contact pressure is being developed and that the loading and contact pressure are uniform for all wheels.

Lighting: For paving operations which will be performed during hours of darkness the paving equipment shall be equipped with lighting fixtures as described below or with an approved equal. Lighting shall minimize glare to passing traffic. The lighting options and minimum number of fixtures are listed in Tables 4.06-1 and 4.06-2.

TABLE 4.06-1: Minimum Paver lighting

Option	Fixture Configuration	Fixture Quantity	Requirement
1	Type A	3	Mount over screed area
	Type B (narrow) or Type C (spot)	2	Aim to auger and guideline
	Type B (wide) or Type C (flood)	2	Aim 25 feet behind paving machine
2	Type D Balloon	2	Mount over screed area

TABLE 4.06-2: Minimum Roller Lighting

Option	Fixture Configuration	Fixture Quantity	Requirement
1	Type B (wide)	2	Aim 50 feet in front of and behind roller
	Type B (narrow)	2	Aim 100 feet in front of and behind roller
2	Type C (flood)	2	Aim 50 feet in front of and behind roller
	Type C (spot)	2	Aim 100 feet in front of and behind roller
3	Type D Balloon	1	Mount above the roller

*All fixtures shall be mounted above the roller.

Type A: Fluorescent fixture shall be heavy duty industrial type. Each fixture shall have a minimum output of 8,000 lumens. The fixtures shall be mounted horizontally and be designed for continuous row installation.

Type B: Each floodlight fixture shall have a minimum output of 18,000 lumens.

Type C: Each fixture shall have a minimum output of 19,000 lumens.

Type D: Balloon light – each balloon light fixture shall have minimum output of 50,000 lumens and emit light equally in all directions.

Material Transfer Vehicle (MTV): A MTV shall be used when placing bituminous concrete surface course (a lift or multiple lifts) as indicated in the Contract except as noted on the plans or as directed by the Engineer. In addition, continuous paving lengths of less than 500 feet may not require the use of a MTV as determined by the Engineer.

The MTV must be a vehicle specifically designed for the purpose of delivering the bituminous concrete mixture from the delivery vehicle to the paver. The MTV must continuously remix the bituminous concrete mixture throughout the placement process.

The use of a MTV will be subject to the requirements stated in Article 1.07.05 Load Restrictions. The Engineer may limit the use of the vehicle if it is determined that the use of the MTV may damage highway components, utilities, or bridges. The Contractor shall submit to the Engineer at time of pre-construction the following information:

1. The make and model of the MTV.
2. The individual axle weights and axle spacing for each piece of paving equipment (haul vehicle, MTV and paver).
3. A working drawing showing the axle spacing in combination with all pieces of equipment that will comprise the paving echelon.

4. Test Section: The Engineer may require the Contractor to place a test section whenever the requirements of this specification or Section M.04 are not met.

The Contractor shall submit the quantity of mixture to be placed and the location of the test section for review and approval by the Engineer. The same equipment used in the construction of a passing test section shall be used throughout production.

If a test section fails to meet specifications, the Contractor shall stop production, make necessary adjustments to the job mix formula, Plant operations, or procedures for placement and compaction. The Contractor shall construct test sections, as allowed by the Engineer, until all the required specifications are met. All test sections shall also be subject to removal as set forth in Article 1.06.04.

5. Transitions for Roadway Surface: Transitions shall be formed at any point on the roadway where the pavement surface deviates, vertically, from the uniform longitudinal profile as specified on the plans. Whether formed by milling or by bituminous concrete mixture, all transition lengths shall meet the criteria below unless otherwise specified.

Permanent Transitions: Defined as any gradual change in pavement elevation that remains as a permanent part of the work.

A transition shall be constructed no closer than 75 feet from either side of a bridge expansion joint or parapet. All permanent transitions, leading and trailing ends shall meet the following length requirements:

Posted Speed Limit	Permanent Transition Length Required
> 35 mph	30 feet per inch of elevation change
35 mph or less	15 feet per inch of elevation change

In areas where it is impractical to use the above-described permanent transition lengths, the use of a shorter permanent transition length may be permitted when approved by the Engineer.

Temporary Transitions: Defined as a transition that does not remain a permanent part of the work.

All temporary transitions shall meet the following length requirements:

Posted Speed Limit	Temporary Transition Length Required
> 50 mph	Leading Transition: 15 feet per inch of vertical change (thickness) Trailing Transition: 6 feet per inch of vertical change (thickness)
40, 45 or 50 mph	Leading and Trailing: 4 feet per inch of vertical change (thickness)
35 mph or less	Leading and Trailing: 3 feet per inch of vertical change (thickness)

Note: Any temporary transition to be in place over the winter shutdown period or during extended periods of inactivity (more than 14 calendar days) shall meet the greater than 50 mph requirements shown above.

6. Spreading and Finishing of Mixture: Prior to the placement of the mixture, the underlying base course shall be brought to the plan grade and cross section within the allowable tolerance.

Immediately before placing a bituminous concrete lift, a uniform coating of tack coat shall be applied to all existing underlying pavement surfaces and on the exposed surface of a wedge joint. Such surfaces shall be clean and dry. Sweeping or other means acceptable to the Engineer shall be used.

The mixture shall not be placed whenever the surface is wet or frozen.

Tack Coat Application: The tack coat shall be applied by a pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gal./s.y. for a non-milled surface and an application rate of 0.05 to 0.07 gal./s.y. for a milled surface. For areas

where both milled and un-milled surfaces occur, the tack coat shall be an application rate of 0.03 to 0.05 gal /s.y. The Engineer must approve the equipment and the method of measurement prior to use. The material for tack coat shall be heated to $160^{\circ}\text{F} \pm 10^{\circ}\text{F}$ and shall not be further diluted.

Tack coat shall be allowed sufficient time to break prior to any paving equipment or haul vehicles driving on it.

The Contractor may request to omit the tack coat application between bituminous concrete layers that have not been exposed to traffic and are placed during the same work shift. Requests to omit tack coat application on the upper and lower surfaces of a wedge joint will not be considered.

Placement: The mixture shall be placed and compacted to provide a smooth, dense surface with a uniform texture and no segregation at the specified thickness and dimensions indicated in the plans and specifications.

When unforeseen weather conditions prevent further placement of the mixture, the Engineer is not obligated to accept or place the bituminous concrete mixture that is in transit from the Plant.

In advance of paving, traffic control requirements shall be set up, maintained throughout placement, and shall not be removed until all associated work including density testing is completed.

The mixture temperature will be verified by means of a probe or infrared type of thermometer. The placement temperature range shall be listed in the quality control plan (QCP) for placement and meet the requirements of Table M.04.03-4. Any HMA material that falls outside the specified temperature range as measured by a probe thermometer may be rejected.

The Contractor shall inspect the newly placed pavement for defects in mixture or placement before rolling is started. Any deviation from standard crown or section shall be immediately remedied by placing additional mixture or removing surplus mixture. Such defects shall be corrected to the satisfaction of the Engineer.

Where it is impracticable due to physical limitations to operate the paving equipment, the Engineer may permit the use of other methods or equipment. Where hand spreading is permitted, the mixture shall be placed by means of suitable shovels and other tools, and in a uniformly loose layer at a thickness that will result in a completed pavement meeting the designed grade and elevation.

Placement Tolerances: Each lift of bituminous concrete placed at a specified thickness shall meet the following requirements for thickness and area. Any pavement exceeding these limits shall be subject to an adjustment or removal. Lift tolerances will not relieve the Contractor from meeting the final designed grade. Lifts of specified non-uniform thickness, i.e. wedge or shim course, shall not be subject to thickness and area adjustments.

- a) Thickness: Where the average thickness of the lift exceeds that shown on the plans beyond the tolerances shown in Table 4.06-3, the Engineer will calculate the thickness adjustment in accordance with Article 4.06.04.

TABLE 4.06-3: Thickness Tolerances

Mixture Designation	Lift Tolerance
S1	+/- 3/8 inch
S0.25, S0.375, S0.5	+/- 1/4 inch

Where the thickness of the lift of mixture is less than that shown on the plans beyond the

tolerances shown in Table 4.06-3, the Contractor, with the approval of the Engineer, shall take corrective action in accordance with this Section.

- b) Area: Where the width of the lift exceeds that shown on the plans by more than the specified thickness, the Engineer will calculate the area adjustment in Article 4.06.04.
- c) Delivered Weight of Mixture: When the delivery ticket shows that the truck exceeds the allowable gross weight for the vehicle type, the Engineer will calculate the weight adjustment in accordance with Article 4.06.04.

Transverse Joints: All transverse joints shall be formed by saw-cutting to expose the full thickness of the lift. Tack coat shall be applied to the sawn face immediately prior to additional mixture being placed.

Compaction: The Contractor shall compact the mixture to meet the density requirements as stated in Article 4.06.04 and eliminate all roller marks without displacement, shoving cracking, or aggregate breakage.

When placing a lift with a specified thickness less than 1 1/2 inches, or a wedge course, the Contractor shall provide a minimum rolling pattern as determined by the development of a compaction curve. The procedure to be used shall be documented in the Contractor's QCP for placement and demonstrated on the first day of placement.

The use of the vibratory system on concrete structures is prohibited. When approved by the Engineer, the Contractor may operate a roller using an oscillatory system at the lowest frequency setting.

If the Engineer determines that the use of compaction equipment in the dynamic mode may damage highway components, utilities or adjacent property, the Contractor shall provide alternate compaction equipment.

Rollers operating in the dynamic mode shall be shut off when changing directions.

These allowances will not relieve the Contractor from meeting pavement compaction requirements.

Surface Requirements:

Each lift of the surface course shall not vary more than 1/4 inch from a Contractor-supplied 10 foot straightedge. For all other lifts of bituminous concrete, the tolerance shall be 3/8 inch. Such tolerance will apply to all paved areas.

Any surface that exceeds these tolerances shall be corrected by the Contractor at its own expense.

7. Longitudinal Joint Construction Methods: The Contractor shall use Method I - Notched Wedge Joint (see Figure 4.06-1) when constructing longitudinal joints where lift thicknesses are 1 1/2 inches to 3 inches. S1.0 mixtures shall be excluded from using Method I. Method II - Butt Joint (see Figure 4.06-2) shall be used for lifts less than 1 1/2 inches or greater than 3 inches. Each longitudinal joint shall maintain a consistent offset from the centerline of the roadway along its entire length. The difference in elevation between the two faces of any completed longitudinal joint shall not exceed 1/4 inch at any location.

Method I - Notched Wedge Joint:

A notched wedge joint shall be constructed as shown in Figure 4.06-1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches. The device shall have an integrated vibratory system. The top vertical notch must be located at the centerline or lane line in the final lift. The requirement for paving full width "curb to curb" as described in Method II may be waived if addressed in the QC plan and approved by

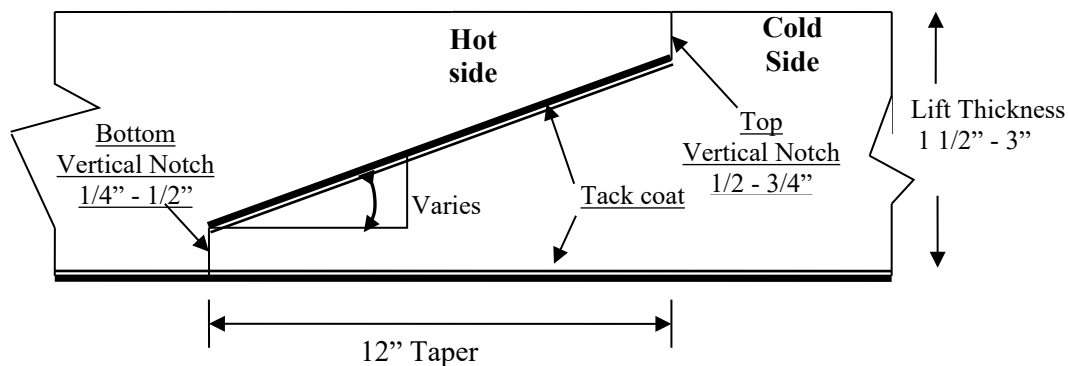
the Engineer.

The taper portion of the wedge joint shall be evenly compacted using equipment other than the paver or notch wedge joint device. The compaction device shall be the same width as the taper and not reduce the angle of the wedge or ravel the top notch of the joint during compaction.

When placed on paved surfaces, the area below the sloped section of the joint shall be treated with tack coat. The top surface of the sloped section of the joint shall be treated with tack coat prior to placing the completing pass.

The taper portion of the wedge joint shall not be exposed to traffic for more than 5 calendar days.

Figure 4.06-1: Notched Wedge Joint (Not to Scale)



Any exposed wedge joint must be located to allow for the free draining of water from the road surface.

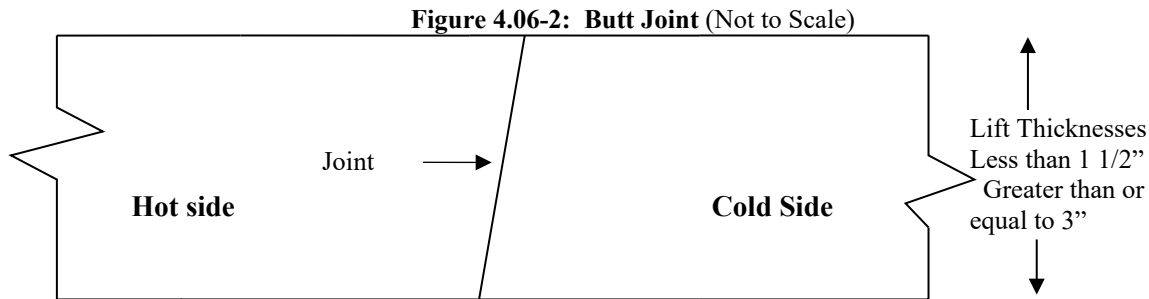
The Engineer reserves the right to define the paving limits when using a wedge joint that will be exposed to traffic.

If Method I cannot be used on those lifts which are 1 ½ inches to 3 inches, Method III may be substituted according to the requirements below for “Method III - Butt Joint with Hot Poured Rubberized Asphalt Treatment.”

Method II - Butt Joint:

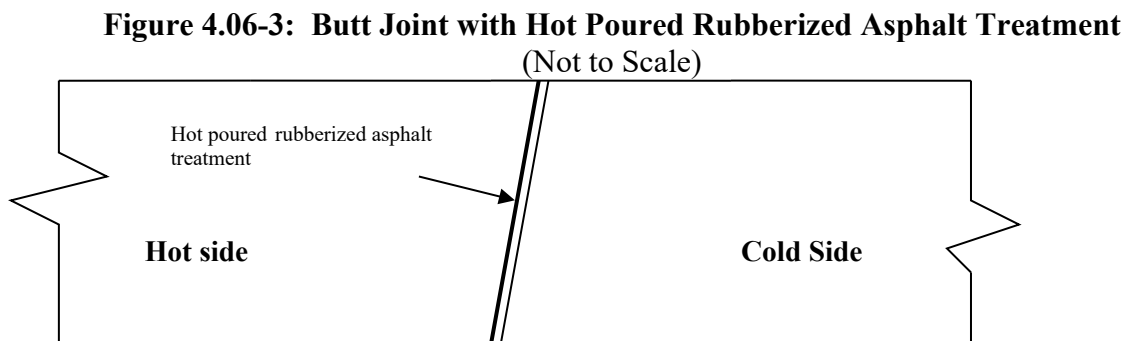
When adjoining passes are placed, the Contractor shall use the end gate to create a near vertical edge (refer to Figure 4.06-2). The completing pass (hot side) shall have sufficient mixture so that the compacted thickness is not less than the previous pass (cold side). During placement of multiple lifts, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inch from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines. The end gate on the paver should be set so there is an overlap onto the cold side of the joint.

The Contractor shall not allow any butt joint to be incomplete at the end of a work shift unless otherwise allowed by the Engineer. When using this method, the Contractor is not allowed to leave a vertical edge exposed at the end of a work shift and must complete paving of the roadway full width “curb to curb.”



Method III - Butt Joint with Hot Poured Rubberized Asphalt Treatment:

If Method I cannot be used due to physical constraints in certain limited locations, the Contractor may submit a request in writing for approval by the Engineer to use Method III as a substitution in those locations. There shall be no additional measurement or payment made when Method III is substituted for Method I. When required by the Contract or approved by the Engineer, Method III (see Figure 4.06-3) shall be used.



All of the requirements of Method II must be met with Method III. In addition, the longitudinal vertical edge must be treated with a rubberized joint seal material meeting the requirements of ASTM D6690, Type 2. The joint sealant shall be placed on the face of the “cold side” of the butt joint as shown above prior to placing the “hot side” of the butt joint. The joint seal material shall be applied in accordance with the manufacturer’s recommendation so as to provide a uniform coverage and avoid excess bleeding onto the newly placed pavement.

8. Contractor Quality Control (QC) Requirements: The Contractor shall be responsible for maintaining adequate quality control procedures throughout the production and placement operations. Therefore, the Contractor must ensure that the materials, mixture, and work provided by Subcontractors, Suppliers, and Producers also meet Contract specification requirements.

This effort must be documented in Quality Control Plans (QCP) and must address the actions, inspection, or sampling and testing necessary to keep the production and placement operations in control, to determine when an operation has gone out of control and to respond to correct the situation in a timely fashion.

The Standard QCP for production shall consist of the quality control program specific to the production facility.

There are 3 components to the QCP for placement: a Standard QCP, a Project Summary Sheet

that details Project-specific information, and, if applicable, a separate Extended Season Paving Plan as required in 4.06.03-9 “Temperature and Seasonal Requirements.”

The Standard QCP for both production and placement shall be submitted to the Department for approval each calendar year and at a minimum of 30 days prior to production or placement.

Production or placement shall not occur until all QCP components have been approved by the Engineer.

Each QCP shall include the name and qualifications of a Quality Control Manager (QCM). The QCM shall be responsible for the administration of the QCP, and any modifications that may become necessary.

The QCM shall have the ability to direct all Contractor personnel on the Project during paving operations.

The QCPs shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QC Technician performing in-place density testing shall be NETTCP certified as a paving inspector.

Approval of the QCP does not relieve the Contractor of its responsibility to comply with the Project specifications. The Contractor may modify the QCPs as work progresses and must document the changes in writing prior to resuming operations. These changes include but are not limited to changes in quality control procedures or personnel. The Department reserves the right to deny significant changes to the QCPs.

QCP for Production: Refer to M.04.03-1.

QCP for Placement: The Standard QCP, Project Summary Sheet, and Extended Season Paving Plan shall conform to the format provided by the Engineer. The format is available at http://www.ct.gov/dot/lib/dot/documents/dconstruction/pat/qcp_outline_hma_placement.pdf

The Contractor shall perform all quality control sampling and testing, provide inspection, and exercise management control to ensure that bituminous concrete placement conforms to the requirements as outlined in its QCP during all phases of the work. The Contractor shall document these activities for each day of placement.

The Contractor shall submit complete field density testing and inspection records to the Engineer within 48 hours in a manner acceptable to the Engineer.

The Contractor may obtain 1 mat core and 1 joint core per day for process control, provided this process is detailed in the QCP. The results of these process control cores shall not be used to dispute the Department’s determinations from the acceptance cores. The Contractor shall submit the location of each process control core to the Engineer for approval prior to taking the core. The core holes shall be filled to the same requirements described in Subarticle 4.06.03-10.

9. Temperature and Seasonal Requirements: Paving, including placement of temporary pavements, shall be divided into 2 seasons, “In-Season” and “Extended-Season.” In-Season paving occurs from May 1 to October 14, and Extended Season paving occurs from October 15 to April 30. The following requirements shall apply unless otherwise authorized or directed by the Engineer:

- Mixtures shall not be placed when the air or subbase temperature is less than 40°F regardless of the season.
- Should paving operations be scheduled during the Extended Season, the Contractor must submit an Extended Season Paving Plan for the Project that addresses minimum delivered mix temperature considering WMA, PMA, or other additives; maximum paver speed; enhanced rolling patterns; and the method to balance mixture delivery and placement

operations. Paving during Extended Season shall not commence until the Engineer has approved the plan.

10. Field Density The Contractor shall obtain cores for the determination of mat and longitudinal joint density of bituminous concrete pavements. Within five calendar days of placement, mat and joint cores shall be extracted on each lift with a specified thickness of 1 1/2 inches or more. Joint cores shall not be extracted on HMA S1.0 lifts.

The Contractor shall extract cores from random locations determined by the Engineer in accordance with ASTM D3665. Four (4) or six (6) inch diameter cores shall be extracted for S0.25, S0.375 and S0.5 mixtures; 6 inch diameter cores shall be required for S1.0 mixtures. The Contractor shall coordinate with the Engineer to witness the extraction, labeling of cores, and filling of the core holes.

Each lift will be separated into lots as follows:

- a. Simple Average Density Lots: For total estimated quantities below 2,000 tons, the lift will be evaluated in one lot which will include the total paved tonnage of the lift and all longitudinal joints between the curb lines.
For total estimated quantities between 2,000 and 3,500 tons, the lift will be evaluated in two lots in which each lot will include approximately half of the total tonnage placed for the full paving width of a lift including all longitudinal joints between the curb lines.
- b. PWL Density Lots: Mat density lots will include each 3,500 tons of mixture placed within 30 calendar days. Joint density lots will include 14,000 linear feet of constructed joints. Bridge density lots will always be analyzed using simple average lot methodology.
- c. Partial Density Lot (For PWL only): A mat density lot with less than 3,500 tons or a joint density lot with less than 14,000 linear feet due to:
 - completion of the course; or
 - a lot spanning 30 calendar days.

Prior to paving, the type and number of lot(s) will be determined by the Engineer.

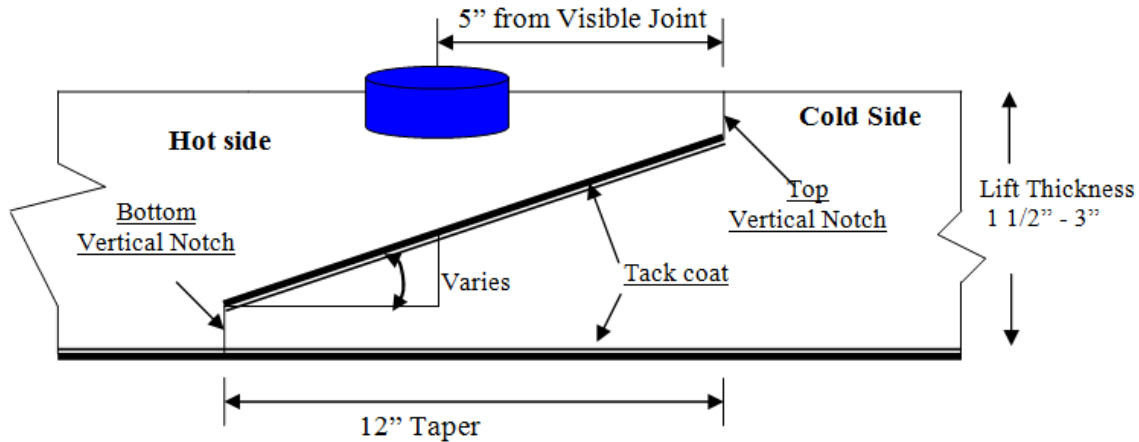
Noncontiguous areas such as highway ramps may be combined to create one lot.

After the lift has been compacted and cooled, the Contractor shall cut cores to a depth equal to or greater than the lift thickness and shall remove them without damaging the lift(s) to be tested. Any core that is damaged or obviously defective while being obtained will be replaced with a new core from a location within 2 feet measured in a longitudinal direction.

A mat core shall not be located any closer than 1 foot from the edge of a paver pass. If a random number locates a core less than 1 foot from any edge, the location will be adjusted by the Engineer so that the outer edge of the core is 1 foot from the edge of the paver pass.

Method I, Notched Wedge Joint cores shall be taken so that the center of the core is 5 inches from the visible joint on the hot mat side (Figure 4.06-4).

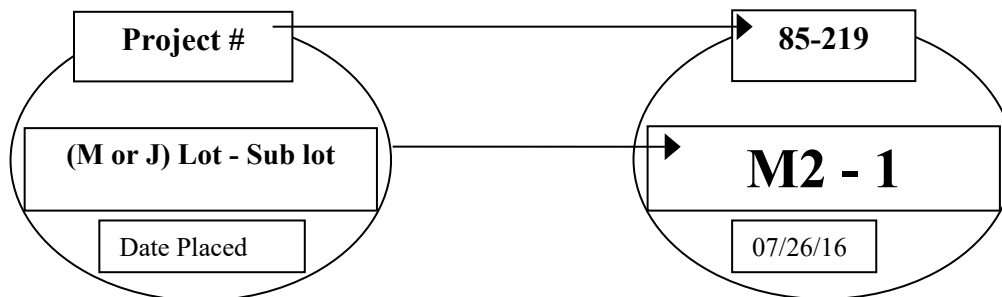
Figure 4.06-4: Notched Wedge Joint Cores (Not to Scale)



When Method II or Method III Butt Joint is used, cores shall be taken from the hot side so the edge of the core is within 1 inch of the longitudinal joint.

The cores shall be labeled by the Contractor with the Project number, date placed, lot number, and sub-lot number. The core's label shall include "M" for a mat core and "J" for a joint core. For example, a mat core from the first lot and the first sub-lot shall be labeled with "M1 - 1." A mat core from the second lot and first sub-lot shall be labeled "M2-1" (see Figure 4.06-5). The Engineer shall fill out a MAT-109 to accompany the cores. The Contractor shall deliver the cores and MAT-109 to the Department's Central Lab. The Contractor shall use a container approved by the Engineer. The container shall have a lid capable of being locked shut and tamper proof. The Contractor shall use foam, bubble wrap, or another suitable material to prevent the cores from being damaged during handling and transportation. Once the cores and MAT-109 are in the container the Engineer will secure the lid using security seals at the removable hinges(s) and at the lid opening(s). The security seals' identification number must be documented on the MAT-109. All sealed containers shall be delivered to the Department's Central Lab within two working days from time of extraction. Central Lab personnel will break the security seal and take possession of the cores.

Figure 4.06-5: Labeling of Cores



Each core hole shall be filled within 4 hours upon core extraction. Prior to being filled, the hole shall be prepared by removing any free water and applying tack coat using a brush or other

means to uniformly cover the cut surface. The core hole shall be filled using a bituminous concrete mixture at a minimum temperature of 240°F containing the same or smaller nominal maximum aggregate size and compacted with a hand compactor or other mechanical means to the maximum compaction possible. The bituminous concrete shall be compacted to 1/8 inch above the finished pavement.

Simple Average Density Lots:

A standard simple average density lot is the quantity of material placed within the defined area excluding any bridge decks.

A combo simple average density lot is the quantity of material placed within the defined area including bridge decks less than or equal to 500 feet long.

A bridge simple average density lot is the quantity of material placed on a bridge deck longer than 500 feet.

The number of cores per lot shall be determined in accordance with Table 4.06-4. If a randomly selected mat or joint core location is on a bridge deck, the core is to be obtained on the bridge deck in addition to the core(s) required on the bridge deck.

The number of cores per lot shall be determined in accordance with Table 4.06-5. Multiple bridge decks can be combined into one lot if the paving and underlying conditions are comparable. If multiple bridge decks are combined into a single bridge lot, at least one mat and joint core shall be obtained on each bridge.

The longitudinal locations of mat cores within a standard, combo, or bridge lot containing multiple paving passes will be determined using the combined length of the paving passes within the lot.

TABLE 4.06-4: Number of Cores per Lot (Simple Average)

Lot Type	No. of Mat Cores		No. of Joint Cores	
Standard Lot < 500 Tons	3		3	
Standard Lot ≥ 500 Tons	4		4	
Combo Lot < 500 Tons	2 plus	1 per bridge (≤ 300')	2 plus	1 per bridge (≤ 300')
Combo Lot ≥ 500 Tons ⁽¹⁾	4 plus	2 per bridge (301' – 500')	4 plus	2 per bridge (301' – 500')

TABLE 4.06-5: Number of Core per Bridge Density Lot (Simple Average)

Length of Bridge(s) (Feet)	Minimum No. of Mat Cores	Minimum No. of Joint Cores
< 500	2	2
501 – 1,500	3	3
1,501 – 2,500	4	4
2,501 and greater	5	5

PWL Density Lots:

A PWL mat density lot is 3,500 tons of material placed within the defined area excluding any bridges. One mat core will be obtained per every 500 tons placed.

A PWL joint density lot is 14,000 linear feet of longitudinal joint excluding any joints on bridge decks. One joint core will be obtained per every 2,000 linear feet of joint.

Bridge density lots will always be analyzed as using the simple average lot methodology. The number of cores per lot shall be determined in accordance with Table 4.06-5. Multiple bridge decks can be combined into one lot if the paving and underlying conditions are comparable. If multiple bridge decks are combined into a single bridge lot, at least one mat and joint core shall be obtained on each bridge.

11. Acceptance Sampling and Testing: Sampling shall be performed in accordance with ASTM D3665 or a statistically-based procedure of stratified random sampling approved by the Engineer.

Plant Material Acceptance: The Contractor shall provide the required sampling and testing during all phases of the work in accordance with M.04. The Department will verify the Contractor's acceptance test results. Should any test results exceed the specified tolerances in the Department's current QA Program for Materials, the Contractor's test results for a subject lot or sub lot may be replaced with the Department's results for the purpose of calculating adjustments. The verification procedure is included in the Department's current QA Program for Materials.

Density Acceptance: The Engineer will perform all acceptance testing in accordance with AASHTO T 331. The density of each core will be determined using the daily production's average maximum theoretical specific gravity (Gmm) established during the testing of the parent material at the Plant. When there was no testing of the parent material or any Gmm exceeds the specified tolerances in the Department's current QA Program for Materials, the Engineer will determine the maximum theoretical density value to be used for density calculations.

12. Density Dispute Resolution Process: The Contractor and Engineer will work in partnership to avoid potential conflicts and to resolve any differences that may arise during quality control or acceptance testing for density. Both parties will review their sampling and testing procedures and results and share their findings. If the Contractor disputes the Engineer's test results, the Contractor must submit in writing a request to initiate the Dispute Resolution Process within five calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results from samples taken prior to and after finish rolling, and within the timeframe described in 4.06.03-8 supporting its position. No request for dispute resolution will be allowed for a density lot in which any core was not taken within the required 5 calendar days of placement. Should the dispute not be resolved through evaluation of existing testing data or procedures, the Engineer may authorize the Contractor to obtain a new core or set of core samples per disputed lot. The core samples must be extracted no later than seven calendar days from the date of the Engineer's authorization. All such core samples shall be extracted and the core hole filled using the procedure outlined in 4.06.03-10.

a) **Simple Average Lots:** The Contractor may only dispute any simple average lot that is adjusted at or below 95 percent payment. The number and location (mat, joint, or structure) of the cores taken for dispute resolution must reflect the number and location of the original cores. The location of each core shall be randomly located within the respective original sub lot. The dispute resolution results shall be combined with the original results and averaged for determining the final in-place density value.

b) **PWL Lots:** The Contractor may dispute any PWL subplot when the PWL falls below 50%

calculated in accordance with section 4.06.04.2.b. An additional random core in the subplot may be taken to validate the accuracy of the core in question. The Department will verify the additional core test result and may average the original test result with the additional core result for purpose of calculating adjustments.

13. Corrective Work Procedure:

If pavement placed by the Contractor does not meet the specifications, and the Engineer requires its replacement or correction, the Contractor shall:

- a) Propose a corrective procedure to the Engineer for review and approval prior to any corrective work commencing. The proposal shall include:
 - Limits of pavement to be replaced or corrected, indicating stationing or other landmarks that are readily distinguishable.
 - Proposed work schedule.
 - Construction method and sequence of operations.
 - Methods of maintenance and protection of traffic.
 - Material sources.
 - Names and telephone numbers of supervising personnel.
- b) Any corrective courses placed as the final wearing surface shall match the specified lift thickness after completion.

14. Protection of the Work: The Contractor shall protect all sections of the newly finished pavement from damage that may occur as a result of the Contractor's operations for the duration of the Project.

15. Cut Bituminous Concrete Pavement: Work under this item shall consist of making a straight-line cut in the bituminous concrete pavement to the lines delineated on the plans or as directed by the Engineer. The cut shall provide a straight, clean, vertical face with no cracking, tearing or breakage along the cut edge.

4.06.04—Method of Measurement:

1. HMA S* or PMA S*: Bituminous concrete will be measured for payment as the amount of material in tons placed as determined by the net weight on the delivered tickets and adjusted by area, thickness and weight as follows:

Quantity Adjustments: Adjustments may be applied to the placed bituminous concrete quantities that will be measured for payment using the following formulas:

Yield Factor for Adjustment Calculation = 0.0575 tons/SY/inch

Actual Area (SY) = [(Measured Length (ft)) x (Avg. of width measurements (ft))] ÷ 9 s.f./SY

Actual Thickness (t) = Total tons delivered / [Actual Area (SY) x 0.0575 tons/SY/inch]

- a) Area: If the average width exceeds the allowable tolerance, an adjustment will be made using the following formula. The tolerance for width is equal to the specified thickness (inch) of the lift being placed.

Quantity Adjusted for Area (T_A) = [(L x W_{adj})/9] x (t) x 0.0575 Tons/SY/inch = (-) tons

Where: L = Length (ft)

(t) = Actual thickness (inches)

W_{adj} = (Designed width (ft) + tolerance /12) - Measured Width)

- b) Thickness: If the actual average thickness is less than the allowable tolerance, the Contractor shall submit a repair procedure to the Engineer for approval. If the actual thickness exceeds the allowable tolerance, an adjustment will be made using the following formula:

$$\text{Quantity Adjusted for Thickness (T}_T\text{)} = A \times t_{\text{adj}} \times 0.0575 = (-) \text{ tons}$$

Where: A = Area = $\{[L \times (\text{Design width} + \text{tolerance (lift thickness)/12})] / 9\}$
 t_{adj} = Adjusted thickness = $[(Dt + \text{tolerance}) - \text{Actual thickness}]$
 Dt = Designed thickness (inches)

- c) Weight: If the quantity of bituminous concrete representing the mixture delivered to the Project is in excess of the allowable gross vehicle weight (GVW) for each vehicle, an adjustment will be made using the following formula:

$$\text{Quantity Adjusted for Weight (T}_W\text{)} = \text{GVW} - \text{DGW} = (-) \text{ tons}$$

Where: DGW = Delivered gross weight as shown on the delivery ticket or measured on a certified scale

2. Bituminous Concrete Adjustment Cost:

- a) Production Lot Adjustment: An adjustment may be applied to each production lot as follows:
- i. Non-PWL Production Lot (less than 3,500 tons):
 The adjustment values in Tables 4.06-6 and 4.06-7 will be calculated for each sub lot based on the Air Void (AV) and Asphalt Binder Content (PB) test results for that sub lot. The total adjustment for each day's production (lot) will be computed as follows:

$$\text{Tons Adjusted for Superpave Design (T}_{SD}\text{)} = [(\text{AdjAV}_t + \text{AdjPB}_t) / 100] \times \text{Tons}$$

Where: AdjAV_t: Percent adjustment for air voids
 AdjPB_t: Percent adjustment for asphalt binder
 Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

$$\text{Percent Adjustment for Air Voids} = \text{AdjAV}_t = [\text{AdjAV}_1 + \text{AdjAV}_2 + \text{AdjAV}_i + \dots + \text{AdjAV}_n] / n$$

Where: AdjAV_t = Total percent air void adjustment value for the lot
 AdjAV_i = Adjustment value from Table 4.06-6 resulting from each sub lot or the average of the adjustment values resulting from multiple tests within a sub lot, as approved by the Engineer.
 n = number of sub lots based on Table M.04.03-2

TABLE 4.06-6: Adjustment Values for Air Voids

Adjustment Value (AdjAV _i) (%)	S0.25, S0.375, S0.5, S1 Air Voids (AV)
+2.5	3.8 - 4.2
+3.125*(AV-3)	3.0 - 3.7
-3.125*(AV-5)	4.3 - 5.0
20*(AV-3)	2.3 - 2.9
-20*(AV-5)	5.1 - 5.7
-20.0	≤ 2.2 or ≥ 5.8

Percent Adjustment for Asphalt Binder = $\text{AdjPB}_t = [(\text{AdjPB}_1 + \text{AdjPB}_2 + \text{AdjPB}_i + \dots + \text{AdjPB}_n)] / n$

Where: AdjPB_t = Total percent liquid binder adjustment value for the lot

AdjPB_i = Adjustment value from Table 4.06-7 resulting from each sub lot

n = number of binder tests in a production lot

TABLE 4.06-7: Adjustment Values for Binder Content

Adjustment Value (AdjAV _i) (%)	S0.25, S0.375, S0.5, S1 Pb
0.0	JMF Pb ± 0.3
- 10.0	≤ JMF Pb - 0.4 or ≥ JMF Pb + 0.4

ii. PWL Production Lot (3500 tons or more):

For each lot, the adjustment values will be calculated using PWL methodology based on AV, VMA, and PB test results. The results will be considered as being normally distributed and all applicable equations in AASHTO R 9 and AASHTO R 42 Appendix X4 will apply.

Only one test result will be considered for each sub lot. The specification limits are listed in M.04.

For AV, PB, and voids in mineral aggregate (VMA), the individual material quantity characteristic adjustment (Adj) will be calculated as follows:

For PWL between 50 and 90%: $\text{Adj}(\text{AV}_t \text{ or } \text{PB}_t \text{ or } \text{VMA}_t) = (55 + 0.5 \text{ PWL}) - 100$

For PWL at and above 90%: $\text{Adj}(\text{AV}_t \text{ or } \text{PB}_t \text{ or } \text{VMA}_t) = (77.5 + 0.25 \text{ PWL}) - 100$

Where: AdjAV_t = Total percent AV adjustment value for the lot

AdjPB_t = Total percent PB adjustment value for the lot

AdjVMA_t = Total percent VMA adjustment value for the lot

A lot with PWL less than 50% in any of the 3 individual material quality characteristics will be evaluated under 1.06.04.

The total adjustment for each production lot will be computed using the following formula:

Tons Adjusted for Superpave Design (T_{SD}) = $[(0.5\text{AdjAV}_t + 0.25\text{AdjPB}_t + 0.25 \text{AdjVMA}_t) / 100] \times \text{Tons}$

Where Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

iii. Partial Lots:

Lots with less than 4 sub lots will be combined with the prior lot. If there is no prior lot with equivalent material or if the last test result of the prior lot is over 30 calendar days old, the adjustment will be calculated as indicated in 4.06.04-2.a)i.

Lots with 4 or more sub lots will be calculated as indicated in 4.06.04-2.a)ii.

Production Lot Adjustment: $T_{SD} \times \text{Unit Price} = \text{Est. (Pi)}$

Where: Unit Price = Contract unit price per ton per type of mixture

Est. (Pi)= Pay Unit in dollars representing incentive or disincentive per lot

b) Density Lot Adjustment: An adjustment may be applied to each density lot as follows:

i. Simple Average Density Lot (less than 3500 tons) and Bridge Lots:

The final lot quantity shall be the difference between the total payable tons for the Project and the sum of the previous lots. If either the Mat or Joint adjustment value is “remove and replace,” the density lot shall be removed and replaced (curb to curb).

No positive adjustment will be applied to a density lot in which any core was not taken within the required 5 calendar days of placement.

Tons Adjusted for Density (T_D) = $[\{(PA_M \times 0.50) + (PA_J \times 0.50)\} / 100] \times \text{Tons}$

Where: T_D = Total tons adjusted for density for each lot

PA_M = Mat density percent adjustment from Table 4.06-8

PA_J = Joint density percent adjustment from Table 4.06-9

Tons: Weight of material (tons) in the lot adjusted by 4.06.4-1

TABLE 4.06-8: Adjustment Values for Pavement Mat density

Average Core Result Percent Mat Density	Percent Adjustment (Bridge and Non-Bridge) ⁽¹⁾⁽²⁾
97.1 - 100	-1.667*(ACRPD-98.5)
94.5 – 97.0	+2.5
93.5 – 94.4	+2.5*(ACRPD-93.5)
92.0 – 93.4	0
90.0 – 91.9	-5*(92-ACRPD)
88.0 – 89.9	-10*(91-ACRPD)
87.0 – 87.9	-30
86.9 or less	Remove and Replace (curb to curb)

Notes:

(1) ACRPD = Average Core Result Percent Density

(2) All Percent Adjustments to be rounded to the second decimal place; for example round 1.667 to 1.67.

TABLE 4.06-9: Adjustment Values for Pavement Joint Density

Average Core Result	Percent Adjustment (Bridge and Non-Bridge) ⁽¹⁾⁽²⁾
Percent Joint Density	
97.1 – 100	-1.667*(ACRPD-98.5)
93.5 – 97.0	+2.5
92.0 – 93.4	+1.667*(ACRPD-92)
91.0 – 91.9	0
89.0 – 90.9	-7.5*(91-ACRPD)
88.0 – 88.9	-15*(90-ACRPD)
87.0 – 87.9	-30
86.9 or less	Remove and Replace (curb to curb)

Notes:

(1) ACRPD = Average Core Result Percent Density

(2) All Percent Adjustments to be rounded to the second decimal place; for example round 1.667 to 1.67

Additionally, any subplot with a density result below 87% will be evaluated under 1.06.04.

ii. PWL Density Lot (3,500 tons or more):

For each lot, the adjustment values will be calculated using PWL methodology based on mat and joint density test results. Only one result will be included for each subplot. The results will be considered as being normally distributed and all applicable equations in AASHTO R 9 and AASHTO R 42 Appendix X4 will apply.

The specification limits for the PWL determination are as follows:

Mat Density: 91.5-98%

Joint Density: 90-98%

For mat and joint density, the individual percent adjustment (PA) will be calculated as follows:

For PWL between 50 and 90%: $PA_{(M \text{ or } J)} = 0.25 * PWL - 22.50$

For PWL at and above 90%: $PA_{(M \text{ or } J)} = 0.125 * PWL - 11.25$

Where: PA_M = Total percent mat density adjustment value for the PWL mat density lot

PA_J = Total percent joint density adjustment value for the PWL joint density lot

No positive adjustment will be applied to a density lot in which any core was not taken within the required 5 calendar days of placement.

A lot with PWL less than 50% will be evaluated under 1.06.04.

The total adjustment for each PWL mat density lot will be computed as follows:

Tons Adjusted for Mat Density (T_{MD}) = $(PA_M / 100) \times \text{Tons}$

Where: Tons = Weight of material (tons) in the lot adjusted by 4.06.4-1.

The total adjustment for each PWL joint density lot will be computed as follows:

Tons Adjusted for Joint Density (T_{JD}) = $(PA_J / 100) \times J_Tons$

Tons Adjusted for Joint Density will be calculated at the end of each project or project phase.

Where: J_Tons = Tons in project or phase adjusted by 4.06.4 – 1 x $\frac{\text{Lot joint length}}{\text{Joint length in project or phase}}$

All bridge density lot adjustments will be evaluated in accordance with 4.06.04-2.b)i.

Additionally, any subplot with a density result below 87% will be evaluated under 1.06.04.

iii. Partial Lots:

Lots with less than 4 sub lots will be combined with the prior lot. If there is no prior lot with equivalent material and placement conditions or if the last test result of the prior lot is over 30 calendar days old, the mat and joint individual adjustments will be calculated in accordance to Tables 4.06-8 and 4.06-9. T_{MD} and T_{JD} will be calculated as indicated in 4.06.04-2.b)i.

Lots with 4 or more sub lots will be calculated as indicated in 4.06.04-2.b)ii.

Density Lot Adjustment (Simple Average Lots): $T_D \times \text{Unit Price} = \text{Est. (Di)}$

Density Lot Adjustment (PWL Lots): $(T_{MD} \text{ or } T_{JD}) \times \text{Unit Price} = \text{Est. (DMi or DJi)}$

Where: Unit Price = Contract unit price per ton per type of mixture

Est. (Di)= Pay Unit in dollars representing incentive or disincentive per simple average density lot

Est. (DMi)= Pay Unit in dollars representing incentive or disincentive per PWL mat lot

Est. (DJi)= Pay Unit in dollars representing incentive or disincentive per PWL joint lot

Additionally, any subplot with a density result below 87% will be evaluated under 1.06.04.

3. Transitions for Roadway Surface: The installation of permanent transitions will be measured under the appropriate item used in the formation of the transition.

The quantity of material used for the installation of temporary transitions will be measured for payment under the appropriate item used in the formation of the transition. The installation and removal of a bond breaker and the removal and disposal of any temporary transition formed by milling or with bituminous concrete pavement is not measured for payment.

4. Cut Bituminous Concrete Pavement: The quantity of bituminous concrete pavement cut will be measured in accordance with 2.02.04.

5. Material for Tack Coat: The quantity of tack coat will be measured for payment by the number of gallons furnished and applied on the Project and approved by the Engineer. No tack coat material shall be included that is placed in excess of the tolerance described in 4.06.03.

- a. Container Method – Material furnished in a container will be measured to the nearest 1/2 gallon. The volume will be determined by either measuring the volume in the original container by a method approved by the Engineer or using a separate graduated container

capable of measuring the volume to the nearest 1/2 gallon. The container in which the material is furnished must include the description of material, including lot number or batch number and manufacturer or product source.

b. Vehicle Method

i. Measured by Weight: The number of gallons furnished will be determined by weighing the material on calibrated scales furnished by the Contractor. To convert weight to gallons, one of the following formulas will be used:

Tack Coat (gallons at 60°F) = Measured Weight (pounds) / Weight per gallon at 60°F

Tack Coat (gallons at 60°F) = 0.996 x Measured Weight (pounds) / Weight per gallon at 77°F

ii. Measured by automated metering system on the delivery vehicle:

Tack Coat (gallons at 60°F) = 0.976 x Measured Volume (gallons).

6. Material Transfer Vehicle (MTV): The furnishing and use of a MTV will be measured separately for payment based on the actual number of surface course tons delivered to a paver using the MTV.

4.06.05—Basis of Payment:

1. HMA S* or PMA S*: The furnishing and placing of bituminous concrete will be paid for at the Contract unit price per ton for " HMA S*" or " PMA S*."

All costs associated with providing illumination of the work area are included in the general cost of the work.

All costs associated with cleaning the surface to be paved, including mechanical sweeping, are included in the general cost of the work. All costs associated with constructing longitudinal joints are included in the general cost of the work.

All costs associated with obtaining cores for acceptance testing and dispute resolution are included in the general cost of the work.

2. Bituminous Concrete Adjustment Costs: This adjustment will be calculated using the formulas shown below if all of the measured adjustments in 4.06.04-2 are not equal to zero. A positive or negative adjustment will be applied to monies due the Contractor.

Production Lot: $\Sigma \text{ Est (Pi)} = \text{Est. (P)}$

Density Lot (Simple Average Lots): $\Sigma \text{ Est (Di)} = \text{Est. (D)}$

Density Lot (PWL): $\Sigma \text{ Est (DMi)} + \Sigma \text{ (DJi)} = \text{Est. (D)}$

Bituminous Concrete Adjustment Cost= Est. (P) + Est. (D)

Where: Est. ()= Pay Unit in dollars representing incentive or disincentive in each production or density lot calculated in 4.06.04-2

The Bituminous Concrete Adjustment Cost item, if included in the bid proposal or estimate, is not to be altered in any manner by the Bidder. If the Bidder should alter the amount shown, the altered figure will be disregarded and the original estimated cost will be used for the Contract.

3. Transitions for Roadway Surface: The installation of permanent transitions will be paid under the appropriate item used in the formation of the transition. The quantity of material used for the installation of temporary transitions will be paid under the appropriate pay item used in the formation of the transition. The installation and removal of a bond breaker, and the removal and disposal of any temporary transition formed by milling or with bituminous concrete

pavement is included in the general cost of the work.

4. The cutting of bituminous concrete pavement will be paid in accordance with 2.02.05.
5. Material for tack coat will be paid for at the Contract unit price per gallon at 60°F for "Material for Tack Coat."
6. The Material Transfer Vehicle (MTV) will be paid at the Contract unit price per ton for "Material Transfer Vehicle."

Pay Item	Pay Unit
HMA S*	ton
PMA S*	ton
Bituminous Concrete Adjustment Cost	est.
Material for Tack Coat	gal.
Material Transfer Vehicle	ton

SECTION 5.86 - CATCH BASINS, MANHOLES AND DROP INLETS

5.86.01—Description

5.86.02—Materials

5.86.03—Construction Methods

5.86.04—Method of Measurement

5.86.05—Basis of Payment

5.86.01—Description: The work under this Section shall consist of furnishing, preparing, and installing catch basins, manholes and drop inlets (and also the removal, abandonment, alteration, reconstruction, or conversion of such existing structures) in conformity with the lines, grades, dimensions and details shown on the plans.

This Section shall also include resetting or replacing catch basin tops as well as manhole frames and covers.

5.86.02—Materials: The materials for this work shall meet the following requirements:

Drainage structures shall meet the requirements of M.08.02 and shall utilize concrete with a 28-day minimum compressive strength of 4000 psi.

Galvanizing shall meet the requirements of M.06.03.

Mortar shall meet the requirements of M.11.04.

Butyl rubber joint seal shall meet the requirements of ASTM C990.

Granular fill, if necessary, shall meet the requirements of M.02.01.

Protective compound material shall be a type appearing on the Department's Qualified Products List and be acceptable to the Engineer, as specified in M.03.09.

5.86.03—Construction Methods: Drainage trench excavation, including rock in drainage trench excavation and backfilling, shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where a drainage structure is to be installed below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the proposed drainage structure or to ensure a uniform foundation for the structure.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved granular fill, thoroughly compacted in lifts not to exceed 6 inches. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

When a drainage structure outside of proposed drainage trench limits is to be removed, it shall be completely removed and all pipes shall be removed or plugged with cement masonry.

When a drainage structure is to be abandoned, the structure shall be removed to a depth 2 feet below the subgrade or as directed by the Engineer. The floor of the structure shall be broken and all pipes shall be plugged with cement masonry.

Drainage structures shall be constructed in accordance with the plans and the requirements contained herein for the character of the work involved. The provisions of 6.02.03 pertaining to bar reinforcement shall apply except that shop drawings need not be submitted for approval unless called for in the plans, Contract or directed by the Engineer. Welding shall be performed in accordance with the applicable sections of the AWS Structural Welding Code, D1.1.

When it becomes necessary to increase the horizontal dimensions of manholes, catch basins and drop inlets to sizes greater than those shown on the plans in order to provide for multiple pipe installations, large pipes or for other reasons, the Contractor shall construct such manholes, catch basins and drop inlets to modified dimensions as directed by the Engineer.

The surfaces of the tops of all catch basins, and drop inlets shall be given a coat of protective compound material, at the manufacturer's recommended application rate, immediately upon completion of the concrete curing period.

All masonry units shall be laid in full mortar beds.

Metal fittings for catch basins, manholes or drop inlets shall be set in full mortar beds or otherwise secured as shown on the plans.

All inlet and outlet pipes shall be set flush with the inside face of the wall of the drainage structure as shown on the plans. The pipes shall extend through the walls for a sufficient distance beyond the outside surface to allow for satisfactory connections, and the concrete or masonry shall be constructed around them neatly to prevent leakage along their outer surfaces.

When constructing a new drainage structure within a run of existing pipe, the section of existing pipe disturbed by the construction shall be replaced with new pipe of identical type and size extending from the drainage structure to the nearest joint of the existing pipe in accordance with 6.86.03 or as directed by the Engineer.

Backfilling shall be performed in accordance with 2.86.03.

Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the frames, covers and tops shall be reset as shown on the plans or as directed by the Engineer.

5.86.04—Method of Measurement:

Drainage Trench Excavation: In accordance with 2.86.04, excavation for drainage trench will not be measured for payment but shall be included in the Contract unit price for the type of structure being installed.

Rock in Drainage Trench Excavation: Rock in Drainage Trench Excavation will be measured in accordance with the drainage trench excavation limits described in 2.86.03.

Manholes, Catch Basins and Drop Inlets will be measured as separate units.

Resetting of Manholes, Catch Basins and Drop Inlets will be measured as separate units.

Replacement of frames, covers, and tops will be measured as a unit for catch basin top or manhole frame and cover.

Conversion of drainage structures as specified on the plans, or as directed by the Engineer, including structure reconstruction will be measured for payment as a unit.

Removal or abandonment of drainage structures outside of drainage trench excavation limits, as defined in 2.86.03, will be measured as separate units.

There will be no measurement or direct payment for the application of the protective compound material, the cost of this work shall be considered as included in the general cost of the work.

Measurement for payment for work and materials involved with installing pipes to connect new drainage structures into a run of existing pipe will be as provided for under the applicable Contract items in accordance with 6.86.04.

There will be no measurement or direct payment for plugging existing pipes with cement masonry, the cost of this work will be considered as included in the general cost of the work.

5.86.05—Basis of Payment:

Drainage Trench Excavation for the installation of proposed structures described herein will be paid for under the respective drainage Contract item(s) for which the excavation is being performed, in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Manholes and Catch Basins will be paid for at the Contract unit price for each "Manhole," or "Catch Basin," of the type specified, at "0' to 10' Deep" or "0' to 20' Deep," complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.

Drop Inlets will be paid for at the Contract unit price for each "Drop Inlet," of the type specified, complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.

Manholes, Catch Basins and Drop Inlets constructed to modified dimensions as directed by the Engineer, will be paid for as follows:

Where the interior floor area has to be increased to accommodate existing field conditions, as measured horizontally at the top of the base of the completed structure, and does not exceed 125% of the interior floor area as shown on the plans for that structure, then the structure shall be paid for at the Contract unit price for each "Manhole," "Catch Basin," or "Drop Inlet" of the type specified. Where the floor area is greater than 125%, the increase in the unit price for the individual structure shall be in direct proportion to the increase of the completed structure interior floor area as compared to the interior floor area as shown on the plans for that structure. Such increased unit price shall include all excavation, materials, equipment, tools, and labor incidental to the completion of the structure.

Reset Units will be paid for at the Contract unit price each for "Reset Manhole," "Reset Catch Basin," or "Reset Drop Inlet," of the type specified, respectively, complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement structure, and all materials, equipment, tools and labor incidental thereto, except when the work requires reconstruction greater than 3 feet, measured vertically, then the entire cost of resetting the unit will be paid for as Extra Work in accordance with the provisions of 1.04.05.

Frames, Covers, and Tops when required in connection with reset units, will be paid for at the Contract unit price each for such "Manhole Frame and Cover" or "(Type) Catch Basin Top," complete in place, including all incidental expense; or when no price exists, the furnishing and placing of such material will be paid for as Extra Work in accordance with the provisions of 1.04.05.

When the catch basin top has a stone or granite curb in its design, the curb or inlet shall be included in the cost of the "(Type) Catch Basin Top."

Conversion of drainage structures will be paid for at the Contract unit price each for "Convert Catch Basin to (Type) Catch Basin," "Convert Catch Basin to (Type) Manhole," or

"Convert Manhole to (Type) Catch Basin," complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, all alterations to existing structure, all materials including catch basin frame and grate of the type specified, or manhole frame and cover, all equipment, tools and labor incidental thereto.

The maximum change in elevation of frame under these items shall not exceed 3 feet. Greater depth changes, if required, shall be paid for as Extra Work, in accordance with 1.04.05.

Removal or abandonment of drainage structures outside of drainage trench excavation limits as defined in 2.86.03 will be paid for at the Contract unit price each for "Remove Drainage Structure – 0' to 10' Deep," "Remove Drainage Structure – 0' to 20' Deep," or "Abandon Drainage Structure," which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, and all equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
(Type) Catch Basin – 0' to 10' Deep	ea.
(Type) Catch Basin – 0' to 20' Deep	ea.
Manhole (Size) – 0' to 10' Deep	ea.
Manhole (Size) – 0' to 20' Deep	ea.
(Type) Drop Inlet	ea.
Reset Catch Basin	ea.
Reset Manhole	ea.
Reset Drop Inlet	ea.
Convert Catch Basin to (Type) Catch Basin	ea.
Convert Catch Basin to (Type) Manhole	ea.
Convert Manhole to (Type) Catch Basin	ea.
Manhole Frame and Cover	ea.
(Type) Catch Basin Top	ea.
Remove Drainage Structure – 0' to 10' Deep	ea.
Remove Drainage Structure – 0' to 20' Deep	ea.
Abandon Drainage Structure	ea.

SECTION 6.01 - CONCRETE FOR STRUCTURES

Replace Section 6.01 in its entirety with the following:

6.01.01—Description

6.01.02—Materials

6.01.03—Construction Methods

6.01.04—Method of Measurement

6.01.05—Basis of Payment

6.01.01—Description: This item shall include concrete for use in new construction, surface repair or structural repair of bridges and culverts, walls, catch basins, drop inlets and other incidental construction. The concrete shall be composed of Portland cement, pozzolans, fine and coarse aggregate, admixtures and water, prepared and constructed in accordance with these specifications, at the locations and of the form dimensions and class shown on the plans, or as directed by the Engineer.

The use of concrete from dry batch or central mixed plants is permitted for all concrete mixtures.

6.01.02—Materials: The materials for this work shall meet the requirements of M.03. Surface or structural repair concrete shall be documented on the delivery ticket, as required in 6.01.03-II-3(a), as having the plastic properties necessary for confined placement to ensure appropriate workability for consolidation within the forms.

6.01.03—Construction Methods:

I. Concrete Quality Control (QC) Requirements: For all bridge deck and bridge parapet construction, the Contractor must demonstrate to the Engineer that the materials and work that will be provided by their field staff, subcontractors, and suppliers meets Contract specification requirements.

This effort shall be documented with a **Concrete Quality Control Plan (CQCP)** and shall address the communication with all parties, on-site inspection, sampling and testing frequency necessary to keep the production, placement and finishing operations in control, to determine when an operation has gone out of control and anticipated procedure to correct the situation in a timely manner.

1. General – provide an overview of the means and methods anticipated to perform the work including any anticipated conditions that may need additional attention (such as seasonal conditions requiring heating or cooling of concrete)
2. Contractor Organization – address authority levels/duties by position and name of persons holding those positions; include those who have decision making authority with regard to quality control, materials, sampling and testing who can be contacted by the Engineer
3. Concrete Mix Design – identify concrete supplier(s); provide copies of all applicable mix designs to field staff; and address submittal timeframe
4. Transportation and Delivery of Concrete – identify the supplier’s plant capacity and ability to ensure continuous delivery to the Project to meet the requirements of the mix design and a corrective procedure if it does not meet Project requirements; include a provision for the addition of admixtures and follow up testing
5. Placement and Finishing of Concrete – identify and describe:

- (a) placement equipment
 - (b) placement method(s) to be used (chute, pump, hopper or other)
 - (c) starting point and direction of placement (logistical sequencing)
 - (d) slip forming, formwork, stay-in-place forms or other forming method(s)
 - (e) joint construction method(s)
 - (f) process and documentation that the elevations, base, forms, reinforcement (including support chairs and ties), utility inserts or any other appurtenance installations have been inspected by the Contractor prior to concrete placement
 - (g) equipment and method(s) to be used for vibrating and consolidating concrete
 - (h) procedure for verifying adequate consolidation and how segregation will be addressed
 - (i) schedule and method(s) to be used for finishing all exposed surfaces
6. Curing of Concrete – describe schedule and method(s) for curing of concrete and how the method(s) will be monitored and maintained
7. Contractor QC testing – identify person(s) or firms responsible for Contractor QC testing and provide copies of their certification(s) (see 6.01.03-II-5), and testing facility location(s). In addition, describe the process used for communication between the QC testing personnel and the Contractor project staff; describe what measures will be taken when test results are out of compliance; this shall include what increased frequency of testing is to be performed to verify that concrete properties are in compliance; the threshold at which time placement ceases; describe what protective measures will be used in case of unforeseen weather
8. The CQCP shall include the name and qualifications of a Quality Control Manager (QCM) provided by the Contractor. The QCM shall be responsible for the administration of the CQCP, and any modifications that may become necessary. The QCM shall have the ability to direct all Contractor personnel on the Project during concreting operations and must communicate directly with the concrete supplier. The QCM shall be certified as either a **Concrete Transportation Construction Inspector by the American Concrete Institute (ACI)** or a **NETTCP Concrete Inspector**.
9. The CQCP must include a provision for pre-placement meeting(s) to be held with representatives of the Engineer, the concrete supplier, the QCM and the Contractor’s field staff supervising the work.
- (a) Timing and number of the meeting(s) will be determined by the complexity of the mix design or placement.
 - (b) Non-Standard mix designs that require trial placements will be discussed at the Preconstruction Meeting to remind the Contractor of the time needed for testing. Additional meeting(s) should be scheduled at least 90 days prior to first use of non-standard mix designs, to allow suppliers to perform trial batches and testing.
 - (c) Discussions shall include the configuration and specific application that the concrete will be used for, plastic properties and workability, any mix design challenges, trial placement procedures and subsequent trial results, timing and quantities. Refer to 6.01.03-II-6(e) for additional requirements.
10. The CQCP shall be submitted to the Engineer and concrete supplier for review and comment a minimum of 30 days prior to production or placement. Production and placement shall not occur until all comments of the Engineer and supplier have been addressed by the Contractor. Changes to the CQCP based on data not available at time of submittal may be added via addendum.

11. The Contractor shall provide the Engineer QC test results within 48 hours after testing or inspection in a format acceptable to the Engineer. The Contractor shall also maintain complete records of all QC tests.

Review of the CQCP does not relieve the Contractor of its responsibility to comply with the Project specifications. The Contractor may modify the CQCP as work progresses and must document the changes in writing prior to resuming operations. These changes include but are not limited to changes in quality control procedures or personnel.

II. New Construction:

1. Falsework and Forms: Falsework is considered to be any temporary structure which supports structural elements of concrete, steel, masonry or other material during the construction or erection. Forms are to be considered to be the enclosures or panels which contain the fluid concrete and withstand the forces due to its placement and consolidation. Forms may in turn be supported on falsework.

This work shall consist of the construction and removal of falsework and forms that are designed by the Contractor in the execution of the work, and whose failure to perform properly could adversely affect the character of the Contract work or endanger the safety of adjacent facilities, property, or the public. Forms shall be mortar tight. Forms and falsework shall be of sufficient rigidity and strength to safely support all loads imposed and to produce in the finished structure the lines and grades indicated in the Contract documents. Forms shall also impart the required surface texture and rustication and shall not detract from the uniformity of color of the formed surfaces. Forms shall be made of wood, steel or other material approved by the Engineer.

(a) Design: The design of falsework and formwork shall conform to the *AASHTO Guide Design Specifications for Bridge Temporary Works*, or to other established and generally accepted design codes such as ACI Standard *ACI 347-Recommended Practice for Concrete Formwork* or specific form or falsework manufacturer specifications. When other than new or undamaged materials are used, appropriate reductions in allowable stresses, and decreases in resistance factors or imposed loads shall be used for design.

(b) Loads: The design of the falsework and forms shall be based on load factors specified in the *AASHTO LRFD Bridge Design Specifications* and all applicable load combinations shall be investigated. The design load for falsework shall consist of the sum of appropriate dead and live vertical loads and any horizontal loads.

As a minimum, dead loads shall include the weight of the falsework and all construction material to be supported. The combined unit weight of concrete, reinforcing and pre-stressing steel, and forms that is supported shall be assumed to be not less than:

1. Normal-weight concrete: 0.16 kip/ft³
2. Lightweight concrete: 0.13 kip/ft³

Live loads shall consist of the actual weight of any equipment to be supported, applied as concentrated loads at the points of contact and a uniform load of not less than 0.02 kip/ft² applied over the area supported, plus 0.075 kip/ft applied at the outside edge of deck overhangs.

The horizontal load used for the design of the falsework bracing system shall be the sum of the horizontal loads due to equipment; construction sequence including unbalanced hydrostatic forces from fluid concrete and traffic control devices; stream flow, when

applicable; and an allowance for wind. However, in no case shall the horizontal load to be resisted in any direction be less than 2% of the total dead load.

For post-tensioned structures, the falsework shall also be designed to support any increase in or redistribution of loads caused by tensioning of the structure. Loads imposed by falsework onto existing, new, or partially completed structures shall not exceed those permitted in 6.01.03-II-12, Application of Loads.

- (c) **Working Drawings:** The working drawings for falsework and formwork shall be prepared in accordance with 1.05.02 whenever the falsework or formwork exceeds 14.0 feet high or whenever vehicular, marine, or pedestrian traffic may travel under or adjacent to the falsework or formwork. Working drawings shall include the sequence, method and rate of placement of the concrete.

Manufacturer catalog cuts or written installation procedures shall be provided for any clips, braces, hangers or other manufactured parts used with the formwork or falsework.

- (d) **Construction:** Forms and falsework shall be built true to lines and grades shall be strong, stable, firm, mortar-tight and adequately braced or tied, or both. They shall be designed and constructed to withstand all loads and pressures including those imposed by plastic concrete, taking full account of the stresses due to the rate of placement, effect of vibration and conditions brought about by construction methods. Forms and falsework shall be constructed to compensate for variations in camber of supporting members and allow for deflections.

Falsework and formwork shall be chamfered at all sharp corners, unless otherwise ordered or permitted, and shall be given a slight bevel or draft in the case of projections to ensure satisfactory removal. Materials for falsework and formwork and their supports, ties and bracing, shall be of the type, quality and strength to achieve the structural requirements. Form material in contact with concrete shall provide the finished concrete surface smoothness as specified in 6.01.03-II-10, Finishing Concrete Surfaces, and shall have a uniform appearance.

Falsework and formwork shall be treated with form oil or other release agent approved by the Engineer before the reinforcing steel is placed or self-releasing forms approved by the Engineer may be used. Release agents which will adhere to or discolor the concrete shall not be used.

Falsework and formwork for concrete surfaces exposed to view shall produce a smooth surface of uniform texture, free of voids, indentations, protrusions and bulges. Panels lining falsework and formwork shall be arranged so that the joint lines form a symmetrical pattern conforming to the general lines of the structure. The same type of form-lining material shall be used throughout each element of a structure. Falsework and formwork shall be sufficiently rigid so that the undulation of the concrete surface shall not exceed 1/4 inch when checked with a 4 foot straightedge or template.

For non-exposed surfaces the falsework and formwork shall be sufficiently rigid so that the undulation of the concrete surface shall not exceed 1/2 inch when checked with a 4 foot straightedge or template.

Metal ties and anchors to hold the falsework and formwork in alignment and location shall be so constructed that the metal work can be removed to a depth of at least 2 inches from the concrete surface without damage to the concrete. All cavities resulting from the removal of metal ties shall be filled after removal of forms with cement mortar of the same

proportions used in the body of the work or other materials approved by the Engineer, and the surface finished smooth and even, and if exposed in the finished work, shall be similar in texture and color of adjacent surfaces. With permission of the Engineer, the Contractor need not remove from the underneath side of bridge decks portions of metal devices used to support reinforcing steel providing such devices are of material, or are adequately coated with material, that will not rust or corrode. When coated reinforcing steel is required, all metal ties, anchorages, or spreaders that remain in the concrete shall be of corrosion-resistant material or coated with a dielectric material.

Forms shall be clean and clear of all debris. For narrow walls and columns where the bottom of the form is inaccessible, an access opening will be allowed in the form and falsework for cleaning out extraneous material.

(e) Vacant

- (f) Bridge Decks:** After erection of beams and prior to placing falsework and forms, the Contractor shall take elevations along the top of the beam at the points shown on the plans or as directed by the Engineer. The Contractor shall calculate the haunch depths and provide them to the Engineer a minimum of 7 days prior to installing the falsework and forms. The Contractor shall also provide calculations for the setting of the overhang brackets based on the final beam deflection. These calculations shall be based on the final proposed deck grade and parapet elevations.

Falsework or formwork for deck forms on girder bridges shall be supported directly on the girders so that there will be no appreciable differential settlement during placing of the concrete. Girders shall be either braced and tied to resist any forces that would cause rotation or torsion in the girders caused by the placing of concrete for diaphragms or decks, or shown to be adequate for those effects. Unless specifically permitted, welding of falsework support brackets or braces to structural steel members or reinforcing steel shall not be allowed.

- (g) Stay-In-Place Metal Forms for Bridge Decks:** These forms may be used if shown in the Contract documents or approved by the Engineer. Prior to the use of such forms and before fabricating any material, the Contractor shall submit working drawings to the Engineer for review in accordance with 1.05.02. These drawings shall include the proposed method of form construction, erection plans including placement plans, attachment details, weld procedure(s), material lists, material designation, gage of all materials, and the details of corrugation. Also, copies of the form design computations shall be submitted with the working drawings. Any changes necessary to accommodate stay-in-place forms, if approved, shall be at no cost to the Department.

The metal forms shall be designed on the basis of the dead load of the form, reinforcement and the plastic concrete, including the additional weight of concrete [considered to be equivalent to the weight imposed by an additional concrete thickness equal to 3% of the proposed deck thickness, but not to exceed 0.3 inch] due to the deflection of the metal forms, plus 50 psf for construction loads. The allowable stress in the corrugated form and the accessories shall not be greater than 0.725 times the yield strength of the furnished material and the allowable stress shall not exceed 36,000 psi. The span for design and deflection shall be the clear distance between edges of the beams or girders less 2 inches and shall be measured parallel to the form flutes. The maximum deflection under the weight of plastic concrete, reinforcement, and forms shall not exceed 1/180 of the form

span or 0.5 inches, whichever is less. In no case shall the loading used to estimate this deflection be less than 120 psf. The permissible form camber shall be based on the actual dead load condition. Camber shall not be used to compensate for deflection in excess of the foregoing limits. The form support angles shall be designed as a cantilever and the horizontal leg of the form support angle shall not be greater than 3 inches.

No stay-in-place metal forms shall be placed over or be directly supported by the top flanges of beams or girders. The form supporting steel angles may be supported by or attached to the top flanges.

Stay-in-place metal forms shall not be used in bays where longitudinal slab construction joints are located, under cantilevered slabs such as the overhang outside of fascia members, and bridges where the clearance over a salt-laden body of water is less than 15 feet above mean high water level.

Welding to the top flanges of steel beams and girders is not permitted in the areas where the top flanges are in tension, or as indicated on the plans. Alternate installation procedures shall be submitted addressing this condition.

Drilling of holes in pre-stressed concrete beams or the use of power-actuated tools on the prestressed concrete beams for fastening of the form supports to the pre-stressed concrete beams will not be permitted. Welding of the reinforcing steel to the pre-stressed units is not permitted.

All edges of openings cut for drains, pipes, and similar appurtenances shall be independently supported around the entire periphery of the opening. All fabricated stay-in-place metal forms shall be unloaded, stored at the Project Site at least 4 inches above the ground on platforms, skids or other suitable supports and shall be protected against corrosion and damage and handled in such a manner as to preclude damage to the forms. Damaged material shall be replaced at no additional cost to the State.

Any exposed form or form support metal where the galvanized coating has been damaged, shall be thoroughly cleaned, wire brushed, then coated with 2 coats of Zinc Dust – Zinc Oxide primer, FS No. TT-P-641d, Type II or another product acceptable to the Engineer.

The forms shall be installed from the topside in accordance with the manufacturer's recommended installation procedures. The form supports shall ensure that the forms retain their correct dimensions and positions during use at all times. Form supports shall provide vertical adjustment to maintain design slab thickness at the crest of corrugation, to compensate for variations in camber of beams and girders and to allow for deflections. Stay-in-place metal forms shall have a minimum depth of the form valley equal to 2 inches. The forms shall have closed tapered ends. Lightweight filler material shall be used in the form valleys.

All field cutting shall be done with a steel cutting saw or shears including the cutting of supports, closures and cutouts. Flame cutting of forms is not permitted.

All welding shall be performed by Department-certified welders in accordance with the Welding subarticle in 6.03. Welding of forms to supports is not permitted.

The steel form supports shall be placed in direct contact with the flange of stringer or floor beam flanges and attached by bolts, clips, welding where permitted, or other approved means. Form sheets shall not be permitted to rest directly on the top of the stringer or floor beam flanges. The forms shall be securely fastened to form supports with self-drilling fasteners and shall have a minimum bearing length of 1 inch at each end. In the areas

where the form sheets lap, the form sheets shall be securely fastened to one another by fasteners at a maximum spacing of 18 inches. The ends of the form sheets shall be securely attached to the support angles with fasteners at a maximum spacing of 18 inches or 2 corrugation widths, whichever is less.

The depth of the concrete slab shall be as shown on the plans and the corrugated forms shall be placed so that the top of the corrugation will coincide with the bottom of the deck slab. No part of the forms or their supports shall protrude into the slab. All reinforcement in the bottom reinforcement mat shall have a minimum concrete cover of 1 inch unless noted otherwise on the plans.

The completed stay-in-place metal form system shall be sufficiently tight to prevent leakage of mortar. Where forms or their installation are unsatisfactory in the opinion of the Engineer, either before or during placement of the concrete, the Contractor shall correct the defects before proceeding with the work.

- (h) **Construction Joints:** Construction joints other than those shown on the plans will not be permitted without prior approval of the Engineer. In joining fresh concrete to concrete that has already set, the work already in place shall have all loose and foreign material removed, and the surface roughened and thoroughly drenched with water.

All reinforcing steel shall extend continuously through joints. Where unplanned construction joints may be needed, they shall be constructed as directed by the Engineer.

- (i) **Expansion and Contraction Joints:** Expansion and contraction joints shall be constructed at the locations and in accordance with the details specified in the Contract. The forming of joint openings shall be dimensioned in accordance with the joint manufacturer's design requirements. Joints include open joints, filled joints, joints sealed with sealants, joints reinforced with steel armor plates or shapes, paraffin coated joints, and joints with combinations of these features.

Open joints shall be placed at locations designated on the plans and shall be formed by the insertion and subsequent removal of templates of wood, metal or other suitable material. The templates shall be so constructed that their removal may be readily accomplished without damage to the work.

Filled joints shall be made with joint filler, the materials for which shall meet the requirements of the plans and of these specifications.

For mechanical joint systems, the concrete shall be placed in such a manner that does not interfere with the movement of the joint.

- (j) **Pipes, Conduits and Utility Installations:** The Contractor shall coordinate the installation of pipes, conduits and utilities as shown on the plans and in accordance with the Contract or as directed by the Engineer. The openings accommodating such pipe, conduit and utility installations shall be incorporated into the formwork by the Contractor.
- (k) **Anchorage:** Anchor bolts and systems shall be set to the requirements of the plans and Contract. Anchor bolts and systems shall be clean and free of dirt, moisture or other foreign materials at the time of installation. The anchor bolts and systems shall be installed prior to placing concrete.

With the Engineer's approval, the Contractor may install anchorages after placement and setting of the concrete or in formed holes. The anchorages shall be installed into drilled or formed holes having a diameter and a depth suitable to receive the bolts in accordance with the grout manufacturer's requirements. Such holes shall be located to avoid damage to the

existing reinforcement. All holes shall be perpendicular to the plane surface. The Contractor shall take every precaution necessary to prevent damage to the concrete due to freezing of water or grout in anchor bolt holes.

- (l) **Ornament or Reverse Moulds:** Ornamental work, when so noted on the plans, shall be formed by the use of reverse moulds. These moulds shall be produced by a qualified manufacturer approved by the Engineer. They shall be built in accordance with the general dimensions and appearance shown on the plans. The Contractor shall submit all detailed drawings, models, or carvings for review by the Engineer before the moulds are made.

The Contractor shall be responsible for their condition at all times, and shall be required to remove and replace any damaged or defective moulds at no additional cost to the State.

The surfaces of the moulds shall be given a coating of form release agent to prevent the adherence of concrete. Any material which will adhere to or discolor the concrete shall not be used.

Form Liners, if required, shall be installed as specified elsewhere.

- (m) **Removal of Falsework and Forms:** The Contractor shall consider the location and character of the structure, the weather, the materials used in the mix, and other conditions influencing the early strength of the concrete when removing forms and falsework.

Methods of removal likely to cause damage to the concrete surface shall not be used.

Supports shall be removed in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight. For structures of 2 or more spans, the sequence of falsework release shall be as specified in the Contract or approved by the Engineer.

Removal shall be controlled by field-cured cylinder tests. The removal shall not begin until the concrete has achieved 75% of the design compressive strength. To facilitate finishing, side forms carrying no load may be removed after 24 hours with the permission of the Engineer, but the curing process must be continued for 7 days.

When the results of field-cured cylinder tests are unavailable, the time periods listed in Table 6.01.03-1, exclusive of days when the temperature drops below 40°F, may govern the removal of forms.

Table 6.01.03-1 Time Restrictions for Removal of Formwork

Structure Element	Minimum Time Period
Arch Centers, centering under beams, pier caps, and unsupported elements	14 days
Slabs on grade, Abutments and Walls	24 hours
Columns	2 days
Bridge Decks	28 days

The Contractor may submit for review and approval by the Engineer, alternate methods to determine the in-place strength of the concrete for removal of forms and falsework.

- 2. Protection from Environmental Conditions:** The concrete shall be protected from damage due to weather or other environmental conditions during placing and curing periods. In-place concrete that has been damaged by weather conditions shall be either repaired to an acceptable condition or removed and replaced as determined by the Engineer.

- (a) **Rain Protection:** The placement of concrete shall not commence or continue unless

adequate protection satisfactory to the Engineer is provided by the Contractor.

(b) Hot Weather Protection: When the ambient air temperature is above 90°F, the forms, which will come in contact with the mix shall be cooled to below 90°F for a minimum of 1 hour prior to and 1 hour after completion of the concrete placement by means of a water spray or other methods satisfactory to the Engineer.

(c) Cold Weather Protection: When there is a probability of ambient air temperature below 40°F during placement and curing, a Cold-Weather Concreting Plan shall be submitted to the Engineer for review and comment. The Plan shall detail the methods and equipment, including temperature measuring devices that will be used to ensure that the required concrete and air temperatures are maintained.

1. **Placement:** The forms, reinforcing steel, steel beam flanges, and other surfaces which will come in contact with the mix shall be heated to a minimum of 40°F, by methods satisfactory to the Engineer, for a minimum of 1 hour prior to, and maintained throughout, concrete placement.

2. **Curing:** For the first 6 days, considered the initial cure period, the concrete shall be maintained at a temperature of not less than 45°F and the air temperature surrounding the structure shall be maintained at a temperature of not less than 60°F. When the concrete mix includes pozzolans or slag, the initial cure period shall be increased to 10 days. After the initial cure period, the air surrounding the structure shall be maintained above 40°F for an additional 8 days. If external heating is employed, the heat shall be applied and withdrawn gradually and uniformly so that no part of the concrete surface is heated to more than 90°F or caused to change temperature by more than 20°F in 8 hours. The Engineer may reduce or increase the amount of time that the structure must be protected or heated based on an indication of in-place concrete strength acceptable to the Engineer.

(d) Additional Requirements for Bridge Decks: Prior to the application of curing materials, all the concrete placed on bridge decks shall be protected from damage due to rapid evaporation by methods acceptable to the Engineer. During periods of low humidity (less than 60% relative humidity), sustained winds of 25 mph or more, or ambient air temperatures greater than 80°F the Contractor shall provide written details of additional measures to be taken during placement and curing.

Protection may include increasing the humidity of the surrounding air with fog sprayers and employing wind-breaks or sun-shades. Additional actions may include reduction of the temperature of the concrete prior to placement, scheduling placement during the cooler times of days or nights, or any combination of these actions.

(e) Concrete Exposed to Salt Water: No Construction joints shall be formed between the levels of extreme low water and extreme high water or the upper limit of wave action as determined by the Engineer.

3. Transportation and Delivery of Concrete: All material delivered to the Project shall be supplied by a producer qualified in accordance with M.03. The producer shall have sufficient plant capacity and trucks to ensure continuous delivery at the rate required to prevent the formation of cold joints.

(a) Material Documentation: All vendors producing concrete must have their weigh scales and mixing plant automated to provide a detailed ticket. Delivery tickets must include the following information:

1. State of Connecticut printed on ticket
2. Name of producer, identification of plant
3. Date and time of day
4. Type of material
5. Cubic yards of material loaded into truck
6. Project number, purchase order number, name of Contractor (if Contractor other than producer)
7. Truck number for specific identification of truck
8. Individual aggregate, cement, water weights and any admixtures shall be printed on plant tickets
9. Water/cement ratio, and
10. Additional water allowance in gallons based on water/cement ratio for mix

A State inspector may be present to monitor batching or weighing operations.

The Contractor shall notify the Engineer immediately if, during the production day, there is a malfunction of the recording system in the automated plant or weigh scales.

Manually written tickets containing all required information may be allowed for up to 1 hour after malfunction provided they are signed by an authorized representative of the producer.

- (b) Transportation of Mixture:** Trucks delivering concrete shall be qualified in accordance with M.03.

If the concrete mix arrives at the Project with a slump lower than allowed by specification, water may be considered as a means to temper concrete to bring the slump back to within specification. This tempering may only be done prior to discharge with the permission of the Engineer. The quantity of water in gallons added to the concrete cannot exceed the allowance shown on the delivery ticket.

The concrete shall be completely discharged into the forms within 1-1/2 hours from the batch time stamped on the delivery ticket. This time may be extended if the measured temperature of the concrete is below 90°F. This time may also be reduced if the temperature of the concrete is over 90° F. Rejected concrete shall be disposed of by the Contractor at no cost to the State.

The addition of chemical admixtures or air entrainment admixtures at the Project Site, to increase the workability or to alter the time of set, will only be permitted if prior approval has been granted by the Engineer. The addition of air entrainment admixtures at the Project Site will only be permitted by the producer's quality control staff. The Contractor is responsible for follow-up quality control testing to verify compliance with the Specifications.

4. Acceptance Testing and Test Specimens: The Contractor shall furnish the facilities and concrete required for sampling, transport to the testing location in the field, performing field testing and for casting sample cylinders for compressive-strength determinations. The Department will furnish personnel for sampling and casting Acceptance specimens and the number of specimens required will be determined by the Engineer. The equipment for the Department's testing is provided for elsewhere in the Contract.

- (a) Temperature, Air Content and Slump:** Field testing in accordance with AASHTO T-23, "Making and Curing Concrete Test Specimens in the Field" will be performed at the point of placement and at a frequency determined by the Engineer.

- (b) Acceptance Testing and Compressive Strength Specimens:** Concrete samples are to be taken at the point of placement into the forms or molds. Representatives of the Engineer will sample the mix.

Table 6.01.03-2 Plastic Properties of Portland Cement Concrete

Standard Mix Class	Air Content	Slump ³	Concrete Temperature
PCC0334Z ¹ (3300 psi)	6.0 +/- 1.5%	As submitted	60°-90° F
PCC0336Z ¹ (3300 psi)			
PCC0446Z ¹ (4400 psi)			
PCCXXX8Z ¹	7.5 +/- 1.5%	As submitted	
Modified Standards ²	6.0 +/- 1.5% ²	As submitted	
Special Provision Mix ⁴	As specified	As submitted	
¹ "Z" denotes the Exposure Factor 0, 1 or 2 as described in Table M.03.02-1a			
² Modifications to Standard Mixes, including mixes placed by pumping, shall be reviewed by the Engineer prior to use. These include but are not limited to the use of chemical admixtures such as high range water reducing (HRWR) admixtures and the use of coarse aggregate sizes for that class not specified in M.03.			
³ If the <u>only</u> modification is the addition of HRWR, the maximum allowable slump shall be 7 inches.			
⁴ All concrete mixes with a mix design strength not shown in the table must be approved by the Engineer on a case-by-case basis. Limits on the plastic properties and strength requirements of these mixes are listed in the Specifications.			

The Contractor shall provide and maintain facilities on the Project Site, acceptable to the Engineer, for sampling, transporting the initial sample, casting, safe storage and initial curing of the concrete test specimens as required by AASHTO T-23. This shall include but not be limited to a sampling receptacle, a means of transport of the initial concrete sample from the location of the concrete placement to the testing location, a level and protected area of adequate size to perform testing, and a specimen storage container capable of maintaining the temperature and moisture requirements for initial curing of Acceptance specimens. The distance from the location of concrete placement to the location of testing and initial curing shall be 100 feet or less, unless otherwise approved by the Engineer.

The specimen storage container described in this section is in addition to the concrete cylinder curing box provided for elsewhere in the Contract.

After initial curing, the test specimens will be transported by Department personnel and stored in the concrete cylinder curing box until they can be transported to the Division of Materials Testing for strength evaluation.

- (c) Sampling Procedure for Pumping:** It is the responsibility of the Contractor to provide concrete that meets specification at the point of placement.

Samples of concrete shall be taken at the discharge end of the pump at the point of placement with the exception of underwater concrete. The Contractor may submit an alternate location to provide a sample from the discharge end of the pump with verification showing that the characteristics of the mix will not be altered from that of which would have been attained at the point of placement. The Engineer will review the documentation and other extenuating circumstances when evaluating the request.

In the case of underwater concrete the Contractor shall submit the proposed sampling location with the submittals required in 6.01.03-II-6(f).

(d) Additional field testing: Additional field testing such as density and yield measurements may be required at the time of placement as determined by the Engineer.

5. Progression Cylinders and Compressive Strength Specimens: Progression Cylinders outlined in this section are field cured compressive strength specimens taken for information related to when a structure or segment of a structure can be loaded or put into service, adequacy of curing and protection of concrete in the structure, or when formwork or shoring may be removed from the structure. The information produced from strength results of Progression Cylinders will not be considered for acceptance of the concrete.

The personnel, equipment, and molds for sampling, casting, curing and testing of Progression Cylinders shall be furnished by the Contractor at no expense to the Department.

Sampling, casting, and field curing of the specimens shall be performed in accordance with AASHTO T23 by an ACI Concrete Field Testing Technician Grade 1 or higher and will be witnessed by a representative of the Department.

The sample shall be taken at the point of placement into the forms or molds from 1 or more of the same truck loads that an Acceptance sample is taken from.

A minimum of 2 of cylinder results will be used to determine in-place strength.

Compression testing shall be performed in accordance with AASHTO T 22 by personnel approved by the Engineer.

A Certified Test Report in accordance with 1.06.07 shall be provided to the Engineer reporting the Progression Cylinder test results. A copy of the results of the compressive strength testing shall be provided to the Engineer at least 24 hours prior to any Project activity that the results may control.

6. Handling and Placing Concrete: Concrete shall be handled, placed, and consolidated by methods acceptable to the Engineer that will not segregate the mix and shall result in a dense homogeneous concrete. The methods used shall not cause displacement of reinforcing steel or other materials to be embedded in the concrete. Concrete shall not be placed until the forms and all materials have been inspected by the Engineer. All mortar from previous placements, debris, and foreign material shall be removed from the forms and steel prior to commencing placement. The forms and subgrade shall be thoroughly moistened with water immediately before concrete is placed. All water that has ponded within the forms shall also be removed. Temporary form spreader devices shall not be left in place.

All laitance or unsound material shall be removed before placing substructure concrete onto the surface of any concrete placed underwater.

Placement of concrete for each section of the structure shall be performed continuously between construction or expansion joints as shown on the plans. The delivery rate, placing sequence and methods shall be such that fresh concrete is always placed and consolidated against previously placed concrete before initial set has occurred. The temperature of the concrete mixture during placement shall be maintained between 60°F and 90°F. During and after placement of concrete, care shall be taken not to damage the concrete or break the bond with reinforcing steel. Platforms for workers and equipment shall not be supported directly on any reinforcing steel. Forces that may damage the concrete shall not be applied to the forms or reinforcing steel.

- (a) Sequence of Placement:** The sequence of placement shall be in accordance with the Contract or as permitted by the Engineer.

Concrete for integral horizontal members, such as caps, slabs, or footings shall not be placed until the concrete for the columns, substructure, culvert walls and similar vertical members has achieved sufficient strength as stated in 6.01.03-II-1(m).

The concrete in arches shall be placed in such a manner as to load the formwork uniformly and symmetrically.

The base slab or footings of cast-in-place box culverts shall reach sufficient strength before the remainder of the culvert is constructed.

- (b) Placement Methods:** The Contractor shall notify the Engineer at least 24 hours in advance of intention to place concrete.

Vibrators shall not be used to shift the fresh concrete horizontally. Vibrators shall be adequate to consolidate the concrete and integrate it with the previous lift.

The rate of concrete placement must not produce loadings that exceed those considered in the design of the forms.

The use of chutes and pipes for conveying concrete into the forms must be reviewed by the Engineer. Chutes shall be clean, lined with smooth watertight material and, when steep slopes are involved, shall be equipped with baffles or reverses. When the discharge must be intermittent, a hopper or other device for regulating the discharge shall be provided.

Aluminum shall not be permanently incorporated into the concrete unless otherwise specified.

When placing operations involve dropping the concrete more than 5 feet, the Contractor shall take action to prevent segregation of the mix and spattering of mortar on steel and forms above the elevation of the lift being placed. This restriction shall not apply to cast-in-place pilings.

When using stay-in-place forms, concrete shall not be dropped more than 3 feet above the top of the forms, and the concrete shall be discharged directly over the beams or girders.

- (c) Pumping:** The Contractor shall use equipment specifically manufactured to pump concrete mixes and that meets the needs of the specific concrete placement.

- (d) Consolidation:** Unless otherwise specified, all concrete, except concrete placed under water, shall be sufficiently consolidated by mechanical vibration immediately after placement.

The Contractor shall provide a sufficient number of commercially available mechanical immersion type vibrators to properly consolidate the concrete immediately after it is placed in the forms unless external form vibrators are used. The Contractor shall have an adequate number of operable vibrators available in case of breakdown.

External form vibrators may be used if submitted prior to concrete placement and reviewed by the Engineer.

Vibration shall not be applied directly to the reinforcement or hardened concrete. Special care shall be taken in placing and consolidating concrete around ornamental moulds, form liners and other embedded items. The vibrator shall not touch these items at any time.

- (e) Additional Requirements for Bridge Decks:** At least 15 days before the erection of the screed rails, the Contractor shall submit screed erection plans, grades and sequence of concrete placement and proposed rate of placing concrete for review by the Engineer.

These plans shall include details of equipment to be used in the placement and finishing of the concrete, including the number and type of personnel who will be engaged in placing the concrete. The screed equipment shall be a commercially available vibratory system. The use of wooden screeds is prohibited.

When setting screed rails for mechanical finishing, the Contractor shall take into consideration and make proper allowances for the deflection of the bridge superstructure due to all operations.

Screed and runway supports shall not be located on any stay-in-place metal form sheets, form supports or reinforcing steel. The Contractor shall operate the mechanical screed at least 24 hours prior to actual placement of the concrete to verify deck survey and equipment operations to the satisfaction of the Engineer.

A Pre-Placement Meeting shall be held on the project site with Contractor, Engineer and concrete supplier 48 hours before the concrete deck pour. The Pre-Placement Meeting will document and include discussion on the following topics:

- 1. Schedule:**
 - (a) Deck pour sequence
 - (b) Daily start and finish times for concrete delivery
 - (c) Anticipated completion time
- 2. Key Personnel:**
 - (a) Concrete placement foreman
 - (b) Total number of personnel involved in deck pour and their roles during the pour
 - (c) Concrete supplier
 - (d) Concrete pump truck operator/service
 - (e) Discuss QC/QA
- 3. Placement:**
 - (a) List of approved delivery trucks per pour
 - (b) Pre-wetting forms prior to placement
 - (c) Placement sequence
 - (d) Rate of concrete placement and vibrator process
 - (e) Monitor concrete temperature during placement
 - (f) Transverse joint bulkheads
 - (g) Approved concrete low-permeability mix design
- 4. Curing:**
 - (a) Curing materials (burlap, quilted blankets, etc.)
 - (b) Means for pre-soaking curing materials.
 - (c) Foggers
 - (d) Soaker hoses
 - (e) White Plastic Sheeting
 - (f) Water source and supply tanks

Concrete shall be deposited in a uniform manner across the entire width being placed, and only 2 passes of the transverse screed will be permitted over a given deck area, unless otherwise allowed by the Engineer.

If the Contractor proposes to place concrete outside of daylight hours, an adequate lighting system must be provided.

Concrete shall be deposited in accordance with the placement sequence as noted on the plans. If no sequence is indicated, the Contractor shall provide a placement sequence to the Engineer for review. The placement sequence shall proceed in such a manner that the total deflection or settlement of supporting members, and the final finishing of the surface will occur before the initial set of the concrete takes place.

At construction joints, concrete shall not be placed against the previously placed concrete for at least 12 hours unless otherwise allowed by the Engineer.

- (f) Underwater Placement:** Concrete may only be placed under water within a cofferdam unless otherwise specified in the Contract or allowed by the Engineer. Placement shall begin following inspection and acceptance of the depth and character of the foundation material by the Engineer.

Underwater concrete mixes are considered non-standard designs and shall be submitted to the Engineer for approval. Typically a minimum of 10% additional cement than comparable non-underwater mixes will be required.

Underwater concrete shall be placed continuously with the surface of the concrete kept as horizontal as practical. To ensure thorough bonding, each succeeding layer shall be placed before the preceding layer has taken initial set. For large concrete placements, more than 1 tremie or pump shall be used to ensure compliance with this requirement.

Mass concrete placement requirements, outlined in 6.01.03-II-6(g), do not apply to underwater concrete.

To prevent segregation, underwater concrete shall be placed in a compact mass, in its final position, by means of a tremie, concrete pump, or other approved method and shall not be disturbed. Still water shall be maintained at the point of deposit. Cofferdams shall be vented during the placement and curing of the concrete to equalize the hydrostatic pressure and thus prevent flow of water through the concrete.

If a tremie is used, the method of depositing the concrete shall be detailed in a submission to the Engineer as a working drawing for review. The tube shall have watertight couplings and shall permit the free movement of the discharge end over the area of the work.

- (g) Mass concrete placement:** Mass concrete placement shall be defined as any placement, excluding underwater concrete placement, in which the concrete being cast has dimensions of 5 feet or greater in each of 3 different directions. For placements with a circular cross-section, a mass concrete placement shall be defined as any placement that has a diameter of 6 feet or greater and a height of 5 feet or greater. For all mass concrete placements, the mix temperature shall not exceed 85°F as measured at point of discharge into the forms.

Any special concrete mix design proposed by the Contractor to meet the above temperature requirements shall be submitted to the Engineer for review.

7. Finishing Plastic Concrete: Unless otherwise specified in the Contract, after concrete has been consolidated and prior to final curing, all surfaces of concrete that are not placed against forms shall be struck-off to the planned elevation or slope. The surface shall be finished by floating with an acceptable tool. While the concrete is still in a workable state, all construction and expansion joints shall be tooled with an edger. Joint filler shall be left exposed. For requirements on float finish, refer to 6.01.03-II-10, Finishing Concrete Surfaces.

After completion of the placing and finishing operation and for at least 12 hours after the concrete has set, the Contractor shall not operate any equipment in the immediate vicinity of the

freshly placed concrete if, in the opinion of the Engineer, it could cause excessive vibration, movement or deflection of the forms.

The addition of water to the surface of the concrete to assist in finishing operations will not be permitted.

(a) Bridge Decks: After the concrete has been consolidated and brought to the proper elevation by the screed machine, it shall be finished by use of a suitable float. The Contractor shall not disturb the fresh concrete after it has been finished. All finishing work, including the application of the fog spray and placement of the curing mats, shall be performed from work bridges supported above the deck surface. A work bridge shall be made available to the Engineer for inspection of the concrete work.

Surfaces that are to be covered with a waterproofing membrane shall be finished to a smooth surface, free of mortar ridges and other projections and in accordance with the membrane manufacturer's recommendations.

Unless otherwise noted in the Contract, the concrete wearing surfaces shall be given a skid-resistant texture by dragging, brooming, tining, or by a combination of these methods. These methods shall be done after floating and at such time and in such manner that the desired texture will be achieved while minimizing displacement of the larger aggregate particles.

1. **Dragging:** The surface shall be finished by dragging a seamless strip of damp burlap over the surface. The burlap to be dragged shall consist of sufficient layers and have sufficient length in contact with the concrete to slightly groove the surface. The burlap shall be drawn longitudinally along the surface in a slow manner so as to leave an even texture. The burlap shall be kept damp, clean, and free of particles of hardened concrete. The Contractor may propose an alternate material for the Engineer's consideration.
2. **Tining:** Tining shall be in a transverse direction using a wire broom, comb, or float having a single row of tines or fins. The tining grooves shall be between 1/16 inch and 3/16 inch wide and between 1/8 inch and 3/16 inch deep, spaced 1/2 inch to 3/4 inch on centers. Tining shall be discontinued 12 inches from the curb line on bridge decks. The area adjacent to the curbs shall be given a light broom finish longitudinally. As an alternative, tining may be achieved using a machine designed specifically for tining or grooving concrete pavements.

The transverse grooving shall be performed when the grooves can be formed to a maximum depth of 3/16 inch with relative ease and without the walls of the grooves closing in on each other. The tining shall be aligned so as to prevent overlapping of grooves in any 2 successive transverse passes. The Contractor shall measure the depth of the grooves in the presence of the Engineer with an appropriate device to ensure compliance.

(b) Surface Testing and Correction: The completed surface shall be constructed in accordance with grades and cross slopes shown on the plans. The entire surface shall be checked by the Contractor in the presence of the Engineer, with an acceptable 10 foot straightedge.

1. The surface shall not vary more than +/- 1/8 inch over 10 feet for decks which will not be covered with an overlay.
2. The surface shall not vary more than +/- 1/4 inch over 10 feet for decks which will be

covered with an overlay.

Variations greater than these, which, in the opinion of the Engineer, may adversely affect the riding qualities of the surface shall be corrected, and this shall be done at the expense of the Contractor. The Contractor shall submit a corrective procedure to the Engineer for review and approval. The procedure shall correct such irregularities by methods such as, but not limited to, concrete planing or grooving.

8. Bearing Surfaces: Concrete surfaces under metallic masonry plates and elastomeric bearings shall have a float finish. After the concrete has set, the area which will be in contact with the masonry plate shall be ground as necessary to provide full and even bearing. The finished surface shall not vary from a straightedge laid on the surface in any direction within the limits of the masonry plate by more than 0.0625 inch. Surfaces which fail to conform shall be ground or filled until acceptable to the Engineer.

9. Curing Concrete: All newly placed concrete shall be cured so as to prevent loss of water by use of the methods specified. The Engineer may request that the Contractor furnish a curing plan.

The duration of the initial and final curing period in total shall continue uninterrupted for a minimum of 7 days.

(a) Curing Methods:

1. Forms-In-Place Method: Formed surfaces of concrete may be cured by retaining the forms in place without loosening. During periods of hot weather, water shall be applied to the forms until the Engineer determines that it is no longer required.
2. Water Method: Exposed concrete surfaces shall be kept continuously wet by ponding, spraying, or covering with materials that are kept continuously and thoroughly wet. Such materials may consist of cotton mats, multiple layers of burlap, or other approved materials that do not discolor or otherwise damage the concrete.
3. Waterproof Cover Method: This method shall consist of covering exposed surfaces with a waterproof sheet material to prevent moisture loss from the concrete. The concrete shall be wet at the time the cover is installed. The sheets shall be of the widest practicable width and adjacent sheets shall overlap a minimum of 6.0 inches to form a waterproof cover of the entire concrete surface and shall be adequately secured. Broken or damaged sheets shall be immediately repaired and the concrete shall be remoistened.

(b) Additional Requirements for Bridge Decks:

Curing Plan: The Contractor shall submit to the Engineer, at least 14 days prior to the placement of concrete for the bridge deck, a detailed curing plan that describes the following:

- A. the initial and final curing durations,
- B. equipment and materials to be used for curing concrete and monitoring concrete temperature,
- C. and proposed primary and secondary water and heat sources
 1. Initial Curing Period: A water fog spray shall be used by the Contractor from the time of initial placement until the final curing period begins. The amount of fog spray shall be strictly controlled so that accumulations of standing or flowing water on the surface of the concrete shall not occur.

Should atmospheric conditions render the use of fog spray impractical, the Contractor shall request approval from the Engineer to use a curing compound that meets the requirements of M.03 in lieu of a fog spray. The application shall be in accordance with the manufacturer's recommendation and be compatible with the membrane waterproofing.

2. Final Curing: After completion of finishing and as soon as any bleed water has dissipated and the concrete reaches sufficient strength to avoid marring, the Final curing period shall begin and the entire concrete surface shall be covered with water-retaining materials such as cotton mats, multiple layers of burlap, or other materials approved by the Engineer. Materials used shall be kept saturated by means of an acceptable sprinkler or wetting system.

The Contractor may cover the wet water-retaining material with a suitable polyethylene film to minimize evaporation during the curing period. The use of the polyethylene film does not relieve the Contractor from maintaining saturation of the curing materials.

3. Temperature Monitoring: The internal temperature of the concrete shall be monitored with a calibrated continuous recording thermometer for a minimum of 7 days. The air temperature at the concrete surface or the air temperature between the concrete surface and its protective covering shall be monitored with a minimum of 1 recording thermometer.

The number and placement of the thermometers will be determined by the Engineer. A minimum of 2 thermometers per concrete placement shall be provided by the Contractor.

The following types of thermometers shall be used to monitor curing temperatures:

- i) Continuously Recording Thermometer: The thermometer shall be capable of continuously recording temperatures within a range of -4°F to 122°F for a minimum of 24 hours.
- ii) Maximum–Minimum Recording Thermometer: For all placements, the thermometer shall be capable of recording maximum and minimum temperatures in a range of -4°F to 122°F.

10. Finishing Concrete Surfaces: Any minor repairs due to fins, bulges, offsets and irregular projections shall be performed immediately following the removal of forms. For areas of newly placed concrete that are honeycombed or segregated the Contractor shall provide a written corrective procedure for review by the Engineer prior to the work being performed.

Construction and expansion joints in the completed work shall be left carefully tooled and free of mortar and concrete. The joint filler shall be left exposed for its full length with clean and true edges.

The cavities produced by form ties and all other holes, broken corners or edges, and other defects shall be cleaned, saturated with water, pointed and trued with a mortar conforming to M.11.04. Cement similar in color to the exposed surface being repaired shall be added to the mortar. Mortar used in pointing shall be used within 1 hour of mixing. The concrete shall be finished as defined below if required and the cure continued as previously specified in 6.01.03-II-9, Curing Concrete.

Finishing work shall not interrupt the curing period unless permitted by the Engineer. The curing period may be extended to provide the minimum total number of days required.

Concrete surface finishes shall be classified as follows:

- (a) **Float Finish:** This finish shall be achieved by placing an excess of material in the form and removing or striking off of such excess forcing the coarse aggregate below the mortar surface. Concave surfaces in which water will be retained will not be allowed. After the concrete has been struck off, the surface shall be thoroughly worked and floated. Before this last finish has set, the surface shall be lightly stripped with a fine brush to remove the surface cement film, leaving a fine-grained, smooth, but sanded texture. Curing, as specified elsewhere, shall follow. Any surfaces that will support appurtenances such as light standards, railing, or fences shall be finished in accordance with 6.01.03-II-8, Bearing Surfaces.
- (b) **Rubbed Finish:** The initial rubbing shall only be allowed within 3 days after placement. The entire surface shall be thoroughly wet with a brush and rubbed with a No. 16 Carborundum Stone or an abrasive of equal quality, bringing the surface to a paste. The rubbing shall be continued sufficiently to remove all form marks and projections, producing a smooth, dense surface without pits or irregularities. The paste formed by the rubbing may be finished by stripping with a clean brush, or it may be spread uniformly over the surface and allowed to re-set. If all or portions of the rubbed surface are unacceptable to the Engineer or a rubbed finish is not provided within 3 days after removal of forms, the Contractor will be directed to provide a grout clean down finish.
- (c) **Grout Clean-Down Finish:** As soon as all cavities have been filled as required elsewhere and the cement mortar has set sufficiently, grout clean-down shall be performed. All burrs, unevenness, laitance, including that in air holes, and any other material which will adversely affect the bond of the grout to the concrete, shall be removed by acceptable methods. This cleaning shall be done from the top or uppermost part of the surface to be finished to the bottom.

A mixture of a fine aggregate and Portland cement shall be thoroughly blended while dry. The proportions shall be such that when mixed with the proper amount of water, the color will match that of the concrete to be finished. Water shall be added to this mixture in an amount which will bring the grout to a workable thick paint-like consistency.

The surface to be treated shall be thoroughly wetted with a sufficient amount of water to prevent the absorption of water from the grout. Grout shall then be applied to the wetted surface before setting of the grout occurs. Grout which has set shall not be re-tempered and shall be disposed of by the Contractor at no cost to the State.

The grout shall be uniformly applied over the entire surface, completely filling all air bubbles and holes. Immediately after applying the grout, the surface shall be floated with a suitable float, scouring the surface vigorously. While the grout is still plastic, all excess grout shall be removed.

After the final rubbing is completed and the surface has dried, it shall be rubbed to remove loose powder and shall be left free from all unsound patches, paste, powder, and objectionable marks. Wetting, application and removal of excess grout shall be completed in 1 work shift.

All finished surfaces shall be cured for a minimum of 24 hours. Horizontal surfaces shall have a float finish and vertical exposed surfaces shall have a rubbed finish. A grout clean down finish may be substituted for a rubbed finish as noted in this section or as directed by the Engineer.

11. Mortar, Grout, Epoxy and Joint Seal:

- (a) **Mortar and Grout:** This work consists of the making and placing of mortar and grout. At least 48 hours prior to the planned use, a copy of the installation instructions and MSDS sheets shall be provided to the Engineer for review and concurrence of their applicability and for verification of proper hole sizes in concrete structures. Such uses include mortar for filling under masonry plates, mortar used to fill voids and repair surface defects, grout used to fill sleeves for anchor bolts, and mortar and grout for other such uses where required or approved.

Concrete areas to be in contact with the mortar or grout shall be cleaned of all loose or foreign material that would in any way prevent bond, and the concrete surfaces shall be flushed with water and allowed to dry until no free-standing water is present.

The mortar or grout shall completely fill and shall be tightly packed into recesses and holes, on surfaces, under structural members, and at other locations specified. After placing, all surfaces of mortar or grout shall be cured as previously specified in 6.01.03-II-9(a)-2, for a period of not less than 3 days.

- (b) **Epoxy:** The epoxy shall be prepared and placed in accordance with the manufacturer's directions and with the equipment prescribed by the manufacturer. Instructions furnished by the supplier for the safe storage, mixing, handling and application of the epoxy shall be followed. Contents of damaged or previously opened containers shall not be used.
- (c) **Joint Seal:** This work consists of sealing joints where shown on the plans or as otherwise directed by the Engineer.

Before placement of the sealing material, the joints shall be thoroughly cleaned of all scale, loose concrete, dirt, dust or other foreign matter. Projections of concrete into the joint space shall be removed. The joint shall be clean and dry before the sealing compound is applied.

The joint sealant shall be prepared and placed in accordance with the manufacturer's directions and with the equipment prescribed by the manufacturer. The sealing compound shall be flush with, or not more than 1/8 inch above the adjacent surface of concrete, cutting off all excess compounds after the application. The joints shall be sealed in a neat and workmanlike manner and when the work is completed, the joints shall effectively seal against infiltration of moisture and water.

The Contractor shall arrange for, and have present at the commencement of the joint-sealing operation, a technically competent manufacturer's representative knowledgeable in the methods of installation of the sealant. The Contractor shall also arrange to have the representative present at such other times as the Engineer may request.

- (d) **Closed Cell Elastomer:** The closed cell elastomer shall be of the thickness specified and installed as shown on the plans and shall be in accordance with M.03.08-6.

12. Application of Loads: Loads shall not be applied to concrete structures until the concrete has attained sufficient strength and, when applicable, sufficient pre-stressing and post tensioning has been completed, so that damage will not occur. The means to determine when the concrete has attained sufficient strength shall be the use of Progression cylinders as defined elsewhere in this specification, or other means approved in advance by the Engineer.

- (a) **Earth Loads:** The placement of backfill shall not begin until the concrete is cured and has reached at least 80% of its specified strength unless otherwise permitted by the Engineer.

The sequence of placing backfill around structures shall minimize overturning or sliding forces and flexural stresses in the concrete.

- (b) Construction Loads:** Light materials and equipment may be hand carried onto bridge decks only after the concrete has been in place at least 24 hours providing curing is not interfered with and the surface texture is not damaged.

Prior to the concrete achieving its specified compressive strength, any other live or dead loads imposed on existing, new, or partially completed portions of structures, shall not exceed the reduced load carrying capacity of the structure, or portion of structure. The Contractor may be required to submit calculations to the Engineer that verify these requirements are being met. The compressive strength of concrete ($f'c$) to be used in computing the load-carrying capacity shall be the smaller of the actual field compressive strength at the time of loading or the specified design strength of the concrete. The means to determine the actual field compressive strength shall be approved by the Engineer.

For post-tensioned structures, no live or dead loads shall be allowed on any span until the steel for that span has been tensioned.

- (c)** Precast concrete or steel girders shall not be placed on substructure elements until the substructure concrete has attained 85% of its specified strength.

No load shall be allowed on mortar or grout that has been in place less than 72 hours.

- (d) Traffic Loads:** The concrete deck will not be opened to traffic until at least 14 days after the last placement of deck concrete and until such concrete has attained its specified strength.

13. Dispute Resolution: The basis of any dispute resolution is side-by-side and quality control testing by the Contractor or the Contractor's representative. The Contractor and Engineer should perform independent testing on the material to reasonably establish the true characteristics of the material at the time of delivery. Absent of Contractor QC testing, the Engineer's test results will apply to the quantity of concrete represented by the sample, not to exceed 75 c.y.

Air Content: Contractor QC Testing must be performed by personnel qualified by The American Concrete Institute as an ACI Concrete Field Testing Technician Grade 1 or higher and performed in accordance with AASHTO T-23. If the Contractor's test results vary from those of the Engineer, the Contractor shall immediately notify the Engineer of the difference and work cooperatively to determine the reasonable cause and recognize the valid test. Should there be agreement, the result of the valid test will be used for acceptance and adjustment purposes for that lot of material. Should there not be an agreement as to the valid test, an additional set of tests should be performed. Results of all valid tests on the same lot may be averaged and used for acceptance and adjustment purposes. Should the Contractor wish to perform additional QC testing on subsequent material, the lot sizes may be adjusted to the amount of material included in that specific delivery. Any such QC testing must be witnessed and agreed to by the Engineer.

Compressive Strength: Contractor QC testing for compressive strength must be performed in accordance with AASHTO T-22 by personnel approved by the Engineer. Samples used to dispute the Engineer's test results must be made simultaneously and from the same batch of concrete. Should the Contractor wish to pursue a dispute resolution with regard to compressive strength, the Contractor shall submit in writing to the Engineer all test results, control charts, or other documentation that may be useful in determining if the specific lot(s) of material met the Contract specifications. The Engineer will consider the submittal and may average specific test results on the disputed lot(s) for acceptance and adjustment purposes. Destructive testing of any

kind on the placed concrete structure will not be allowed.

III. Additional Requirements for Surface Repairs and Structural Repairs

1. Work Area Access and Shielding: Prior to removal of existing concrete, the Contractor shall provide access to the anticipated work areas so that the inspector and the Contractor may together determine and delineate the exact limits and locations of the work.

The Contractor shall design, furnish, install and remove a shield(s) to prevent debris from entering areas adjacent or beneath the work. The Contractor shall submit working drawings to the Engineer in accordance with 1.05.02. The shield(s) shall be maintained by the Contractor and remain in place during all phases of the repair work.

2. Concrete Removal: The perimeter of each area to be repaired shall be saw cut as shown on the plans. All concrete within that area shall be removed to at least 1 inch beneath any visible reinforcing steel and to sound concrete. The reinforcing steel shall not be damaged or its bond in the surrounding concrete. The Contractor must use fifteen (15) pound hammers or other methods accepted by the Engineer.

In addition to removal of concrete to a depth of 1 inch below reinforcing steel, localized areas of removal may be required if embedded galvanic anodes are specified in the Contract, to allow a minimum of 2 inches of concrete cover over the anodes.

Any steel reinforcing scheduled to be left in place that is damaged during the concrete removal process shall be replaced in accordance with 6.02 to the satisfaction of the Engineer and at the expense of the Contractor.

Corroded, missing, or broken reinforcing steel shall be replaced in accordance with 6.02 and as shown on the plans or as directed by the Engineer.

The Contractor shall perform the work in a manner that prevents debris from entering roadway lanes or areas below the structure. All debris shall be removed from the Site and disposed of by the Contractor.

3. Surface Preparation: All newly exposed surfaces of concrete shall be sandblasted and be visibly free from oil, solvent, grease, loose particles, or any other foreign matter. Exposed reinforcing steel shall be sandblasted in accordance with SSPC-SP-6, Commercial Blast Cleaning, to remove all contaminants, rust and rust scale.

4. Installation of Embedded Galvanic Anodes: After sandblasting reinforcing steel, galvanic anodes shall be embedded where shown on the plans and in accordance with the Contract.

5. Welded Wire Fabric in Vertical and Overhead Surface Repairs: Prior to installing formwork, steel welded wire fabric meeting the requirements of M.06.01-3 shall be installed at the proper depth in those areas as shown on the plans or directed by the Engineer. The fabric shall be tied to exposed reinforcing steel or anchored to sound concrete using means approved by the Engineer.

6. Formwork: Forms and support systems shall be designed in accordance with 6.01.03-II-1. Forms shall be so designed so that access is from the top of the formwork. If access is not possible from the top of the formwork, the Contractor shall submit a method of concrete placement for review by the Engineer.

7. Concrete Placement and Curing: Bonding compounds shall not be used before or during the placement of the concrete. Exposed surfaces shall be wetted with water immediately prior to placement. There shall be no excessive water on the surface or in the formwork. Light rust on sandblasted reinforcing steel can be anticipated and is acceptable.

The temperature of the air and surface to be repaired at the time of placement and curing shall be a minimum of 45°F. Concrete shall be placed and consolidated immediately with appropriate vibratory equipment.

Forms shall be kept moist and shall be left in place for a minimum of 7 days or as shown on the plans.

8. Form Removal and Sequence of Repair: Form removal shall be in accordance with 6.01.03-II-1(m) unless otherwise noted on the plans. The Contractor shall follow the sequence of repairs shown on the plans.

9. Finishing: Immediately following curing and form stripping, the exposed faces shall be finished in accordance with Subarticle 6.01.03-II-10(c) Grout Clean-Down Finish.

10. Sounding of Completed Repairs: Cured and finished areas may be sounded by the Engineer to detect the presence of subsurface voids or delamination. Such areas shall be removed and replaced by the Contractor at its expense until an acceptable repair is in place as determined by the Engineer.

11. Sealing Concrete Surfaces: After all repairs have been accepted, penetrating sealer shall be applied in accordance with the Contract to the repaired areas as well as all contiguous areas to the repair or as directed by the Engineer.

6.01.04—Method of Measurement: This work will be measured for payment as follows:

1. Concrete used for new construction: The quantity of concrete used for new construction will be the actual volume in cubic yards of the specified class, with the exception of underwater concrete, completed and accepted within the neat lines as shown on the plans or as ordered by the Engineer. Parapets will be measured for payment by the number of linear feet of parapet, completed and accepted. The length of parapet will be measured along the centerline of the top of the parapet.

When concrete is placed against bedrock, a maximum of 6 additional inches beyond the neat lines can be measured for payment.

No deduction will be made for panels, form liners, reinforcing bars, structural steel shapes or for pile heads. There will be no deduction made for the volume occupied by culvert and drainage pipes, scuppers, weep holes, public utility structures or any other opening, unless the surface area of any such single opening is 9 s.f. or more.

In the case of culverts or drainage pipes, the computation of the surface area will be based on the nominal diameter of the pipe, disregarding the thickness of the shell.

Miscellaneous materials necessary for completion of the work such as felt, mortar, grout, epoxy and joint seal will not be measured for payment.

Incidental work such as forming for anchor bolts, utilities, keyways, and sampling and testing will not be measured for payment.

The work to produce and administer the Concrete Quality Control Plan (CQCP) will not be measured for payment.

2. Underwater Concrete: When underwater concrete is used, it will be measured by the volume in cubic yards within the actual horizontal limits of the cofferdam and between the elevations established by the Engineer.

3. Concrete used for Surface or Structural Repairs: The quantity of concrete used for surface repairs or structural repairs will be the actual volume completed and accepted. Welded wire fabric used in repair areas will not be measured for payment.

4. Joint Filler: This material will be measured by the area in square feet of the joint filler, of the type and thickness specified, installed and accepted.

5. Closed Cell Elastomer: This material will be measured by the volume in cubic inches of elastomer, of the thickness specified, installed and accepted.

6.01.05—Basis of Payment: Payment for this work will be made as follows:

1. Concrete: Progress payments may be allowed for completed major labor elements of work such as forming, placing and curing. Prior to placement, the Contractor shall submit a proposed schedule of values for review and approval by the Engineer.

Payment for any lot of concrete allowed to remain in place will be adjusted when the field and laboratory testing of the material is completed. The quantity of concrete in each lot for new construction will be a maximum of 75 c.y. Payment for each lot of concrete will be adjusted based on the results of the acceptance testing performed by the Engineer.

The pay factors listed in Table 6.01.05-1 apply for Standard and Modified Standard Mix classes with regard to entrained air content.

Table 6.01.05-1 Entrained Air Content Pay Factors

Specified Entrained air (%)*				Pay factor (%)
6.0 +/- 1.5%		7.5 +/- 1.5%		1.00 (100)
4.3 and 4.4	7.6 and 7.7	5.8 and 5.9	9.1 and 9.2	0.98 (98)
4.1 and 4.2	7.8 and 7.9	5.6 and 5.7	9.3 and 9.4	0.96 (96)
3.9 and 4.0	8.0 and 8.1	5.4 and 5.5	9.5 and 9.6	0.94 (94)
3.7 and 3.8	8.2 and 8.3	5.2 and 5.3	9.7 and 9.8	0.92 (92)
3.5 and 3.6	8.4 and 8.5	5.0 and 5.1	9.9 and 10.0	0.90 (90)
Concrete lots with less than 3.5% or greater than 8.5% entrained air will be rejected.		Concrete lots with less than 5.0% or greater than 10% entrained air will be rejected.		
*Air content measured at time and point of placement				

The pay factors listed in Table 6.01.05-2a apply for Standard and Modified Standard Mix classes with regard to compressive strength.

Table 6.01.05-2a Compressive Strength Pay Factors

Compressive Strength (%)	Pay factor (%)
95 or greater	1.00 (100)
90 to 94.9	0.95 (95)
85 to 89.9	0.90 (90)
*Measured at 28 days	
Concrete lots with less than 85% specified strength will be rejected.	

The pay factors listed in Table 6.01.05-2b apply for Standard and Modified Standard Mix classes with regard to surface resistivity when specified in accordance with AASHTO T 358 using 4 inch × 8-inch cylinders.

Table 6.01.05-2b Permeability Pay Factors

Surface Resistivity (kΩ-cm)*	Pay factor (%)
29 or greater	1 (100)
25 to 28.9	0.85 (85)
21 to 24.9	0.75 (75)
*Measured at 56 days	
Concrete lots with resistivity values less than 21 will be rejected.	

The payment adjustment value for entrained air, 28-day strength, and permeability if applicable, for any lot of concrete for new construction that is allowed to remain in-place is determined using the formulas listed in Table 6.01.05-3a. An Index Price of \$400.00 per c.y. will be used to calculate each adjustment, except for Parapet Concrete, for which an Index Price of \$100 per l.f. will be used. The sum of the individual adjustment values will be deducted from the cubic yard or linear foot payment for the appropriate item.

Table 6.01.05-3a Payment Adjustment Formulas for New Construction

Adj (air) = (1 - air pay factor) × Index Price × lot size (c.y. or l.f.)
Adj (strength) = (1 - strength pay factor) × Index Price × lot size (c.y. or l.f.)
Adj (permeability) = (1 - permeability pay factor) × Index Price × lot size (c.y. or l.f.)
Total Adjustment = Adj (air) + Adj (strength) + Adj (permeability)

The payment adjustment value for entrained air and 28-day strength for any lot of repair concrete that is allowed to remain in-place is determined using the formulas listed in Table 6.01.05-3b. An index price of \$200.00 per c.f. shall be used to calculate each adjustment. The total adjustment value will be the sum of each individual adjustment value and will be deducted from the cubic foot payment for the appropriate item.

Table 6.01.05-3b Payment Adjustment Formulas for Repair Concrete

Adj (air) = (1 - air pay factor) × \$200/c.f. × lot size (c.f.)
Adj (strength) = (1 - strength pay factor) × \$200/c.f. × lot size (c.f.)
Total Adj = Adj (air) + Adj (strength)

The Contractor shall request permission from the Engineer to remove and replace a lot(s) of concrete to avoid a negative payment adjustment. Any replacement material will be sampled, tested and evaluated in accordance with this specification.

No direct payment will be made for any labor, equipment or materials used during the sampling and testing of the concrete for Progression or Acceptance. The cost shall be considered as included in the general cost of the work or as stated elsewhere in the Contract. The work of transporting the concrete test specimens, after initial curing, for Acceptance testing will be performed by the Department without expense to the Contractor.

This material used for new construction will be paid for at the Contract unit price per cubic yard or linear foot less any adjustments, for the specified class, complete in place, which price shall include all materials, equipment, tools, labor and work incidental thereto, including Concrete Quality Control Plan, heating, all admixtures, joint sealer, roofing felt, and any miscellaneous materials such as metal flashing and metal used in expansion joints and bearings.

2. Underwater Concrete: When this class of concrete is used, it will be paid for at the Contract unit price per cubic yard for "Underwater Concrete," complete in place, which price shall include all materials, equipment, tools, labor and work incidental thereto.

3. Concrete Used For Structural Repairs or Surface Repairs: The material used for structural repairs or surface repairs will be paid for at the Contract unit price per cubic foot less any adjustments, complete in place, which price shall include saw cutting, removing concrete, sandblasting, cleaning, forming, placing, curing, stripping, and finishing new surfaces, and all materials, equipment, tools, labor and clean-up incidental thereto.

4. Joint Filler: Expansion joint filler will be paid for at the Contract unit price per square foot for "Joint Filler for Bridges" of the type and thickness specified, complete in place, which price shall include all materials, equipment, tools, labor and work incidental thereto.

5. Closed Cell Elastomer: Closed cell elastomer will be paid for at the Contract unit price per cubic inch for "Closed Cell Elastomer" of the thickness specified, complete in place, which price shall include all materials, equipment, tools, labor and work incidental thereto.

Embedded galvanic anodes, deformed steel bars, and penetrating sealer, will be paid for separately.

Pay Item	Pay Unit
Footing Concrete	c.y.
Footing Concrete (Mass)	c.y.
Abutment and Wall Concrete	c.y.
Abutment and Wall Concrete (Mass)	c.y.
Column and Cap Concrete	c.y.
Column and Cap Concrete (Mass)	c.y.
Bridge Deck Concrete	c.y.
Bridge Deck Concrete (SIP Forms)	c.y.
Parapet Concrete	l.f.
Bridge Sidewalk Concrete	c.y.
Approach Slab Concrete	c.y.
Barrier Wall Concrete	c.y.
Underwater Concrete	c.y.
Surface Repair Concrete	c.f.
Structural Repair Concrete	c.f.
Class PCCXXYZ Concrete	c.y.
(Thickness and Type) Joint Filler for Bridges	s.f.
(Thickness) Closed Cell Elastomer	c.i.

SECTION 6.86 - DRAINAGE PIPES, DRAINAGE PIPE ENDS

6.86.01—Description

6.86.02—Materials

6.86.03—Construction Methods

6.86.04—Method of Measurement

6.86.05—Basis of Payment

6.86.01—Description: This work shall consist of furnishing, preparing and installing drainage pipes of the size and type specified, bedding material, joint sealant, rubber gaskets, clamps, collars, grout, grout collars, drainage trench excavation, backfilling or satisfactory disposal of all materials, the removal of which is necessary for the proper completion of the work, connecting proposed drainage systems to existing systems, plugging or abandoning existing pipes and removal of existing pipe within trench limits, as shown on the plans or as directed by the Engineer.

This Section shall also include removal of drainage pipes outside of drainage trench excavation limits, as defined in 2.86.03-1.

6.86.02—Materials: The materials for this work shall meet the following requirements: Drainage Pipe, Drainage Pipe Ends, Sealers, Gaskets and connection hardware shall meet the requirements of M.08.01.

Bedding Material shall meet the requirements of M.08.03-1.

Granular Fill, if necessary, shall meet the requirements of M.02.01.

Brick Masonry shall meet the requirements of M.11.03 and Mortar shall meet the requirements of M.11.04.

Concrete used for Concrete Pipe Connections shall be Class “F” Concrete meeting the requirements of M.03.

6.86.03—Construction Methods:

- (1) **Drainage Trench Excavation:** Drainage trench excavation and backfilling shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where drainage pipe is to be laid below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the bedding material.

Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

- (2) **Rock in Drainage Trench Excavation:** When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

- (3) **Drainage Pipe Installation:** New or re-laid drainage pipes shall be installed on 4 inches of bedding material (12 inches if over rock in ledge formation), the details as shown on the plans, or as directed by the Engineer. Prior to placement of the drainage pipe, in accordance with the plans, bedding material shall be pre-shaped to 10% of the total height

of the pipe in order to keep the pipe in the center of the trench. Following placement of the drainage pipe, bedding material backfill shall be placed in accordance with the following table:

Internal Pipe Diameter	Required Bedding Material Backfill
< 48 inches*	25% of total height of the pipe
≥ 48 inches*	12 inches above the top of the pipe
*Includes pipe arch of equivalent internal horizontal span See Standard Drawing	

The placement of the drainage pipe shall start at the downstream end and progress upstream or as shown on the plans, or as directed by the Engineer. All drainage pipes shall be carefully laid in the center of the drainage trench, true to the lines and grades given. Bell ends shall face upgrade and all joints shall be tight.

Joints in concrete pipe shall be sealed with cold-applied bituminous sealer, preformed plastic gaskets or flexible, watertight, rubber-type gaskets. Portland cement mortar shall not be used for sealing pipe joints except with permission of the Engineer.

When cold-applied bituminous sealer is used, the bell and spigot ends shall be wiped clean and dry before applying the bituminous sealer to the pipe ends. Before the drainage pipes are placed in contact with each other, the spigot or tongue end shall be completely covered with bituminous sealer; then the pipe shall be laid to line and grade so the inside surface of all abutting pipes are flush. Additional bituminous sealer shall be applied to the joint after the connection has been made to ensure a water tight connection.

Where the end of an existing drainage pipe is not compatible with the end of a proposed concrete pipe, the Contractor shall align the inner diameters of the pipes being connected, butt the pipe ends together, and construct a cast-in-place concrete pipe connection, as shown in the plans. Incompatible bell/spigot or tongue/groove ends shall be cut off as required to ensure the interior drainage pipe walls are aligned to provide a smooth transition between the pipes.

Metal pipe and pipe arches shall be carefully joined and firmly clamped together by approved connecting bands, which shall be properly bolted in place before any backfill is placed.

Newly installed drainage pipe which is not in true alignment, or which shows any settlement or distortion, shall be reinstalled in accordance with 1.05.03.

When drainage pipe outside of proposed drainage trench limits is to be removed, it shall be removed to the limits shown on the plans and all remaining pipes shall be plugged with cement masonry.

Where shown on the plans or directed by the Engineer, the Contractor shall plug abandoned existing pipes with cement masonry.

(4) Drainage Pipe End Installation: Reinforced concrete drainage pipe ends shall be placed on a prepared bed of the existing ground and accurately aligned as shown on the plans. The joints shall be sealed as specified in 6.86.03-3 and backfill shall be placed around both sides of the unit simultaneously to the elevation shown on the plans.

Metal drainage pipe ends shall be placed on a prepared bed of the existing ground and accurately aligned as shown on the plans. After the attachment of the drainage pipe end, backfill shall be placed around both sides of the unit up to the elevation shown on the plans, exercising caution to avoid displacement or deformation of the unit.

6.86.04—Method of Measurement: This work will be measured as follows:

Drainage Trench Excavation, in accordance with 2.86.04, will not be measured for payment.

Rock in Drainage Trench Excavation will be measured in accordance with 2.86.04.

Bedding Material will not be measured for payment.

New and Re-laid Pipes and Pipe Arches will be measured for payment by the actual number of linear feet of pipe or pipe arch of the various sizes and types, completed and accepted and measured in place along the invert. Coupling bands and fittings for pipes and pipe arches will not be measured for payment.

Reinforced Concrete Drainage Pipe Ends and Metal Drainage Pipe Ends will be measured for payment as separate units.

Corrugated Metal Pipe Elbows (of the Size and Type specified) will be measured for payment by the actual number of linear feet of pipe elbows completed and accepted, based on 6 linear feet per elbow, as shown on the plans. Coupling bands for elbows will not be measured for payment.

Concrete Pipe Connection will be measured for payment by the number of each concrete pipe connection constructed at locations where proposed concrete pipes tie into an existing pipe with an incompatible end, completed and accepted by the Engineer.

Removal of drainage pipe outside of drainage trench excavation limits, as defined in 2.86.03, will be measured for payment by the actual number of linear feet of drainage pipe removed.

There will be no measurement for plugging existing pipes with cement masonry.

6.86.05—Basis of Payment:

Drainage Trench Excavation for the installation of drainage pipes will not be paid separately but shall be included in the Contract unit price for the respective drainage pipe or pipe end item(s), in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Bedding Material necessary for the installation of drainage items described herein will be included in the Contract unit price for the respective drainage pipe or pipe end item(s). Bedding material required to fill voids when rock in drainage trench is encountered will not be measured for payment but shall be included in the Contract unit price for "Rock in Drainage Trench Excavation," in accordance with 2.86.05.

New Pipes and Pipe Arches will be paid for at the Contract unit price per linear foot for "(Size and Type) Pipe (Thickness) – 0' to 10' Deep," "(Size and Type) Pipe (Thickness) – 0' to 20' Deep," "(Size) Pipe Arch (Thickness) – 0' to 10' Deep" or "(Size) Pipe Arch (Thickness) – 0' to 20' Deep" complete in place, including materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Relaid Pipes and Pipe Arches will be paid for at the Contract unit price per linear foot for "Relaid Pipe (Size and Type) – 0' to 10' Deep," "Re-laid Pipe (Size and Type) – 0' to 20' Deep," "Relaid Pipe Arch (Size and Type) – 0' to 10' Deep," or "Relaid Pipe Arch (Size and Type) – 0' to 20' Deep," complete in place, including all materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Reinforced Concrete Drainage Pipe Ends and Metal Drainage Pipe Ends will be paid for at the Contract unit price for each drainage pipe end of the Size and Type specified, complete in place, including all excavation, materials, attachment systems, equipment, tools and labor incidental thereto.

Corrugated Metal Pipe Elbows will be paid for at the Contract unit price per linear foot for "(Size and Type) Corrugated Metal Pipe Elbow" including all materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Concrete Pipe Connection will be paid for at the Contract unit price each for "Concrete Pipe Connection" complete in place, including all materials, equipment, tools and labor incidental thereto.

Removal of drainage pipes of all types and sizes, outside of drainage trench excavation limits, as defined in 2.86.03-1, will be paid for at the Contract unit price per linear foot for "Remove Existing Pipe – 0' to 10' Deep," or "Remove Existing Pipe – 0' to 20' Deep," which price shall include excavation, temporary trench protection, backfill, and all equipment, tools and labor incidental thereto.

There will be no direct payment for the plugging of existing drainage pipes, but the cost thereof shall be included in the respective drainage Contract item(s).

Pay Item	Pay Unit
(Size and Type) Pipe (Thickness) – 0' to 10' Deep	l.f.
(Size and Type) Pipe (Thickness) – 0' to 20' Deep	l.f.
(Size and Type) Pipe Arch (Thickness) – 0' to 10' Deep	l.f.
(Size and Type) Pipe Arch (Thickness) – 0' to 20' Deep	l.f.
Relaid (Size and Type) Pipe– 0' to 10' Deep	l.f.
Relaid (Size and Type) Pipe– 0' to 20' Deep	l.f.
(Size and Type) Relaid Pipe Arch – 0' to 10' Deep	l.f.
(Size and Type) Relaid Pipe Arch – 0' to 20' Deep	l.f.
(Size) Reinforced Concrete Drainage Pipe End	ea.
(Size) Metal Drainage Pipe End	ea.
(Size and Type) Corrugated Metal Pipe Elbow	l.f.
Concrete Pipe Connection	ea.
Remove Existing Pipe – 0' to 10' Deep	l.f.
Remove Existing Pipe – 0' to 20' Deep	l.f.

SECTION 12.00 – GENERAL CLAUSES FOR HIGHWAY SIGNING

Description:

Work under this item shall conform to the requirements of Section 12.00 supplemented as follows:

NOTICE TO CONTRACTOR – Global Positioning System (GPS) coordinates for signs:

The Contractor shall obtain and provide to the Engineer sign installation data, including Global Positioning System (GPS) latitude and longitude coordinates, for all new permanent State owned and maintained signs (temporary and construction signs are not to be included) installed in the project. The Engineer shall forward the sign data to the Division of Traffic Engineering for upload into the Highway Sign Inventory and Maintenance Management Program (SIMS). Sign data submissions or questions relating to SIMS or GPS shall be sent to DOT-SignInventory@ct.gov.

The horizontal datum is to be set to the State Plane Coordinate System, North American Datum of 1983 (NAD83) in feet. The minimum tolerance must be within 10 feet. The format of the GPS information shall be provided in a Microsoft Office compatible spreadsheet (Excel) file with data for each sign. The record for each sign installed is to be compatible with the anticipated CTDOT Sign Inventory and Management System (CTSIMS). The following format shall be used. However, the data fields noted by “#” are not required for the project submission. These entries will be completed as part of the Traffic Engineering CTSIMS data upload.

The cost of this work shall be included in the cost of the respective sign face – sheet aluminum and sign face – extruded aluminum items. The receipt of this electronic database must be received and accepted by the Engineer prior to final payment for items involving permanent highway signing. The electronic database information shall detail information regarding the sign actually installed by the project.

Field Number	Type	size	Description
1	text	20	Record Number (starting at 1...)
2	text	20	Sign Catalog Number
# 3	text	10	Size Height
# 4	text	10	Size Width
5	text	25	Legend
# 6	text	10	Background Color
# 7	text	10	Copy Color
8	Link	25	Material (see acceptable categories)
9	text	30	Comments if any
# 10	text	20	MUTCD Type
11	text	15	Town
12	text	5	Route
13	text	5	Route direction

#	14	text	10	Highway Log Mileage
	15	text	15	Latitude
	16	text	15	Longitude
	17	text	25	Mounting Type
	18	text	25	Reflective Sheeting Type
	19	date	25	Date Installed
	20	text	10	Number of Posts
	21	text	255	Sheeting Manufacturer name and address
	22	text	15	State Project Number (or)
	23	text	15	Encroachment Permit number.
	24	Graphic	*	Sign Picture Graphic.

* Graphics provided shall be representative of the sign supplied and be in color. Graphic formats shall be either JPG or TIFF and provided with a recommended pixel density of 800 x 600. The graphic shall be inserted in the supplied media in field 24 for each sign.

SECTION M.03 - PORTLAND CEMENT CONCRETE

Replace Section M.03 in its entirety with the following:

M.03.01—Component Materials

M.03.02—Mix Design Requirements

M.03.03—Producer Equipment and Production Requirements

M.03.04—Curing Materials

M.03.05—Non Shrink, Non Staining Grout

M.03.06—Expansive Cement for Anchoring

M.03.07—Chemical Anchors

M.03.08—Joint Materials

M.03.09—Protective Compound/Sealers

M.03.10—Formwork

M.03.01—Component Materials

1. Coarse Aggregate: Coarse aggregate shall meet the requirements of M.01.

2. Fine Aggregate: Fine aggregate shall meet the requirements of M.01.

3. Cement:

(a) Portland: Types I, II, and III Portland cement shall meet the requirements of AASHTO M 85. Type I and Type III Portland cement shall be used only when required or expressly permitted by the Project specification or the Engineer. The use of Type I or III will require that these mixtures be submitted as Non-standard Mix Designs. All cement shall be provided by a mill participating in the Departments' Cement Certification program. The requirements of the Certification Program are detailed in the Departments' Quality Assurance Program for Materials.

(b) Pre-Blended Cements: Binary or Ternary cements consisting of Portland Cement and supplemental cementitious materials may be used provided that all the requirements of M.03.01- 3(a) and -3(c) are met.

(c) Replacement Materials: Unless already approved as a Standard Mix Design, any Contractor proposed Mix Designs with partial replacement of Portland Cement (PC) with fly ash or ground granulated blast furnace slag (GGBFS), shall be submitted in writing to the Engineer for approval prior to the start of work, on a project-by-project basis. The type of material, source, and the percentage of the PC replaced shall be clearly indicated. Upon request, a Certified Test Report for the cement replacement material shall be provided to the Engineer for use during the Mix Design review.

1. Fly Ash: Fly ash to be used as a partial replacement for Portland cement shall meet the requirements of AASHTO M 295, either Class C or Class F, including the uniformity requirements of Table 2A. Loss on Ignition for either class of fly ash shall not exceed 4.0%. Fly ash may be used to replace up to a maximum of 20% of the required Portland cement for mixes without permeability requirements. For mixes with permeability requirements, the maximum of 20% may be exceeded. The fly ash shall be substituted on a weight basis, with a minimum of 1 lb. of fly ash for 1 lb. of Portland cement. Different classes of fly ash or the same class from different sources shall not be permitted on any single project without the written approval of the Engineer.

2. **Ground Granulated Blast Furnace Slag (GGBFS):** GGBFS used as a partial replacement for Portland cement shall meet the requirements of AASHTO M 302/ASTM C989, Grade 100 or 120. As determined by the Engineer, GGBFS may be used to replace a maximum of 30% of the required Portland cement for mixes without permeability requirements. For mixes with permeability requirements, the maximum of 30% may be exceeded. The Engineer may restrict or prohibit the use of GGBFS if ambient temperatures anticipated during the placement and initial curing of the concrete are low. The GGBFS shall be substituted on a weight basis, with a minimum of 1 lb. of slag for 1 lb. of Portland cement. Different sources of GGBFS shall not be permitted on any single project without the written approval of the Engineer.

4. Water: All water used in the mixing of concrete shall be odorless and clear in appearance. Surface water may be used if not taken from shallow or muddy sources; classified as Class C or Class D on the Department of Energy and Environmental Protection (DEEP) Water Quality Classification mapping; and accommodations have been made to prevent contaminants from entering the supply to the satisfaction of the Engineer. The Engineer may request that water from any surface or ground source be tested in accordance with AASHTO T26 and AASHTO D512 if the appearance or scent of the water is suspect. To be acceptable, the pH of the water must not be less than 6.0 or greater than 8.0 and Chloride Ion Concentration of the water must not exceed 250ppm. Potable water taken directly from a municipal or regional water supply may be used for mixing concrete without testing. Heating or cooling of water may be required to meet mix temperature requirements at time of placement.

5. Admixtures: All admixtures shall perform their function without injurious effects upon the concrete. If requested by the TDC, the Contractor shall present a certified statement from a recognized laboratory attesting to this requirement. A "recognized" laboratory is any cement and concrete laboratory approved and inspected regularly by the Cement and Concrete Reference Laboratory (CCRL). The statement shall contain results of compression tests of cylinder specimens made with concrete utilizing the admixture(s) in proportions equal to those proposed by the Contractor. The results of at least 5 standard 6 inch x 12 inch cylinders of each mix design shall be listed with the results of at least 5 like-sized cylinders not utilizing the admixture(s). Specimens must be made and cured in the laboratory in accordance with AASHTO T 126 and will be tested in accordance with AASHTO T 22.

- (a) Air-Entraining Admixtures:** In the event that air entrained concrete is required, an admixture meeting the requirements of AASHTO M 154 may be used. Tests for 7 and 28-day compressive and flexural strengths and resistance to freezing and thawing are required whereas tests for bleeding, bond strength and volume change will not be required.
- (b) Other Chemical Admixtures:** In the event that concrete properties are specified that require the use of additional admixtures, or the Contractor proposes the use of additional admixtures to facilitate placement, the admixtures shall meet the requirements of AASHTO M194M/M, including the 1 year performance data.

M.03.02—Mix Design Requirements

1. Standard ConnDOT Mix Designs: Standard Mix Designs shall be designed in accordance with applicable sections of ACI 211 and ACI 318. The mixtures shall consist of Portland cement, fine aggregate, coarse aggregate, admixtures, and water proportioned in accordance with Table M.03.02-1. The mixtures shall also be designed to obtain the plastic properties of Portland cement concrete as specified in Table 6.01.03-2.

Table M.03.02-1 Standard Portland Cement Concrete Mixes

Class ¹	Max. Water/Cement ² ratio	Min. Cement ² Content - lb./c.y.	Air Content %	Electrical Resistivity (Permeability) kΩ-cm AASHTO T 358
PCC0223Z	0.69	455	6 +/- 1.5	NA
PCC0334Z	0.48	615		NA
PCC0336Z	0.50	564		NA
PCC0354Z	0.49	615		NA
PCC0446Z	0.44	658		NA
PCC04462	0.42			29 minimum
PCC0556Z	0.40			NA
PCC05562	0.40			29 minimum
PCCXXX81 ³	0.46			7.5 +/- 1.5
PCCXXX82	0.40	29 minimum		

¹ PCCXYZ where:

PCC = Portland Cement Concrete

XXX = 28-day minimum compressive strength (psi/100)

Y = Nominal Maximum Aggregate Size (U.S. Sieve No. Designation)

Z = Exposure Factor (See Table M.03.02-1a)

² Portland Cement may be partially replaced within a Standard Mix Design by other approved cementitious material meeting the requirements of M.03.01-3(c) if permitted by the Engineer.

³ When this class is paid for in a surface or structural repair concrete item, the plastic properties necessary for confined placement to ensure appropriate workability for consolidation within the forms shall be noted on the delivery ticket by the concrete supplier.

Table M.03.02-1a Exposure Factor per Application

Exposure		Application
0	Benign	Elements not exposed to weather (buried, enclosed)
1	Moderate	Elements not in contact with salt water or deicing chemicals
2	Severe	Elements in contact with salt water, deicing chemicals, flowing/standing water

Mix designs shall indicate the dosage of admixtures anticipated to provide plastic properties required in the Project specification. Plastic properties of standard mix classes of concrete in the plastic state are listed in Table 6.01.03-2.

Standard Mix Designs are required to be designed and submitted by the concrete producers, and are approved by the Department on a standing basis. Submittal or re-approval of these Standard Mix Designs on an annual basis is not required. Previously approved producer-designed Standard Mixes that have a record of satisfactory performance may be utilized on Department projects unless there is a change in the gravimetric properties or the sources of any materials. Revisions to the Standard Mix Designs, which include changes in component sources, can be submitted at any time to the TDC, but must be approved prior to use on Department projects.

2. Non-Standard CTDOT Mix Designs: Any proposed Mix Designs that do not comply with Table M.03.02-1 are required to be submitted 15 days prior to use on a project-by-project basis and be approved by the TDC prior to use. The use of an approved admixture with an otherwise approved Standard Mix Design is not considered non-standard.

All Non-standard Mix Designs used for load-bearing structures shall contain a minimum of 658 lb./c.y. of cementitious materials.

Concrete used in applications such as flowable fill or controlled low-strength material may be designed with less than 658 lb./c.y. of cementitious materials.

M.03.03—Producer Equipment and Production Requirements

1. General Requirements: The source of the concrete must be approved by the Engineer prior to use on Department projects. Specifically the location and capacity of the central mix or dry batch plant, and complement of truck mixers/haulers, shall be adequate for continuous placement of concrete on a typical Department project. Approval may be revoked at any time in accordance with 1.06.01.

- (a) **Inspection:** The production facility supplying hydraulic cement concrete shall have a current Certification of Ready Mixed Concrete Production Facilities from the National Ready Mixed Concrete Association (NRMCA), or equivalent certification approved by the Engineer.
- (b) In addition to the requirements of approved third party certification, the facility shall produce batch tickets that meet the requirements of 6.01.03-3(a).
- (c) **Quality Control:** The Contractor is responsible for all aspects of Quality Control (QC). As determined by the Engineer, should material delivered to a project not meet specification, the Contractor may be required to submit to the Engineer a corrective procedure for approval within 3 calendar days. The procedure shall address any minor adjustments or corrections made to the equipment or procedures at the facility.
- (d) **Suspension:** As determined by the Engineer, repeated or frequent delivery of deficient material to a Department project may be grounds for suspension of that source of material. A detailed QC plan that describes all QC policies and procedures for that facility may be

required to formally address quality issues. This plan must be approved by the Engineer and fully implemented, prior to reinstatement of that facility.

2. Hand Mixed Concrete: Hand mixing shall be permitted only with the permission of the Engineer. Hand mixed batches shall not exceed 1/2 c.y. in volume. Hand mixing will not be permitted for concrete to be placed under water.

M.03.04—Curing Materials

1. Water: Any water source deemed acceptable by the Engineer for mixing concrete may be used to provide water for curing purposes. Surface water may be used if classified as Class C or Class D on the Department of Energy and Environmental Protection (DEEP) Water Quality Classification mapping and accommodations have been made to prevent contaminants from entering the supply to the satisfaction of the Engineer. In general, water shall not be taken from shallow or muddy sources. In cases where sources of supply are relatively shallow, the intake pipe shall be enclosed to exclude silt, mud, grass, etc.; and the water in the enclosure shall be maintained at a depth of not less than 2 feet under the intake pipe.

2. Mats: Mats for curing concrete shall be capable of maintaining moisture uniformly on the surface of the concrete. The mats shall not contain any materials such as dyes, sugar, etc., that may be injurious to the concrete.

The length or width of the mats shall be sufficient to cover all concrete surfaces being cured. Should more than one mat be required, sufficient overlap shall be provided by the Contractor as determined by the Engineer.

3. Liquid Membrane-Forming Compound: Liquid membrane-forming compound shall meet the requirements of AASHTO M 148 Type 2, Class B, or shall be a water-soluble linseed oil-based compound meeting the requirements of AASHTO M 148, Type 2.

4. White Polyethylene Sheeting (Film): White polyethylene sheeting (film) shall meet the requirements of AASHTO M 171.

M.03.05—Non Shrink, Non Staining Grout

1. Bagged (pre-mixed): Bagged (pre-mixed) formulations of non-shrink grout shall meet the requirements of ASTM C1107. The grout shall be mixed with potable water for use. The grout shall be mixed to a flowable consistency as determined by ASTM C230. All bagged material shall be clearly marked with the manufacturer's name, date of production, batch number, and written instructions for proper mixing, placement and curing of the product.

2. Bulk: The Contractor may formulate and design a grout mix for use on the Project in lieu of using a pre-bagged product. The Contractor shall obtain prior written approval of the Engineer for any such proposed Mix Design. Any such Mix Design shall include the proportions of hydraulic cement, potable water, fine aggregates, expansive agent, and any other necessary additive or admixture. This material shall meet all of the same chemical and physical requirements as shall the pre-bagged grout, in accordance with ASTM C1107.

M.03.06—Expansive Cement for Anchoring

The premixed anchoring cement shall be non-metallic, concrete gray in color and prepackaged. The mix shall consist of hydraulic cement, fine aggregate, expansive admixtures and water meeting the following requirements:

1. The anchoring cement shall have a minimum 24 hour compressive strength of 2,600 psi when tested in accordance with ASTM C109.

2. The water content of the anchoring cement shall be as recommended by the manufacturer. Water shall meet the requirements of M.03.01-4.

The Contractor shall provide a Certified Test Report and Materials Certificate for the premixed anchoring cement in accordance with 1.06.07. The Contractor shall also provide, when requested by the Engineer, samples of the premixed anchoring cement for testing and approval.

M.03.07—Chemical Anchors

Chemical anchor material must be listed on the Departments' Qualified Products List and approved by the Engineer for the specified use.

The chemical anchor material shall be epoxy or polyester polymer resin. It shall not contain any metals or other products that promote corrosion of steel. The Contractor shall supply the Engineer with a Certified Test Report and Materials Certificate for the chemical anchor material in accordance with 1.06.07. When requested by the Engineer, the Contractor shall also provide samples of the chemical anchor material.

M.03.08—Joint Materials

1. Transverse Joints for Concrete Pavement: Transverse joints shall consist of corrosion resistant load transfer devices, poured joint seal and in addition, in the case of expansion joints, expansion joint filler all meeting the following requirements:

- (a) The corrosion resistant load transfer device shall be coated steel or sleeved steel or be made of corrosion resistant material. The dimensions of any devices used shall be as shown on the plans, exclusive of any coating or sleeving. Core material of coated or sleeved metallic devices shall be steel meeting the requirements of AASHTO M 255M/M 255 Grade 520, or steel having equal or better properties and approved by the Engineer. Nonmetallic devices shall meet the various strength requirements applicable to metallic devices as well as all other requirements stated herein.
- (b) All coated load transfer devices shall meet the requirements of AASHTO M 254. Uncoated or sleeved load transfer devices shall meet the applicable physical requirements of AASHTO M 254. The use of field applied bond breakers will not be permitted.
- (c) The basis of acceptance for corrosion resistant load transfer devices shall be the submission by the Contractor of a minimum of 2 samples accompanied by Certified Test Reports meeting the requirements of 1.06.07 demonstrating that the load transfer device meets the requirements of AASHTO M 254 for the type of device supplied. The Engineer reserves the right to reject any load transfer device deemed unsatisfactory for use.

2. Joint Filler for Concrete Curbing: Expansion joint filler shall be either preformed expansion joint filler or wood joint filler as indicated on the plans and shall meet the following requirements:

- (a) Preformed expansion joint filler shall be the bituminous cellular type and shall meet the requirements of AASHTO M 213.
- (b) Boards for wood joint filler shall have 2 planed sides and shall be redwood, cypress or white pine. Redwood and cypress boards shall be of sound heartwood. White pine boards shall be of sound sapwood. Occasional small, sound knots and medium surface checks will be permitted provided the board is free of any defects that will impair its usefulness for the purpose intended. The joint filler may be composed of more than one length of board in the length of the joint, but no board of a length less than 6 feet shall be used; and the

separate boards shall be held securely to form a straight joint. Boards composed of pieces that are jointed and glued shall be considered as one board.

- (c) Dimensions shall be as specified or shown on the plans; and tolerances of plus 1/16 inch thickness, plus 1/8 inch depth and plus 1/4 inch length will be permitted.
- (d) All wood joint filler boards shall be given a preservative treatment by brushing with creosote oil meeting the requirements of AASHTO M 133. After treatment, the boards shall be stacked in piles, each layer separated from the next by spacers at least 1/4 inch thick; and the boards shall not be used until 24 hours after treatment. Prior to concreting, all exposed surfaces of the wood filler shall be given a light brush coating of form oil.
- (e) Testing of board expansion joint filler shall be in accordance with pertinent sections of AASHTO T 42.

3. Longitudinal Joint Devices: The metal used in the fabrication of longitudinal joint devices shall meet ASTM requirements for each type of metal used. The dimensions shall be as shown on the plans.

4. Expansion Joint Fillers for Bridges and Bridge Bearings:

- (a) Preformed expansion joint filler for bridges shall meet the requirements of AASHTO M 153, Type I or Type II.
- (b) Pre-molded expansion joint filler for bridge bearings shall meet the requirements of AASHTO M 33.

5. Joint Sealants:

(a) **Joint Sealer for Pavement:** The joint sealer for pavement shall be a rubber compound of the hot-poured type and shall meet the requirements of AASHTO M 324 Type II unless otherwise noted on the plans or in the special provisions.

(b) **Joint Sealer for Structures:** Structure joint sealers shall be one of the following type sealants:

1. Where "Joint Seal" is specified on the plans, it shall meet the requirements of the Federal Specifications SS-S-200-E (Self-leveling type), TT-S-0227E (COM-NBS) Type II-Class A (Non-sag type), or 1 component polyurethane-base elastomeric sealants conforming to FS TT-S-00230C Type II-Class A or an approved equal.

A Certified Test Report will be required in accordance with 1.06.07, certifying that the sealant meets the requirements set forth in the Federal Specification. Should the consignee noted on a Certified Test Report be other than the Prime Contractor, a Materials Certificate shall be required to identify the shipment.

2. Where "Silicone Joint Sealant" is specified on the plans, it shall be one of the following or an approved equal:
 - i. Sealant, manufactured by the Dow Corning Corporation, Midland, Michigan 48686-0994
 - ii. Dow Corning 888 Silicone Joint Sealant or
 - iii. Dow Corning 888-SL Self-Leveling Silicone Joint 48686-0994

6. Closed Cell Elastomer: The closed cell elastomer shall meet the requirements of ASTM D1056, Grade RE-41 B2. The elastomer shall have a pressure-sensitive adhesive backing on one side.

The Contractor shall deliver the closed cell elastomer to the job site a minimum of 30 days prior to installation. Prior to the delivery of the closed cell elastomer, the Contractor shall notify the Engineer of the date of shipment and the expected date of delivery. Upon delivery of the closed cell elastomer to the job site, the Contractor shall immediately notify the Engineer.

Each separate length, roll or container shall be clearly tagged or marked with the manufacturer's name, trademark and lot number. A lot is defined as that amount of closed cell elastomer manufactured at 1 time from 1 batch of elastomer. A batch is defined as that amount of elastomer prepared and compounded at 1 time. The Contractor shall furnish a Certified Test Report in accordance with 1.06.07, confirming that the closed cell elastomer meets the requirements set forth in these specifications. Should the co-signee noted on a Certified Test Report be other than the Prime Contractor, a Materials Certificate shall be required to identify shipment.

The Contractor shall furnish a 1 foot length of closed cell elastomer in each lot for purposes of inspection and testing by the Engineer. The Engineer will cut a 1 foot sample from each lot and inspect the sample for conformance to size, and perform physical tests on the sample as deemed necessary.

The Engineer shall reject any lot or portion of a lot that does not meet the requirements stated herein. A rejected lot or portion of a lot may be resubmitted provided the Contractor has removed or corrected, in a manner acceptable to the Engineer, all non-conforming material.

M.03.09—Protective Compound/Sealers

The brand and type of material must be listed on the Department's Qualified Products List and approved by the Engineer for the specified use.

M.03.10—Formwork

1. Stay-in-place Forms: Material for stay-in-place metal forms shall be made of zinc-coated (galvanized) steel sheet meeting ASTM Specification A653 (Structural Steel (SS) Grade 33 through 80). The minimum thickness shall be 20 gauge. Coating weight shall meet the requirements of ASTM A924, Class G235, and shall otherwise meet all requirements relevant to steel stay-in-place metal forms and the placing of concrete as specified herein and as noted in the Contract.

Form supports shall either be fabricated and meet the same material requirements as the forms, or be fabricated from structural steel meeting the requirements of ASTM A36 and shall be hot-dip galvanized in accordance with ASTM A123.

Lightweight filler material for forms shall be as recommended by the form manufacturer.

2. Temporary Forms and Falsework: Forms and Falsework shall be of wood, steel or other material approved by the Engineer. This approval does not relieve the Contractor from employing adequately sized materials of sufficient rigidity to prevent objectionable distortion of the formed concrete surfaces caused by pressure of the plastic concrete and other loads incidental to the construction operations.

SECTION M.04 - BITUMINOUS CONCRETE MATERIALS

Section M.04 is being deleted in its entirety and replaced with the following:

M.04.01—Bituminous Concrete Materials and Facilities

M.04.02—Mix Design and Job Mix Formula (JMF)

M.04.03—Production Requirements

M.04.01—Bituminous Concrete Materials and Facilities: Each source of material, Plant, and laboratory used to produce and test bituminous concrete must be qualified on an annual basis by the Engineer. AASHTO or ASTM Standards noted with an (M) have been modified and are detailed in Table M.04.03-5.

Aggregates from multiple sources of supply must not be blended or stored in the same stockpile.

1. Coarse Aggregate: All coarse aggregate shall meet the requirements listed in M.01.

2. Fine Aggregate: All fine aggregate shall meet the requirements listed in M.01.

3. Mineral Filler: Mineral filler shall conform to the requirements of AASHTO M 17.

4. Performance Graded (PG) Asphalt Binder:

(a) General:

- i. PG asphalt binder shall be uniformly mixed and blended and be free of contaminants such as fuel oils and other solvents. Binder shall be properly heated and stored to prevent damage or separation.
- ii. The binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29. The Contractor shall submit a Certified Test Report and bill of lading representing each delivery in accordance with AASHTO R 26(M). The Certified Test Report must also indicate the binder specific gravity at 77°F; rotational viscosity at 275°F and 329°F; and the mixing and compaction viscosity-temperature chart for each shipment.
- iii. The Contractor shall submit the name(s) of personnel responsible for receipt, inspection, and record keeping of PG binder. Contractor Plant personnel shall document specific storage tank(s) where binder will be transferred and stored until used and provide binder samples to the Engineer upon request. The person(s) shall assure that each shipment is accompanied by a statement certifying that the transport vehicle was inspected before loading was found acceptable for the material shipped and that the binder is free of contamination from any residual material, along with 2 copies of the bill of lading.
- iv. The blending or combining of PG binders in 1 storage tank at the Plant from different suppliers, grades, or additive percentages is prohibited.

(b) Basis of Approval: The request for approval of the source of supply shall list the location where the material will be manufactured, and the handling and storage methods, along with necessary certification in accordance with AASHTO R 26(M). Only suppliers/refineries that have an approved “Quality Control Plan for Performance Graded Binders” formatted in accordance with AASHTO R 26(M) may supply PG binders to Department projects.

(c) Standard Performance Grade (PG) Binder:

- i. Standard PG binder shall be defined as “Neat.” Neat PG binders shall be free from modification with: fillers, extenders, reinforcing agents, adhesion promoters,

thermoplastic polymers, acid modification and other additives such as re-refined motor oil, and shall indicate such information on each bill of lading and Certified Test Report.

- ii. The standard asphalt binder shall be PG 64S-22.

(d) Modified Performance Grade (PG) Binder: The modified asphalt binder shall be Performance Grade PG 64E-22 asphalt modified solely with a Styrene-Butadiene-Styrene (SBS) polymer. The polymer modifier shall be added at either the refinery or terminal and delivered to the bituminous concrete production facility as homogenous blend. The stability of the modified binder shall be verified in accordance with ASTM D7173 using the Dynamic Shear Rheometer (DSR). The DSR $G^*/\sin(\delta)$ results from the top and bottom sections of the ASTM D7173 test shall not differ by more than 10%. The results of ASTM D7173 shall be included on the Certified Test Report. The binder shall meet the requirements of AASHTO M 332 (including Appendix X1) and AASHTO R 29.

(e) Warm Mix Additive or Technology:

- i. The warm mix additive or technology must be listed on the North East Asphalt User Producer Group (NEAUPG) Qualified Warm Mix Asphalt (WMA) Technologies List at the time of bid, which may be accessed online at <http://www.neaupg.uconn.edu>.
- ii. The warm mix additive shall be blended with the asphalt binder in accordance with the manufacturer's recommendations.
- iii. The blended binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29 for the specified binder grade. The Contractor shall submit a Certified Test Report showing the results of the testing demonstrating the binder grade. In addition, it must include the grade of the virgin binder, the brand name of the warm mix additive, the manufacturer's suggested rate for the WMA additive, the water injection rate (when applicable), and the WMA Technology manufacturer's recommended mixing and compaction temperature ranges.

5. Emulsified Asphalts:

(a) General:

- i. The emulsified asphalt shall meet the requirements of AASHTO M 140(M) or AASHTO M 208 as applicable.
- ii. The emulsified asphalts shall be free of contaminants such as fuel oils and other solvents.
- iii. The blending at mixing Plants of emulsified asphalts from different suppliers is prohibited.

(b) Basis of Approval:

- i. The request for approval of the source of supply shall list the location where the material is manufactured, the handling and storage methods, and certifications in accordance with AASHTO R 77. Only suppliers that have an approved "Quality Control Plan for Emulsified Asphalt" formatted in accordance with AASHTO R 77 and that submit monthly split samples per grade to the Engineer may supply emulsified asphalt to Department projects.
- ii. Each shipment of emulsified asphalt delivered to the Project site shall be accompanied with the corresponding Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon at 77°F and Material Certificate.
- iii. Anionic emulsified asphalts shall meet the requirements of AASHTO M-140. Materials

used for tack coat shall not be diluted and meet grade RS-1 or RS-1h. When ambient temperatures are 80°F and rising, grade SS-1 or SS-1h may be substituted if permitted by the Engineer.

- iv. Cationic emulsified asphalt shall meet the requirements of AASHTO M-208. Materials used for tack coat shall not be diluted and meet grade CRS-1. The settlement and demulsibility test will not be performed unless deemed necessary by the Engineer. When ambient temperatures are 80°F and rising, grade CSS-1 or CSS-1h may be substituted if permitted by the Engineer.

6. Reclaimed Asphalt Pavement (RAP):

(a) General: RAP is a material obtained from the cold milling or removal and processing of bituminous concrete pavement. RAP material shall be crushed to 100% passing the 1/2 inch sieve and free from contaminants such as joint compound, wood, plastic, and metals.

(b) Basis of Approval: The RAP material will be accepted on the basis of one of the following criteria:

- i. When the source of all RAP material is from pavements previously constructed on Department projects, the Contractor shall provide a Materials Certificate listing the detailed locations and lengths of those pavements and that the RAP is only from those locations listed.
- ii. When the RAP material source or quality is not known, the Contractor shall request approval from the Engineer at least 30 calendar days prior to the start of the paving operation. The request shall include a Material Certificate and applicable test results stating that the RAP consists of aggregates that meet the specification requirements of M.04.01-1 through M.04.01-3 and that the binder in the RAP is substantially free of solvents, tars and other contaminants. The Contractor is prohibited from using unapproved material on Department projects and shall take necessary action to prevent contamination of approved RAP stockpiles. Stockpiles of unapproved material shall remain separate from all other RAP materials at all times. The request for approval shall include the following:
 - 1. A 50-lb. sample of the RAP to be incorporated into the recycled mixture.
 - 2. A 25-lb. sample of the extracted aggregate from the RAP.

7. Crushed Recycled Container Glass (CRCG):

(a) Requirements: The Contractor may propose to use clean and environmentally-acceptable CRCG in an amount not greater than 5% by weight of total aggregate.

(b) Basis of Approval: The Contractor shall submit to the Engineer a request to use CRCG. The request shall state that the CRCG contains no more than 1% by weight of contaminants such as paper, plastic, and metal and conforms to the following gradation:

CRCG Grading Requirements	
<u>Sieve Size</u>	<u>Percent Passing</u>
3/8 inch	100
No. 4	35-100
No. 200	0.0-10.0

The Contractor shall submit a Material Certificate to the Engineer stating that the CRCG complies with all the applicable requirements in this Section.

8. Joint Seal Material: Joint seal material must meet the requirements of ASTM D6690 - Type 2. The Contractor shall submit a Material Certificate in accordance with 1.06.07 certifying that the joint seal material meets the requirements of this Section.

9. Recycled Asphalt Shingles (RAS): RAS shall consist of processed asphalt roofing shingles from post-consumer asphalt shingles or from manufactured shingle waste. The RAS material under consideration for use in bituminous concrete mixtures must be certified as being asbestos-free and shall be entirely free of whole, intact nails. The RAS material shall meet the requirements of AASHTO MP 23.

The Producer shall test the RAS material to determine the asphalt content and the gradation of the RAS material. The Producer shall take necessary action to prevent contamination of RAS stockpiles.

The Contractor shall submit a Material Certificate to the Engineer stating that the RAS complies with all the applicable requirements in this Section.

10. Plant Requirements:

(a) General: The Plant producing bituminous concrete shall comply with AASHTO M 156.

(b) Storage Silos: The Contractor may use silos for short-term storage with the approval of the Engineer. A storage silo must have heated cones and an unheated silo cylinder if it does not contain a separate internal heating system. When multiple silos are filled, the Contractor shall discharge 1 silo at a time. Simultaneous discharge of multiple silos for the same Project is not permitted.

Type of silo cylinder	Maximum storage time for all classes (hr)	
	<u>HMA</u>	<u>WMA/PMA</u>
Open Surge	4	Mfg Recommendations*
Unheated - Non-insulated	8	Mfg Recommendations*
Unheated - Insulated	18	Mfg Recommendations*
Heated - No inert gas	TBD by the Engineer	TBD by the Engineer

*Not to exceed HMA limits

(c) Documentation System: The mixing Plant documentation system shall include equipment for accurately proportioning the components of the mixture by weight and in the proper order, controlling the cycle sequence, and timing the mixing operations. Recording equipment shall monitor the batching sequence of each component of the mixture and produce a printed record of these operations on each Plant ticket, as specified herein.

If recycled materials are used, the Plant tickets shall include their dry weight, percentage, and daily moisture content.

If a WMA Technology is added at the Plant, the Plant tickets shall include the actual dosage rate.

For drum Plants, the Plant ticket shall be produced at 5 minute intervals and maintained by the vendor for a period of 3 years after the completion of the Project.

For batch Plants, the Plant ticket shall be produced for each bath and maintained by the vendor for a period of 3 years after the completion of the Project. In addition, an asterisk (*)

shall be automatically printed next to any individual batch weight(s) exceeding the following tolerances:

Each Aggregate Component	±1.5% of individual or cumulative target weight for each bin
Mineral Filler	±0.5% of the total batch
Bituminous Material	±0.1% of the total batch
Zero Return (Aggregate)	±0.5% of the total batch
Zero Return (Bituminous Material)	±0.1% of the total batch

The entire batching and mixing interlock cut-off circuits shall interrupt and stop the automatic batching operations when an error exceeding the acceptable tolerance occurs in proportioning.

The scales shall not be manually adjusted during the printing process. In addition, the system shall be interlocked to allow printing only when the scale has come to a complete rest. A unique printed character (m) shall automatically be printed on the truck and batch plant printout when the automatic batching sequence is interrupted or switched to auto-manual or full manual during proportioning.

(d) Aggregates: Aggregate stockpiles shall be managed to prevent segregation and cross contamination. For drum Plants only, the percent moisture content, at a minimum prior to production and half way through production, shall be determined.

(e) Mixture: The dry and wet mix times shall be sufficient to provide a uniform mixture and a minimum particle coating of 95% as determined by AASTO T 195(M).

Bituminous concrete mixtures shall contain no more than 0.5% moisture when tested in accordance with AASHTO T 329.

(f) RAP: RAP moisture content shall be determined a minimum of twice daily (prior to production and halfway through production).

(g) Asphalt Binder: A binder log shall be submitted to the Department’s Central Lab on a monthly basis.

(h) Warm mix additive: For mechanically foamed WMA, the water injection rate shall be monitored during production and not exceed 2.0% by total weight of binder. For additive added at the Plant, the dosage rate shall be monitored during production.

(i) Testing Laboratory: The Contractor shall maintain a laboratory to test bituminous concrete mixtures during production. The laboratory shall have a minimum of 300 s.f., have a potable water source and drainage in accordance with the CT Department of Public Health Drinking Water Division, and be equipped with all necessary testing equipment as well as with a PC, printer, and telephone with a dedicated hard-wired phone line. In addition, the PC shall have a high speed internet connection and a functioning web browser with unrestricted access to <https://ctmail.ct.gov> . This equipment shall be maintained in working order at all times and be made available for use by the Engineer.

The laboratory shall be equipped with a heating system capable of maintaining a minimum temperature of 65°F. It shall be clean and free of all materials and equipment not associated with the laboratory. Sufficient light and ventilation must be provided. During summer months

adequate cooling or ventilation must be provided so the indoor air temperature shall not exceed the ambient outdoor temperature.

The laboratory testing apparatus, supplies, and safety equipment shall be capable of performing all the applicable tests in their entirety that are referenced in AASHTO R 35 and AASHTO M 323. The Contractor shall ensure that the Laboratory is adequately supplied at all times during the course of the Project with all necessary testing materials and equipment.

The Contractor shall maintain a list of laboratory equipment used in the acceptance testing processes including, but not limited to, balances, scales, manometer/vacuum gauge, thermometers, and gyratory compactor, clearly showing calibration and/or inspection dates, in accordance with AASHTO R 18. The Contractor shall notify the Engineer if any modifications are made to the equipment within the laboratory. The Contractor shall take immediate action to replace, repair, or recalibrate any piece of equipment that is out of calibration, malfunctioning, or not in operation.

M.04.02—Mix design and Job Mix Formula (JMF)

1. Curb Mix:

(a) Requirements: The Contractor shall use bituminous concrete that meets the requirements of Table M.04.02-1. RAP may be used in 5% increments by weight up to 30%.

(b) Basis of Approval: Annually, an approved JMF based on a mix design for curb mix must be on file with the Engineer prior to use.

The Contractor shall test the mixture for compliance with the submitted JMF and Table M.04.02-1. The maximum theoretical density (Gmm) will be determined by AASHTO T 209. If the mixture does not meet the requirements, the JMF shall be adjusted within the ranges shown in Table M.04.02-1 until an acceptable mixture is produced.

An accepted JMF from the previous operating season may be acceptable to the Engineer provided that there are no changes in the sources of supply for the coarse aggregate, fine aggregate, recycled material (if applicable) and the Plant operation had been consistently producing acceptable mixture.

Any change in component source of supply or consensus properties must be approved by the Engineer. A revised JMF shall be submitted prior to use.

**TABLE M.04.02-1:
Control Points for Curb Mix Mixtures**

Mix	Curb Mix	Production Tolerances from JMF Target
Grade of PG Binder content %	PG 64S-22 6.5 - 9.0	0.4
Sieve Size		
No. 200	3.0 - 8.0 (b)	2.0
No. 50	10 - 30	4
No. 30	20 - 40	5
No. 8	40 - 70	6
No. 4	65 - 87	7
1/4 inch		
3/8 inch	95 - 100	8
1/2 inch	100	8
3/4 inch		8
1 inch		
2 inch		
Additionally, the fraction of material retained between any 2 consecutive sieves shall not be less than 4%.		
Mixture Temperature		
Binder	325°F maximum	
Aggregate	280-350°F	
Mixtures	265-325°F	
Mixture Properties		
Air Voids (VA) %	0 – 4.0 (a)	
Notes: (a) Compaction Parameter 50 gyrations (N_{des}) (b) The percent passing the No. 200 sieve shall not exceed the percentage of bituminous asphalt binder.		

2. Superpave Design Method – S0.25, S0.375, S0.5, and S1:

(a) **Requirements:** All designated mixes shall be designed using the Superpave mix design method in accordance with AASHTO R 35. A JMF based on the mix design shall meet the requirements of Tables M.04.02-2 to M.04.02-5. Each JMF and component samples must be submitted no less than 7 days prior to production and must be approved by the Engineer prior to use. All JMFs expire at the end of the calendar year.

All aggregate component consensus properties and tensile strength ratio (TSR) specimens shall be tested at an AASHTO Materials Reference Laboratory (AMRL) by NETTCP Certified Technicians.

All bituminous concrete mixes shall be tested for stripping susceptibility by performing the TSR test procedure in accordance with AASHTO T 283(M) at a minimum every 36 months. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. A minimum of 45000 grams of laboratory or plant blended mixture and the

corresponding complete Form MAT-412s shall be submitted to the Division of Material Testing (DMT) for design TSR testing verification. The mixture submitted shall be representative of the corresponding mix design as determined by the Engineer.

- i. Superpave Mixtures with RAP: RAP may be used with the following conditions:
 - RAP amounts up to 15% may be used with no binder grade modification.
 - RAP amounts up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
 - Two (2) representative samples of RAP shall be obtained. Each sample shall be split, and 1 split sample shall be tested for binder content in accordance with AASHTO T 164 and the other in accordance with AASHTO T 308.
 - RAP material shall not be used with any other recycling option.
- ii. Superpave Mixtures with RAS: RAS may be used solely in HMA S1 mixtures with the following conditions:
 - RAS amounts up to 3% may be used.
 - RAS total binder replacement up to 15% may be used with no binder grade modification.
 - RAS total binder replacement up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
 - Superpave Mixtures with RAS shall meet AASHTO PP 78 design considerations.
- iii. Superpave Mixtures with CRCG: CRCG may be used solely in HMA S1 mixtures. One percent (1%) of hydrated lime, or other accepted non-stripping agent, shall be added to all mixtures containing CRCG. CRCG material shall not be used with any other recycling option.
- (b) Basis of Approval: The following information must be included in the JMF submittal:
 - i. Gradation, consensus properties and specific gravities of the aggregate, RAP or RAS.
 - ii. Average asphalt content of the RAP or RAS by AASHTO T 164.
 - iii. Source of RAP or RAS and percentage to be used.
 - iv. Warm mix Technology, manufacturer's recommended additive rate and tolerances, and manufacturer recommended mixing and compaction temperatures.
 - v. TSR test report and anti-strip manufacturer and recommended dosage rate if applicable.
 - vi. Mixing and compaction temperature ranges for the mix with and without the warm-mix technology incorporated.
 - vii. JMF ignition oven correction factor by AASHTO T 308.

With each JMF submittal, the following samples shall be submitted to the Division of Materials Testing:

- 4 - one (1) quart cans of PG binder, with corresponding Safety Data Sheet (SDS)
- 1 - 50 lbs. bag of RAP
- 2 - 50 lbs. bags of Plant-blended virgin aggregate

A JMF may not be approved if any of the properties of the aggregate components or mix do not meet the verification tolerances as described in the Department's current QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures.

Any material based on a JMF, once approved, shall only be acceptable for use when it is produced by the designated Plant, it utilizes the same components, and the production of material continues to meet all criteria as specified in Tables M.04.02-2, M.04.02-3 and M.04.02-4. A new JMF must be submitted to the Engineer for approval whenever a new component source is proposed.

Only 1 mix with 1 JMF will be approved for production at a time. Switching between approved JMF mixes with different component percentages or sources of supply is prohibited.

TABLE M.04.02-2: Superpave Master Range for Bituminous Concrete Mixture Design Criteria

Sieve	S0.25		S0.375		S0.5		S1	
	Control Points		Control Points		Control Points		Control Points	
inches	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)
2.0	-	-	-	-	-	-	-	-
1.5	-	-	-	-	-	-	100	-
1.0	-	-	-	-	-	-	90	100
3/4	-	-	-	-	100	-	-	90
1/2	100	-	100	-	90	100	-	-
3/8	97	100	90	100	-	90	-	-
No. 4	72	90	-	72	-	-	-	-
No. 8	32	67	32	67	28	58	19	45
No. 16	-	-	-	-	-	-	-	-
No. 30	-	-	-	-	-	-	-	-
No. 50	-	-	-	-	-	-	-	-
No. 100	-	-	-	-	-	-	-	-
No. 200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0
VMA (%)	16.5 ± 1		16.0 ± 1		15.0 ± 1		13.0 ± 1	
VA (%)	4.0 ± 1		4.0 ± 1		4.0 ± 1		4.0 ± 1	
Gse	JMF value		JMF value		JMF value		JMF value	
Gmm	JMF ± 0.030		JMF ± 0.030		JMF ± 0.030		JMF ± 0.030	
Dust / effective binder	0.6 - 1.2		0.6 - 1.2		0.6 - 1.2		0.6 - 1.2	
TSR	≥ 80%		≥ 80%		≥ 80%		≥ 80%	
T-283 Stripping	Minimal as determined by the Engineer							

(c) Mix Status: Each facility will have each type of bituminous concrete mixture rated based on the results of the previous year of production. Mix status will be provided to each bituminous concrete Producer prior to the beginning of the paving season.

The rating criteria are based on compliance with Air Voids and Voids in Mineral Aggregate (VMA) as indicated in Table M.04.03-4 and are calculated as follows:

Criteria A: Percentage of acceptance test results with compliant air voids.

Criteria B: The average of the percentage of acceptance results with compliant VMA and the percentage of acceptance results with compliant air voids.

The final rating assigned will be the lower of the rating obtained with Criteria A or Criteria B.

Mix status is defined as:

“A” – Approved: Assigned to each mixture type from a production facility with a current rating of 70% or greater, or to each mixture type completing a successful PPT.

“PPT” – Pre-Production Trial: Temporarily assigned to each mixture type from a production facility when:

1. there are no compliant acceptance production test results submitted to the Department from the previous year;
2. there is a source change in one or more aggregate components;
3. there is a component percentage change of more than 5% by weight;
4. there is a change in RAP percentage;
5. the mixture has a rating of less than 70% from the previous season;
6. it is a new JMF not previously submitted; or
7. the average of 10 consecutive acceptance results for VFA, Density to N_{ini} or dust to effective binder ratio does not meet the criteria in tables M.04.02-2 and M.04.02-4.

Bituminous concrete mixtures rated with a “PPT” status cannot be used on Department projects. Testing shall be performed by the Producer with NETTCP certified personnel on material under this status. Test results must confirm that specification requirements in Tables M.04.02-2 through M.04.02-4 are met and the binder content (Pb) meets the requirements in Table M.04.03-2 before material can be used. One of the following methods must be used to verify the test results:

Option A: Schedule a day when a Department Inspector can be at the facility to witness testing

Option B: When the Contractor or their representative performs testing without being witnessed by an Inspector, the Contractor shall submit the test results and a split sample including 2 gyratory molds, 5,000 grams of boxed bituminous concrete, and 5,000 grams of cooled loose bituminous concrete for verification testing and approval

Option C: When the Contractor or their representative performs testing without being witnessed by a Department Inspector, the Engineer may verify the mix in the Contractor’s laboratory

Witnessing or verifying by the Department of compliant test results will change the mix’s status to “A”

The differences between the Department’s test results and the Contractor’s must be within the “C” tolerances included in the [Department’s QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures](#) in order to be verified.

“U” – Not Approved: Status assigned to a type of mixture that does not have an approved JMF. Bituminous concrete mixtures with a “U” status cannot be used on Department projects.

**TABLE M.04.02-3:
Superpave Consensus Properties Requirements for Combined Aggregate**

Traffic Level	Design ESALs (80kN) Millions	Coarse Aggregate Angularity ⁽¹⁾	Fine Aggregate Angularity AASHTO T 304, Method A Minimum %	Flat and Elongated Particles ⁽²⁾ ASTM D4791, Maximum %	Sand Equivalent AASHTO T 176, Minimum %
		ASTM D5821, Minimum %			
1	< 0.3	55/- -	40	10	40
2	0.3 to < 3.0	75/- -	40	10	40
3	≥ 3.0	95/90	45	10	45

Notes:
⁽¹⁾ 95/90 denotes that a minimum of 95% of the coarse aggregate, by mass, shall have one fractured face and that a minimum of 90% shall have two fractured faces.
⁽²⁾ Criteria presented as maximum Percent by mass of flat and elongated particles of materials retained on the No. 4 sieve, determined at 5:1 ratio.

TABLE M.04.02-4: Superpave Traffic Levels and Design Volumetric Properties

Traffic Level	Design ESALs (million)	Number of Gyration by Superpave Gyrotory Compactor			Percent Density of Gmm from HMA/WMA Specimen			Voids Filled with Asphalt (VFA) Based on Nominal Mix Size - Inch			
		N _{ini}	N _{des}	N _{max}	N _{ini}	N _{des}	N _{max}	0.25	0.375	0.5	1
1	<0.3	6	50	75	≤91.5	96.0	≤98.0	70-80	70-80	70-80	67-80
2	0.3 to <3.0	7	75	115	≤90.5	96.0	≤98.0	65-78	65-78	65-78	65-78
3	≥3.0	7	75	115	≤90.0	96.0	≤98.0	65-77	65-76	65-75	65-75

**TABLE M.04.02-5:
Superpave Minimum Binder Content by Mix Type and Level**

Mix Type	Level	Binder Content Minimum
S0.25	1	5.80
S0.25	2	5.70
S0.25	3	5.70
S0.375	1	5.70
S0.375	2	5.60
S0.375	3	5.60
S0.5	1	5.10
S0.5	2	5.00
S0.5	3	5.00
S1	1	4.60
S1	2	4.50
S1	3	4.50

M.04.03—Production Requirements:

1. Standard Quality Control Plan (QCP) for Production: The QCP for production shall describe the organization and procedures, which the Contractor shall use to administer quality control. The QCP shall include the procedures used to control the production process, to determine when immediate changes to the processes are needed, and to implement the required changes. The QCP must detail the inspection, sampling and testing protocols to be used, and the frequency for each.

Control Chart(s) shall be developed and maintained for critical aspect(s) of the production process as determined by the Contractor. The control chart(s) shall identify the material property, applicable upper and lower control limits, and be updated with current test data. As a minimum, the following quality characteristics shall be included in the control charts:

- percent passing No. 4 sieve
- percent passing No. 200 sieve
- binder content
- air voids
- Gmm
- Gse
- VMA

The control chart(s) shall be used as part of the quality control system to document variability of the bituminous concrete production process. The control chart(s) shall be submitted to the Engineer the first day of each month.

The QCP shall also include the name and qualifications of a Quality Control Manager. The Quality Control Manager shall be responsible for the administration of the QCP, including compliance with the plan and any plan modifications.

The Contractor shall submit complete production testing records to the Engineer within 24 hours in a manner acceptable to the Engineer.

The QCP shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QCP must also include a list of sampling and testing methods and frequencies used during production, and the names of all Quality Control personnel and their duties.

Approval of the QCP does not imply any warranty by the Engineer that adherence to the plan will result in production of bituminous concrete that complies with these specifications. The Contractor shall submit any changes to the QCP as work progresses.

2. Acceptance Requirements:

(a) General:

For those mixes with a total estimated project tonnage over 500 tons, a NETTCP HMA Paving Inspector certified Contractor representative shall obtain a field sample of the material placed at the project site in accordance with AASHTO T 168 using the procedure indicated in Section 5.2.3 or an alternate procedure approved by the Engineer. Sampling from the truck at the Plant in accordance with AASHTO T 168 using the procedure indicated in Section 5.2.2 will be allowed for those mixes with a total estimated project tonnage equal to or less than 500 tons. Regardless of sampling location, the sample shall be quartered by the Contractor in accordance with AASHTO R 47 and placed in an approved container. The container shall be sealed with a security tape provided by the Department and labelled to include the project number, date of paving, mix type, lot and subplot numbers and daily tonnage. The minimum weight of each quartered sample shall be 14000 grams. The Contractor shall transport one of the containers to the Departments Central Laboratory in Rocky Hill, retain one of the sealed containers for potential use in dispute resolution and test the remaining samples for acceptance in accordance with past practice.

The Contractor shall submit all acceptance tests results to the Engineer within 24 hours or prior to the next day's production. All acceptance test specimens and supporting documentation must be retained by the Contractor and may be disposed of with the approval of the Engineer. All quality control specimens shall be clearly labeled and separated from the acceptance specimens.

Contractor personnel performing QC and acceptance testing must be present at the facility prior to, during, and until completion of production, and be certified as a NETTCP HMA Plant Technician or Interim HMA Plant Technician and be in good standing. Production of material for use on State projects must be suspended by the Contractor if such personnel are not present. Technicians found by the Engineer to be non-compliant with NETTCP policies and procedures or Department policies may be removed by the Engineer from participating in the acceptance testing process for Department projects until their actions can be reviewed.

Verification and dispute resolution testing will be performed by the Engineer in accordance with the Department's QA Program for Materials.

Should the Department be unable to validate the Contractor's acceptance test result(s) for a lot of material, the Engineer will use results from verification testing and re-calculate the pay adjustment for that lot. The Contractor may request to initiate the dispute resolution process in writing within 24 hours of receiving the adjustment and must include supporting documentation or test results to justify the request.

(b) Curb Mix Acceptance Sampling and Testing Procedures: Curb Mixes shall be tested by the Contractor at a frequency of 1 test per every 250 tons of cumulative production, regardless of the day of production.

When these mix designs are specified, the following acceptance procedures and AASHTO test methods shall be used:

TABLE M.04.03-1: Curb Mix Acceptance Test Procedures

Protocol	Reference	Description
1	AASHTO T 30(M)	Mechanical Analysis of Extracted Aggregate
2	AASHTO T 168	Sampling of Bituminous Concrete
3	AASHTO T 308	Binder Content by Ignition Oven Method (adjusted for aggregate correction factor)
4	AASHTO T 209(M)⁽²⁾	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
5	AASHTO T 312⁽²⁾	⁽¹⁾ Superpave Gyrotory Molds Compacted to N _{des}
6	AASHTO T 329	Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method

Notes: ⁽¹⁾ One (1) set equals 2 each of 6-inch molds. Molds to be compacted to 50 gyrations.
⁽²⁾ Once per year or when requested by the Engineer.

- i. Determination of Off-Test Status:
 1. Curb Mix is considered “off test” when the test results indicate that any single value for bitumen content or gradation are not within the tolerances shown in Table M.04.02-1 for that mixture. If the mix is “off test,” the Contractor must take immediate actions to correct the deficiency and a new acceptance sample shall be tested on the same day or the following day of production.
 2. When multiple silos are located at 1 site, mixture supplied to 1 project is considered as coming from 1 source for the purpose of applying the “off test” status.
 3. The Engineer may cease supply from the Plant when test results from 3 consecutive samples are not within the JMF tolerances or the test results from 2 consecutive samples not within the control points indicated in Table M.04.02-1 regardless of production date.
 - ii. JMF Revisions
 1. If a test indicates that the bitumen content or gradation are outside the tolerances, the Contractor may make a single JMF revision as allowed by the Engineer prior to any additional testing. Consecutive test results outside the requirements of Table M.04.02-1 JMF tolerances may result in rejection of the mixture.
 2. Any modification to the JMF shall not exceed 50% of the JMF tolerances indicated in Table M.04.02-1 for any given component of the mixture without approval of the Engineer. When such an adjustment is made to the bitumen, the corresponding production percentage of bitumen shall be revised accordingly.
- (c) Superpave Mix Acceptance:
- i. Sampling and Testing Procedures

Production Lot: The lot will be defined as one of the following types:

 - Non-PWL Production Lot for total estimated Project quantities per mixture less than 3500 tons: All mixture placed during a single continuous paving operation.
 - PWL Production Lot for total estimated Project quantities per mixture of 3500 tons or more: Each 3500 tons of mixture produced within 30 calendar days.

Production Sub Lot:

 - For Non-PWL: As defined in Table M.04.03-2
 - For PWL: 500 tons (The last sub lot may be less than 500 tons.)

Partial Production Lots (For PWL only): A Lot with less than 3500 tons due to:

- completion of the course;
- a Job Mix Formula revision due to changes in:
 - o cold feed percentages over 5%,
 - o target combined gradation over 5%,
 - o target binder over 0.15%,
 - o any component specific gravity; or
- a lot spanning 30 calendar days.

The acceptance sample(s) location(s) shall be selected using stratified - random sampling in accordance with ASTM D3665 based on:

- the total daily estimated tons of production for non-PWL lots, or
- the total size for PWL lots.

One (1) acceptance sample shall be obtained and tested per sub lot with quantities over 125 tons. The Engineer may direct that additional acceptance samples be obtained. For non-PWL lots, one (1) acceptance test shall always be performed in the last sub lot based on actual tons of material produced.

For non-PWL lots, quantities of the same mixture per Plant may be combined daily for multiple State projects to determine the number of sub lots.

The payment adjustment will be calculated as described in 4.06.

**TABLE M.04.03-2:
Superpave Acceptance Testing Frequency per Type/Level/Plant for Non-PWL Lots**

Daily Quantity Produced in Tons (Lot)	Number of Sub Lots/Tests
0 to 125	0, Unless requested by the Engineer
126 to 500	1
501 to 1,000	2
1,001 to 1,500	3
1,500 or greater	1 per 500 tons or portions thereof

The following test procedures shall be used for acceptance:

TABLE M.04.03-3: Superpave Acceptance Testing Procedures

Protocol	Procedure	Description
1	AASHTO T 168	Sampling of bituminous concrete
2	AASHTO R 47	Reducing samples to testing size
3	AASHTO T 308	Binder content by ignition oven method (adjusted for aggregate correction factor)
4	AASHTO T 30(M)	Gradation of extracted aggregate for bituminous concrete mixture
5	AASHTO T 312	⁽¹⁾ Superpave gyratory molds compacted to N_{des}
6	AASHTO T 166	⁽²⁾ Bulk specific gravity of bituminous concrete
7	AASHTO R 35	⁽²⁾ Air voids, VMA
8	AASHTO T 209(M)	Maximum specific gravity of bituminous concrete (average of 2 tests)
9	AASHTO T 329	Moisture content of bituminous concrete

- Notes:** ⁽¹⁾ One (1) set equals 2 each of 6-inch molds. Molds to be compacted to N_{max} for PPTs and to N_{des} for production testing. The first sub lot of the year shall be compacted to N_{max} .
- ⁽²⁾ Average value of 1 set of 6-inch molds.

If the average ignition oven corrected binder content differs by 0.3% or more from the average of the Plant ticket binder content in 5 consecutive tests regardless of the production date (moving average), the Contractor shall immediately investigate, determine an assignable cause, and correct the issue. When 2 consecutive moving average differences are 0.3% or more and no assignable cause has been established, the Engineer may require a new ignition oven aggregate correction factor to be performed or to adjust the current factor by the average of the differences between the corrected binder content and production Plant ticket for the last 5 acceptance results.

The Contractor shall perform TSR testing within 30 days after the start of production for all design levels of HMA- and PMA- S0.5 Plant-produced mixtures, in accordance with AASHTO T 283(M). The TSR test shall be performed at an AMRL certified laboratory by NETTCP certified technicians. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. A minimum of 45000 grams of plant blended mixture and the corresponding complete Form MAT-412s shall be submitted to the DMT for production TSR testing verification. The mixture submitted shall be representative of the corresponding mix design as determined by the Engineer. Additionally, the TSR test report and tested specimens shall be submitted to the Engineer for review. Superpave mixtures that require anti-strip additives (either liquid or mineral) shall continue to meet all requirements specified herein for binder and bituminous concrete. The Contractor shall submit the name, manufacturer, percent used, technical datasheet and SDS for the anti-strip additive (if applicable) to the Engineer.

i. Determination of Off-Test Status:

1. Superpave mixes shall be considered "*off test*" when any control point sieve, binder content, VA, VMA, and Gmm value is outside of the limits specified in Table M.04.03-4 or the target binder content at the Plant is below the minimum binder

content stated in Table M.04.02-5. Note that further testing of samples or portions of samples not initially tested for this purpose cannot be used to change the status.

2. Any time the bituminous concrete mixture is considered off-test:
 - A. The Contractor shall notify the Engineer when the Plant is “*off test*” for any mix design that is delivered to the Project in any production day. When multiple silos are located at 1 site, mixture supplied to 1 project is considered as coming from 1 source for the purpose of applying the “*off test*” determination.
 - B. The Contractor must take immediate actions to correct the deficiency, minimize “*off test*” production to the Project, and obtain an additional Process Control (PC) test after any corrective action to verify production is in conformance with the specifications. A PC test will not be used for acceptance and is solely for the use of the Contractor in its quality control process.

ii. Cessation of Supply for Superpave Mixtures in Non-PWL Lots:

A mixture **shall not be used** on Department projects when it is “off test” for:

1. four (4) consecutive tests in any combination of VA, VMA or Gmm, regardless of date of production, or
2. two (2) consecutive tests in the control point sieves in 1 production shift.

As a result of cessation of supply, the mix status will be changed to PPT

iii. JMF revisions:

JMF revisions are only permitted prior to or after a production shift. A JMF revision is effective from the time it was submitted and is not retroactive to the previous test(s).

JMF revisions shall be justified by a documented trend of test results.

Revisions to aggregate or RAP specific gravities are only permitted when testing is performed at an AMRL certified laboratory by NETTCP certified technicians.

A JMF revision is required when the Plant target RAP or bin percentage deviates by more than 5% or the Plant target binder content deviates by more than 0.15% from the active JMF.

TABLE M.04.03-4: Superpave Mixture Production Requirements

	S0.25		S0.375		S0.5		S1		Tolerances
Sieve	Control Points		Control Points		Control Points		Control Points		From JMF Targets ⁽²⁾
inches	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	+/- Tolerance
1.5	-	-	-	-	-	-	100	-	
1.0	-	-	-	-	-	-	90	100	
3/4	-	-	-	-	100	-	-	90	
1/2	100	-	100	-	90	100	-	-	
3/8	97	100	90	100	-	90	-	-	
No. 4	72	90	-	72	-	-	-	-	
No. 8	32	67	32	67	28	58	19	45	
No. 16	-	-	-	-	-	-	-	-	
No. 200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0	
Pb	JMF value		JMF value		JMF value		JMF value		0.3 ⁽³⁾
VMA (%)	16.5		16.0		15.0		13.0		1.0 ⁽⁴⁾
VA (%)	4.0		4.0		4.0		4.0		1.0 ⁽⁵⁾
Gmm	JMF value		JMF value		JMF value		JMF value		0.030
Mix Temp. – HMA ⁽⁶⁾	265-325°F ⁽¹⁾		265-325°F ⁽¹⁾		265-325°F ⁽¹⁾		265-325°F ⁽¹⁾		
Mix Temp. – PMA ⁽⁶⁾	285-335°F ⁽¹⁾		285-335°F ⁽¹⁾		285-335°F ⁽¹⁾		285-335°F ⁽¹⁾		
Prod. TSR	N/A		N/A		≥80%		N/A		
T-283 Stripping	N/A		N/A		Minimal TBD by the Engineer		N/A		

Notes: ⁽¹⁾ 300°F minimum after October 15.

⁽²⁾ JMF tolerances shall be defined as the limits for production compliance.

⁽³⁾ 0.4 for PWL lots

⁽⁴⁾ 1.3 for all PWL lots except S/P 0.25 mixes. 1.1 for S/P 0.25 Non-PWL lots. 1.4 for S/P 0.25 PWL lots

⁽⁵⁾ 1.2 for PWL lots

⁽⁶⁾ Also applies to placement

**Table M.04.03-5:
Modifications to Standard AASHTO and ASTM Test Specifications and Procedures**

AASHTO Standard Method of Test	
Reference	Modification
T 30	Section 7.2 through 7.4 Samples are not routinely washed for production testing
T 209	Section 7.2 The average of 2 bowls is used proportionally in order to satisfy minimum mass requirements. 8.3 Omit Pycnometer method.
T 283	When foaming technology is used, the material used for the fabrication of the specimens shall be cooled to room temperature, and then reheated to the manufacturer’s recommended compaction temperature prior to fabrication of the specimens.
AASHTO Standard Recommended Practices	
Reference	Modification
R 26	<p>All laboratory technician(s) responsible for testing PG binders shall be certified or Interim Qualified by NETTCP as a PG Asphalt Binder Lab Technician. All laboratories testing binders for the Department are required to be accredited by the AMRL.</p> <p>Sources interested in being approved to supply PG binders to the Department by use of an “in-line blending system” must record properties of blended material and additives used.</p> <p>Each source of supply of PG binder must indicate that the binders contain no additives used to modify or enhance their performance properties. Binders that are manufactured using additives, modifiers, extenders, etc., shall disclose the type of additive, percentage and any handling specifications or limitations required.</p> <p>All AASHTO M 320 references shall be replaced with AASHTO M 332.</p> <p>Once a month, 1 split sample and test results for each asphalt binder grade and each lot shall be submitted by the PG binder supplier to the Department’s Central Lab. Material remaining in a certified lot shall be re-certified no later than 30 days after initial certification. Each April and September, the PG binder supplier shall submit test results for 2 BBR tests at 2 different temperatures in accordance with AASHTO R 29.</p>

ON-THE-JOB TRAINING (OJT) WORKFORCE DEVELOPMENT PILOT:

Description

To provide construction industry related job opportunities to minorities, women and economically disadvantaged individuals; and to increase the likelihood of a diverse and inclusive workforce on Connecticut Department of Transportation (ConnDOT) projects.

All contractors (existing and newcomers) will be automatically placed in the Workforce Development Pilot. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level for new projects. Instead, these requirements will be applicable on an annual basis for each contractor performing work on ConnDOT projects.

The OJT Workforce Development Pilot will allow a contractor to train employees on Federal, State and privately funded projects located in Connecticut. However, contractors should give priority to training employees on ConnDOT Federal-Aid funded projects.

Funding

The Department will establish an OJT fund annually from which contractors may bill the Department directly for eligible trainee hours. The funds for payment of trainee hours on federal-aid projects will be allocated from the ½ of 1% provided for OJT funding, and will be based on hours trained, not to exceed a maximum of \$25,000.00 per year; per contractor.

Minorities and Women

Developing, training and upgrading of minorities, women and economically disadvantaged individuals toward journeyman level status is the primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority, women and economically disadvantaged individuals as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Coordinator, will assign training goals for a calendar year based on the contractor's past two year's activities and the contractor's anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time, the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from one (1) to six (6) per

contractor per calendar year. Each January, a summary of the trainees required and the OJT Workforce Development Pilot package will be sent to participating contractors. The number of trainees assigned to each contractor in the summary will increase proportionately not to exceed 6, as shown in the following table. This package will also be provided to contractors as they become newly eligible for the OJT Workforce Development Pilot throughout the remainder of the year. Projects awarded after September 30 will be included in the following year's Program.

The dollar thresholds for training assignments are as follows:

\$4.5 – 8 million=	1 trainee
\$ 9 – 15 million=	2 trainees
\$16 – 23 million=	3 trainees
\$24 – 30 million=	4 trainees
\$31 – 40 million=	5 trainees
\$41 – and above=	6 trainees

Training Classifications

Preference shall be given to providing training in the following skilled work classifications. However, the classifications established are not all-inclusive:

Equipment Operators	Electricians
Laborers	Painters
Carpenters	Iron / Reinforcing Steel Workers
Concrete Finishers	Mechanics
Pipe Layers	Welders

The Department has on file common training classifications and their respective training requirements; that may be used by the contractors. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and the number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

Where feasible, 25% percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

Records and Reports

The Contractor shall maintain enrollment in the program and submit all required reports documenting company compliance under these contract requirements. These documents and any other information shall be submitted to the OJT Program Coordinator as requested.

Upon the trainee's completion and graduation from the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

Trainee Interviews

In order to determine the continued effectiveness of the OJT Program in Connecticut, the department will periodically conduct personal interviews with current trainees and may survey recent graduates of the program. This enables the OJT Program Coordinator to modify and improve the program as necessary. Trainee interviews are generally conducted at the job site to ensure that the trainees' work and training is consistent with the approved training program.

Trainee Wages

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent	of the journeyman wage for the first half of the training period
75 percent	of the journeyman wage for the third quarter of the training period
90 percent	of the journeyman wage for the last quarter of the training period

In no case, will the trainee be paid less than the prevailing rate for general laborer as shown in the contract wage decision (must be approved by the Department of Labor).

Achieving or Failing to Meet Training Goals

The Contractor will be credited for each trainee currently enrolled or who becomes enrolled in the approved training program and providing they receive the required training under the specific training program. Trainees will be allowed to be transferred between projects if required by the Contractor's schedule and workload. The OJT Program Coordinator must be notified of transfers within five (5) days of the transfer or reassignments by e-mail (Phylisha.Coles@ct.gov).

Where a contractor does not or cannot achieve its annual training goal with female or minority trainees, they must produce adequate Good Faith Efforts documentation. Good Faith Efforts are those designed to achieve equal opportunity through positive, aggressive, and continuous result-oriented measures. 23 CFR § 230.409(g) (4). Contractors should request minorities and females from unions when minorities and females are under-represented in the contractor's workforce.

Whenever a contractor requests ConnDOT approval of someone other than a minority or female, the contractor must submit documented evidence of its Good Faith Efforts to fill that position with a minority or female. When a non-minority male is accepted, a contractor must continue to attempt to meet its remaining annual training goals with females and minorities.

Where a contractor has neither attained its goal nor submitted adequate Good Faith Efforts documentation, ConnDOT will issue a letter of non-compliance. Within thirty (30) days of receiving the letter of non-compliance, the contractor must submit a written Corrective Action Plan (CAP) outlining the steps that it will take to remedy the non-compliance. The CAP must be approved by ConnDOT. Failure to comply with the CAP may result in your firm being found non-responsive for future projects.

Measurement and Payment

Optional reimbursement will be made to the contractor for providing the required training under this special provision on ConnDOT Federal-Aid funded projects only.

Contractor will be reimbursed at \$0.80 for each hour of training given to an employee in accordance with an approved training or apprenticeship program. This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement.

Reimbursement for training is made annually or upon the trainees completion and not on a monthly basis. No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the Contractor.

Program reimbursements will be made directly to the prime contractor on an annual basis. To request reimbursement, prime contractors must complete the Voucher for OJT Workforce Development Pilot Hourly Reimbursement for each trainee in the OJT Program. This form is included in the OJT Workforce Development Pilot package and is available on the Department's web site at:

www.ct.gov/dot

The completed form must be submitted to the Office of Contract Compliance for approval. The form is due on the 15th day of January for each trainee currently enrolled and for hours worked on ConnDOT Federal-Aid funded projects only.

**D.B.E. SUBCONTRACTORS AND MATERIAL SUPPLIERS OR
MANUFACTURERS**

January 2013

I. ABBREVIATIONS AND DEFINITIONS AS USED IN THIS SPECIAL PROVISION

A. *CTDOT* means the Connecticut Department of Transportation.

B. *USDOT* means the U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (“FHWA”), the Federal Transit Administration (“FTA”), and the Federal Aviation Administration (“FAA”).

C. *Broker* means a party acting as an agent for others in negotiating Contracts, Agreements, purchases, sales, etc., in return for a fee or commission.

D. *Contract, Agreement or Subcontract* means a legally binding relationship obligating a seller to furnish supplies or services (including but not limited to, construction and professional services) and the buyer to pay for them. For the purposes of this provision, a lease for equipment or products is also considered to be a Contract.

E. *Contractor* means a consultant, second party or any other entity under Contract to do business with CTDOT or, as the context may require, with another Contractor.

F. *Disadvantaged Business Enterprise (“DBE”)* means a for profit small business concern:

1. That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and
2. Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it; and
3. Certified by CTDOT under Title 49 of the Code of Federal Regulations, Part 26, (Title 49 CFR Part 23 of the Code of Federal Regulations for Participation of Disadvantaged Business Enterprise in Airport Concessions)

G. *USDOT-assisted Contract* means any Contract between CTDOT and a Contractor (at any tier) funded in whole or in part with USDOT financial assistance.

H. *Good Faith Efforts (“GFE”)* means all necessary and reasonable steps to achieve a DBE goal or other requirement which by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

I. *Small Business Concern* means, with respect to firms seeking to participate as DBEs in USDOT-assisted Contracts, a small business concern as defined pursuant to Section 3 of the Small Business Act and Small Business Administration (“SBA”) regulations implementing it (13 CFR Part 121) that also does not exceed the cap on average annual gross receipts in 49 CFR Part 26, Section 26.65(b).

J. *Socially and Economically Disadvantaged Individual* means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is:

1. Any individual who CTDOT finds, on a case-by-case basis, to be a socially and economically disadvantaged individual.
2. Any individuals in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:
 - “Black Americans”, which includes persons having origins in any of the Black racial groups of Africa;
 - “Hispanic Americans”, which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
 - “Native Americans”, which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians.
 - “Asian-Pacific Americans”, which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kiribati, Juvalu, Nauru, or Federated States of Micronesia;
 - “Subcontinent Asian Americans”, which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
 - Women;
 - Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

K. *Commercially Useful Function (“CUF”)* means the DBE is responsible for the execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved with its own forces and equipment. The DBE must be responsible for procuring, determining quantity, negotiating price, determining quality and paying for all materials (where applicable) associated with their work. The DBE must also perform at least 30% of the total cost of its contract with its own workforce.

II. ADMINISTRATIVE REQUIREMENTS

A. General Requirements

A DBE goal percentage equaling **13 percent (%)** of the Contract value has been established for this Contract. This DBE goal percentage will be applied to the final Contract value to ultimately determine the required DBE goal. If additional work is required, DBE firms should be provided the appropriate opportunities to achieve the required DBE goal.

In order to receive credit toward the Contract DBE goal, the firms utilized as DBE subcontractors or suppliers must be certified as DBEs in the type of work to be counted for credit by CTDOT’s Office of Contract Compliance prior to the date of the execution of the subcontract. Neither CTDOT nor the State of Connecticut’s Unified Certification Program (UCP) makes any representation as to any DBE’s technical or financial ability to perform the work. Prime contractors are solely responsible for performing due diligence in hiring DBE subcontractors.

All DBEs shall perform a CUF for the work that is assigned to them. The Contractor shall monitor and ensure that the DBE is in compliance with this requirement. The Connecticut DBE UPC Directory of certified firms can

be found on the CTDOT website <http://www.ct.gov/dot>. The directory lists certified DBE firms with a description of services that they are certified to perform. Only work identified in this listing may be counted towards the project's DBE goal. A DBE firm may request to have services added at any time by contacting CTDOT's Office of Contract Compliance. No credit shall be counted for any DBE firm found not to be performing a CUF.

Once a Contract is awarded, all DBEs that were listed on the pre-award DBE commitment document must be utilized. The Contractor is obligated to provide the value and items of the work originally established in the pre-award documentation to the DBE firms listed in the pre-award documentation. Any modifications to the pre-award commitment must follow the procedure established in Section II-C.

The Contractor shall designate a liaison officer who will administer the Contractor's DBE program. Upon execution of this Contract, the name of the liaison officer shall be furnished in writing to CTDOT's unit administering the Contract, CTDOT's Office of Contract Compliance and CTDOT's Office of Construction ("OOC"). Contact information for the designated liaison officer shall be furnished no later than the scheduled date for the pre-construction meeting.

The Contractor shall submit a bi-monthly report to the appropriate CTDOT unit administering the Contract. This report shall indicate what work has been performed to date, with the dollars paid and percentage of DBE goal completed.

Verified payments made to DBEs shall be included in this bi-monthly report. A sample form is included on the CTDOT website.

In addition, the report shall include:

1. A projected time frame of when the remaining work is to be completed for each DBE.
2. A statement by the Contractor either confirming that the approved DBEs are on schedule to meet the Contract goal, or that the Contractor is actively pursuing a GFE.
3. If retainage is specified in the Contract specifications, then a statement of certification that the subcontractors' retainage is being released in accordance with 1.08.01 (Revised or supplemented).

Failure by the Contractor to provide the required reports may result in CTDOT withholding an amount equal to one percent (1%) of the monthly estimate until the required documentation is received.

The Contractor shall receive DBE credit when a DBE, or any combination of DBEs, perform work under the Contract in accordance with this specification.

Only work actually performed by and/or services provided by DBEs which are certified for such work and/or services, as verified by CTDOT, can be counted toward the DBE goal. Supplies and equipment a DBE purchases or leases from the Contractor or its affiliate cannot be counted toward the goal.

Monitoring of the CUF will occur by CTDOT throughout the life of the project. If it is unclear that the DBE is performing the work specified in its subcontract with the prime Contractor, further review may be required. If it is determined that the DBE is not performing a CUF, then the work performed by that DBE will not be counted towards the DBE goal percentage.

B. Subcontract Requirements

The Contractor shall submit to CTDOT's OOC all requests for subcontractor approvals on the standard CLA-12 forms provided by CTDOT. The dollar amount and items of work identified on the CLA-12 form must, at minimum, equal the dollar value submitted in the pre-award commitment. CLA-12 forms can be found at <http://www.ct.gov/dot/construction> under the "Subcontractor Approval" section. All DBE subcontractors must be identified on the CLA-12 form, regardless of whether they are being utilized to meet a Contract goal percentage. A copy of the legal Contract between the Contractor and the DBE subcontractor/supplier, a copy of the Title VI Contractor Assurances and a copy of the Required Contract Provision for Federal Aid Construction Contracts (Form FHWA-1273) (Federal Highway Administration projects only) must be submitted along with a request for subcontractor approval. These attachments cannot be substituted by reference.

If retainage is specified in the Contract specifications, then the subcontract agreement must contain a prompt payment mechanism that acts in accordance with Article 1.08.01 (Revised or supplemented).

If the Contract specifications do not contain a retainage clause, the Contractor shall not include a retainage clause in any subcontract agreement, and in this case, if a Contractor does include a retainage clause, it shall be deemed unenforceable.

In addition, the following documents are to be included with the CLA-12, if applicable:

- An explanation indicating who will purchase material.
- A statement explaining any method or arrangement for utilization of the Contractor's equipment.

The subcontract must show items of work to be performed, unit prices and, if a partial item, the work involved by all parties. If the subcontract items of work or unit prices are modified, the procedure established in Section II-C must be followed.

Should a DBE subcontractor further sublet items of work assigned to it, only lower tier subcontractors who are certified as a DBE firm will be counted toward the DBE goal. If the lower tier subcontractor is a non-DBE firm, the value of the work performed by that firm will not be counted as credit toward the DBE goal.

The use of joint checks between a DBE firm and the Contractor is acceptable, provided that written approval is received from the OOC prior to the issuance of any joint check. Should it become necessary to issue a joint check between the DBE firm and the Contractor to purchase materials, the DBE firm must be responsible for negotiating the cost, determining the quality and quantity, ordering the material and installing (where applicable), and administering the payment to the supplier. The Contractor should not make payment directly to suppliers.

Each subcontract the Contractor signs with a subcontractor must contain the following assurance:

"The subcontractor/supplier/manufacture shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor/subcontractor/supplier/manufacture to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate."

C. Modification to Pre-Award Commitment

Contractors may not terminate for convenience any DBE subcontractor or supplier that was listed on the pre-award DBE commitment without prior written approval of the OOC. This includes, but is not limited to, instances

in which a Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Prior to approval, the Contractor must demonstrate to the satisfaction of the OOC, that it has good cause, as found in 49CFR Part 26.53 (f)(3), for termination of the DBE firm.

Before transmitting its request for approval to terminate pre-award DBE firms to the OOC, the Contractor must give written notice to the DBE subcontractor and include a copy to the OOC of its notice to terminate and/or substitute, and the reason for the notice.

The Contractor must provide five (5) days for the affected DBE firm to respond. This affords the DBE firm the opportunity to advise the OOC and the Contractor of any reasons why it objects to the termination of its subcontract and why the OOC should not approve the Contractor's action.

Once the Contract is awarded, should there be any amendments or modifications of the approved pre-award DBE submission other than termination of a DBE firm, the Contractor shall follow the procedure below that best meets the criteria associated with the reason for modification:

1. If the change is due to a scope of work revision or non-routine quantity revision by CTDOT, the Contractor must notify CTDOT's OOC in writing or via electronic mail that their DBE participation on the project may be impacted as soon as they are aware of the change. In this case, a release of work from the DBE firm may not be required; however the Contractor must concurrently notify the DBE firm in writing, and copy the OOC for inclusion in the project DBE file. This does not relieve the Contractor of its obligation to meet the Contract specified DBE goal, or of any other responsibility found in this specification.
2. If the change is due to a factor other than a CTDOT directive, a request for approval in writing or via electronic mail of the modification from the OOC must be submitted, along with an explanation of the change(s), prior to the commencement of work. The Contractor must also obtain a letter of release from the originally named DBE indicating their concurrence with the change, and the reason(s) for their inability to perform the work. In the event a release cannot be obtained, the Contractor must document all efforts made to obtain it.
3. In the event a DBE firm that was listed in the pre-award documents is **unable** or **unwilling** to perform the work assigned, the Contractor shall:
 - Notify the OOC Division Chief immediately and make efforts to obtain a release of work from the firm.
 - Submit documentation that will provide a basis for the change to the OOC for review and approval prior to the implementation of the change.
 - Use the DBE Directory to identify and contact firms certified to perform the type of work that was assigned to the unable or unwilling DBE firm. The Contractor should also contact CTDOT's Office of Contract Compliance for assistance in locating additional DBE firms to the extent needed to meet the contract goal.

Should a DBE subcontractor be terminated or fail to complete work on the Contract for any reason, the Contractor must make a GFE to find another DBE subcontractor to substitute for the original DBE. The DBE replacement shall be given every opportunity to perform at least the same amount of work under the Contract as the original DBE subcontractor.

If the Contractor is unable to find a DBE replacement:

- The Contractor should identify other contracting opportunities and solicit DBE firms in an effort to meet the Contract DBE goal requirement, if necessary, and provide documentation to support a GFE. (Refer to GFE in Section III.)
- The Contractor must demonstrate that the originally named DBE, who is unable or unwilling to perform the work assigned, is in default of its subcontract, or identify other issues that affected the DBE firm's ability to perform the assigned work. **The Contractor's ability to negotiate a more advantageous agreement with another subcontractor is not a valid basis for change.**

III. GOOD FAITH EFFORTS

The DBE goal is **NOT** reduced or waived for projects where the Contractor receives a Pre-Award GFE determination from the Office of Contract Compliance prior to the award of the Contract. It remains the responsibility of the Contractor to make a continuing GFE to achieve the specified Contract DBE goal. The Contractor shall pursue every available opportunity to obtain additional DBE firms and document all efforts made in such attempts.

At the completion of all Contract work, the Contractor shall submit a final report to CTDOT's unit administering the Contract indicating the work done by and the dollars paid to DBEs. Only verified payments made to DBEs performing a CUF will be counted towards the Contract goal.

Goal attainment is based on the total Contract value, which includes all construction orders created during the Contract. If the Contractor does not achieve the specified Contract goal for DBE participation or has not provided the value of work to the DBE firms originally committed to in the pre-award submission, the Contractor shall submit documentation to CTDOT's unit administering the Contract detailing the GFE made during the performance of the Contract to satisfy the goal.

A GFE should consist of the following, where applicable (CTDOT reserves the right to request additional information):

1. A detailed statement of the efforts made to replace an unable or unwilling DBE firm, and a description of any additional subcontracting opportunities that were identified and offered to DBE firms in order to increase the likelihood of achieving the stated goal.
2. A detailed statement, including documentation of the efforts made to contact and solicit bids from certified DBEs, including the names, addresses, and telephone numbers of each DBE firm contacted; the date of contact and a description of the information provided to each DBE regarding the scope of services and anticipated time schedule of work items proposed to be subcontracted and the response from firms contacted.
3. Provide a detailed explanation for each DBE that submitted a subcontract proposal which the Contractor considered to be unacceptable stating the reason(s) for this conclusion.
4. Provide documentation, if any, to support contacts made with CTDOT requesting assistance in satisfying the specified Contract goal.

5. Provide documentation of all other efforts undertaken by the Contractor to meet the defined goal. Additional documentation of efforts made to obtain DBE firms may include but will not be limited to:
 - Negotiations held in good faith with interested DBE firms, not rejecting them without sound reasons.
 - Written notice provided to a reasonable number of specific DBE firms in sufficient time to allow effective participation.
 - Those portions of work that could be performed by readily available DBE firms.

In instances where the Contractor can adequately document or substantiate its GFE and compliance with other DBE Program requirements, the Contractor will have satisfied the DBE requirement and no administrative remedies will be imposed.

IV. PROJECT COMPLETION

At the completion of all Contract work, the Contractor shall:

1. Submit a final report to CTDOT's unit administering the Contract indicating the work done by, and the dollars paid to DBEs.
2. Submit verified payments made to all DBE subcontractors for the work that was completed.
3. Submit documentation detailing any changes to the DBE pre-award subcontractors that have not met the original DBE pre-award commitment, including copies of the Department's approvals of those changes.
4. Retain all records for a period of three (3) years following acceptance by CTDOT of the Contract and those records shall be available at reasonable times and places for inspection by authorized representatives of CTDOT and Federal agencies. If any litigation, claim, or audit is started before the expiration of the three (3) year period, the records shall be retained until all litigation, claims, or audit findings involving the records are resolved.

If the Contractor does not achieve the specified Contract goal for DBE participation in addition to meeting the dollar value committed to the DBE subcontractors identified in the pre-award commitment, the Contractor shall submit documentation to CTDOT's unit administering the Contract detailing the GFE made during the performance of the Contract to satisfy the goal.

V. SHORTFALLS

A. Failure to meet DBE goals

As specified in (II-A) above, attainment of the Contract DBE goal is based on the final Contract value. The Contractor is expected to achieve the amount of DBE participation originally committed to at the time of award; however, additional efforts must be made to provide opportunities to DBE firms in the event a Contract's original value is increased during the life of the Contract.

The Contractor is expected to utilize the DBE subcontractors originally committed in the DBE pre-award documentation for the work and dollar value that was originally assigned.

If a DBE is terminated or is unable or unwilling to complete its work on a Contract, the Contractor shall make a GFE to replace that DBE with another certified DBE to meet the Contract goal.

The Contractor shall immediately notify the OOC of the DBE's inability or unwillingness to perform, and provide reasonable documentation and make efforts to obtain a release of work from the firm.

If the Contractor is unable to find a DBE replacement, then the Contractor should identify other contracting opportunities and solicit DBE firms in an effort to meet the Contract DBE goal requirement, if necessary, and provide documentation to support a GFE.

When a DBE is unable or unwilling to perform, or is terminated for just cause, the Contractor shall make a GFE to find other DBE opportunities to increase DBE participation to the extent necessary to at least satisfy the Contract goal.

For any DBE pre-award subcontractor that has been released appropriately from the project, no remedy will be assessed, provided that the Contractor has met the criteria described in Section II-C.

B. Administrative Remedies for Non-Compliance:

In cases where the Contractor has failed to meet the Contract specified DBE goal or the DBE pre-award commitment, and where no GFE has been demonstrated, then one or more of the following administrative remedies will be applied:

1. A reduction in Contract payments to the Contractor as determined by CTDOT, not to exceed the shortfall amount of the **DBE goal**. The maximum shortfall will be calculated by multiplying the Contract DBE goal (adjusted by any applicable GFE) by the final Contract value, and subtracting any verified final payments made to DBE firms by the Contractor.
2. A reduction in Contract payments to the Contractor determined by CTDOT, not to exceed the shortfall amount of the **pre-award commitment**. The maximum shortfall will be calculated by subtracting any verified final payments made by the Contractor to each DBE subcontractor from the amount originally committed to that subcontractor in the pre-award commitment.
3. A reduction in Contract payments to the Contractor determined by CTDOT for any pre-award DBE subcontractor who has not obtained the dollar value of work identified in the DBE pre-award commitment and has not followed the requirements of Section II-C or for any DBE firm submitted for DBE credit that has not performed a CUF.
4. The Contractor being required to submit a written DBE Program Corrective Action Plan to CTDOT for review and approval, which is aimed at ensuring compliance on future projects.
5. The Contractor being required to attend a Non-Responsibility Meeting on the next contract where it is the apparent low bidder.
6. The Contractor being suspended from bidding on contracts for a period not to exceed six (6) months.

VI. CLASSIFICATIONS OTHER THAN SUBCONTRACTORS

A. Material Manufacturers

Credit for DBE manufacturers is 100% of the value of the manufactured product. A manufacturer is a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Contractor.

If the Contractor elects to utilize a DBE manufacturer to satisfy a portion of, or the entire specified DBE goal, the Contractor must provide the OOC with:

- Subcontractor Approval Form (CLA-12) indicating the firm designation,
- An executed "Affidavit for the Utilization of Material Suppliers or Manufacturers" (sample attached), and
- Substantiation of payments made to the supplier or manufacturer for materials used on the project.

B. Material Suppliers (Dealers)

Credit for DBE dealers/suppliers is limited to 60% of the value of the material to be supplied, provided such material is obtained from an approved DBE dealer/supplier.

In order for a firm to be considered a regular dealer, the firm must own, operate, or maintain a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. At least one of the following criteria must apply:

- To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question.
- A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating or maintaining a place of business if the person both owns and operates distribution equipment for the products. Any supplementing of the regular dealers' own distribution equipment shall be by long term lease agreement, and not on an ad hoc or contract to contract basis.
- Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers within the meaning of this paragraph.

If the Contractor elects to utilize a DBE supplier to satisfy a portion or the entire specified DBE goal, the Contractor must provide the OOC with:

- Subcontractor Approval Form (CLA-12) indicating the firm designation,
- An executed "Affidavit for the Utilization of Material Suppliers or Manufacturers" (sample attached), and
- Substantiation of payments made to the supplier or manufacturer for materials used on the project.

C. Brokering

- Brokering of work for DBE firms who have been listed by the Department as certified brokers is allowed. Credit for those firms shall be applied following the procedures in Section VI-D.
- Brokering of work by DBEs who have been approved to perform subcontract work with their own workforce and equipment is not allowed, and is a Contract violation.

- Firms involved in the brokering of work, whether they are DBEs and/or majority firms who engage in willful falsification, distortion or misrepresentation with respect to any facts related to the project shall be referred to the U.S. DOT, Office of the Inspector General for prosecution under Title 18, U.S. Code, Part I, Chapter 47, Section 1020.

D. Non-Manufacturing or Non-Supplier DBE Credit

Contractors may count towards their DBE goals the following expenditures with DBEs that are not manufacturers or suppliers:

- Reasonable fees or commissions charged for providing a bona fide service such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment materials or supplies necessary for the performance of the Contract, provided that the fee or commission is determined by the OOC to be reasonable and consistent with fees customarily allowed for similar services.
- The fees charged only for delivery of materials and supplies required on a job site when the hauler, trucker, or delivery service is a DBE, and not the manufacturer, or regular dealer of the materials and supplies, and provided that the fees are determined by the OOC to be reasonable and not excessive as compared with fees customarily allowed for similar services.
- The fees or commissions charged for providing bonds or insurance specifically required for the performance of the Contract, provided that the fees or commissions are determined by CTDOT to be reasonable and not excessive as compared with fees customarily allowed for similar services.

E. Trucking

While technically still considered a subcontractor, the rules for counting credit for DBE trucking firms are as follows:

- The DBE must own and operate at least one fully licensed, insured, and operational truck used on the Contract.
- The DBE receives credit for the total value of the transportation services it provides on the Contract using trucks it owns, insures and operates using drivers it employs.
- The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the Contract.
- The DBE may lease trucks from a non-DBE firm; however the DBE may only receive credit for any fees or commissions received for arranging transportation services provided by the non-DBE firms. Additionally, the DBE firm must demonstrate that they are in full control of the trucking operation for which they are seeking credit.

VII. Suspected DBE Fraud

In appropriate cases, CTDOT will bring to the attention of the USDOT any appearance of false, fraudulent, or dishonest conduct in connection with the DBE program, so that USDOT can take the steps, e.g. referral to the

Department of Justice for criminal prosecution, referral to USDOT Inspector General, action under suspension and debarment or Program Fraud and Civil Penalties rules provided in 49 CFR Part 31.

**CONNECTICUT DEPARTMENT OF TRANSPORTATION
(OFFICE OF CONSTRUCTION)
BUREAU OF ENGINEERING AND CONSTRUCTION**

This affidavit must be completed by the State Contractor's DBE notarized and attached to the contractor's request to utilize a DBE supplier or manufacturer as a credit towards its DBE contract requirements; failure to do so will result in not receiving credit towards the contract DBE requirement.

State Contract No.

Federal Aid Project No.

Description of Project

I, _____, acting in behalf of _____,
(Name of person signing Affidavit) (DBE person, firm, association or corporation)

of which I am the _____ certify and affirm that _____
(Title of Person) (DBE person, firm, association or corporation)

is a certified Connecticut Department of Transportation DBE. I further certify and affirm that I have read and understand 49 CFR, Sec. 26.55(e)(2), as the same may be revised.

I further certify and affirm that _____ will assume the actual and
(DBE person, firm, association or Corporation)

for the provision of the materials and/or supplies sought by _____.

If a manufacturer, I operate or maintain a factory or establishment that produces, on the premises, the materials, supplies, articles or equipment required under the contract an of the general character described by the specifications.

If a supplier, I perform a commercially useful function in the supply process. As a regular dealer, I, at a minimum, own and operate the distribution equipment for bulk items. Any supplementing of my distribution equipment shall be by long-term lease agreement, and not on an ad hoc or contract-by-contract basis.

I understand that false statements made herein are punishable by Law (Sec. 53a-157), CGS, as revised).

(Name of Corporation or Firm)

(Signature & Title of Official making the Affidavit)

Subscribed and sworn to before me, this _____ day of _____ 20 _____.

Notary Public (Commissioner of the Superior Court)

My Commission Expires _____

CERTIFICATE OF CORPORATION

I, _____, certify that I am the _____
(Official) (President)

of the Corporation named in the foregoing instrument; that I have been duly authorized to affix the seal of the Corporation to such papers as require the seal; that _____, who signed said instrument on behalf of the Corporation, was then _____ of said corporation; that said instrument was duly signed for and in behalf of said Corporation by authority of its governing body and is within the scope of its corporation powers.

(Signature of Person Certifying)

(Date)

ITEM #0101000A - ENVIRONMENTAL HEALTH AND SAFETY

Description:

Under this item, the Contractor shall establish protocols and provide procedures to protect the health and safety of its employees and subcontractors as related to the proposed construction activities performed within the Project AOEC(s). Work under this Item consists of the development and implementation of a written health and safety plan (HASP) that addresses the relative risk of exposure to documented hazards present within Project limits. The HASP shall establish health and safety protocols that address the relative risk of exposure to regulated substances in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. Such protocols shall only address those potential concerns directly related to site conditions.

Note: The Engineer will prepare a site-specific HASP which is compatible with the Contractor's HASP and will be responsible for the health and safety of all Project Inspectors, Department employees and consulting engineers.

Materials:

The Contractor must provide chemical protective clothing (CPC) and personal protective equipment (PPE) as stipulated in the Contractor's HASP during the performance of work in areas identified as potentially posing a risk to worker health and safety for workers employed by the Contractor and all subcontractors.

Construction Methods:

1-Existing Information: The Contractor shall utilize all available information and existing records and data pertaining to chemical and physical hazards associated with any of the regulated substances identified in the environmental site investigations to develop the HASP. The documents containing this data are referenced in "Notice to Contractor – Environmental Investigations".

2-General: The requirements set forth herein pertain to the provision of workers' health and safety as it relates to proposed Project activities when performed in the presence of hazardous or regulated materials or otherwise environmentally sensitive conditions. THE PROVISION OF WORKER HEALTH AND SAFETY PROTOCOLS WHICH ADDRESS POTENTIAL AND/OR ACTUAL RISK OF EXPOSURE TO SITE SPECIFIC HAZARDS POSED TO CONTRACTOR EMPLOYEES IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

The Contractor shall be responsible for the development, implementation and oversight of the HASP throughout the performance of work within the limits of the AOEC(s), as identified in the Contract Documents, and in other areas identified by the Engineer or by the HASP where site conditions may pose a risk to worker health and safety and/or the environment. **No physical aspects of the work within the AOEC shall begin until the HASP is reviewed by the Engineer and is determined to meet the requirements of the specifications. However, the Contract time, in accordance with Article 1.03.08, will begin on the date stipulated in the Notice to Proceed.**

3-Regulatory Requirements: All construction related activities performed by the Contractor within the limits of the AOEC(s) or in other areas where site conditions may pose a risk to worker health and safety and/or the environment shall be performed in conformance with 29 CFR 1926, Safety and Health Regulations for Construction and 29 CFR 1910, Safety and Health Regulations for General Industry. Conformance to 29 CFR 1910.120, Hazardous Waste Site Operations and Emergency Response (HAZWOPER) may also be required, where appropriate.

4-Submittals: Three copies of the HASP shall be submitted to the Engineer within four (4) weeks after the Award of Contract or four (4) weeks prior to the start of any work in the AOEC, whichever is first, but not before the Award of the Contract.

The HASP shall be developed by a qualified person designated by the Contractor. This qualified person shall be a Certified Industrial Hygienist (CIH), Certified Hazardous Material Manager (CHMM), or a Certified Safety Professional (CSP). He/she shall have review and approval authority over the HASP and be identified as the Health and Safety Manager (HSM). The HASP shall bear the signature of said HSM indicating that the HASP meets the minimum requirements of 29 CFR 1910.120 and 29 CFR 1926.65.

The Engineer will review the HASP(s) within four (4) weeks of submittal and provide written comments as to deficiencies in and/or exceptions to the plan(s), if any, to assure consistency with the specifications, applicable standards, policies and practices and appropriateness given potential or known site conditions. Items identified in the HASP which do not conform to the specifications will be brought to the attention of the Contractor, and the Contractor shall revise the HASP to correct the deficiencies and resubmit it to the Engineer for determination of compliance with this item. The Contractor shall not be allowed to commence work activities in the AOEC(s), as shown on the Plans, or where site conditions exist which may pose a risk to worker health and safety and/or the environment, until the HASP has been reviewed and accepted by the Engineer. No claim for delay in the progress of work will be considered for the Contractor's failure to submit a HASP that conforms to the requirements of the Contract.

5-HASP Provisions:

(a) General Requirements: The Contractor shall prepare a HASP covering all Project site work regulated by 29 CFR 1910.120(b)/ 1926.65(b) to be performed by the Contractor and all subcontractors under this Contract. The HASP shall establish in detail, the protocols necessary for the recognition, evaluation, and control of all hazards associated

with each task performed under this Contract. The HASP shall address site-specific safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection. The level of detail provided in the HASP shall be tailored to the type of work, complexity of operations to be performed, and hazards anticipated. Details about some activities may not be available when the initial HASP is prepared and submitted. Therefore, the HASP shall address, in as much detail as possible, all anticipated tasks, their related hazards and anticipated control measures.

The HASP shall interface with the Contractor's Safety and Health Program. Any portions of the Safety and Health Program that are referenced in the HASP shall be included as appendices to the HASP. All topics regulated by the 29 CFR 1910.120(b)(4) and those listed below shall be addressed in the HASP. Where the use of a specific topic is not applicable to the Project, the HASP shall include a statement to justify its omission or reduced level of detail and establish that adequate consideration was given the topic.

(b) Elements:

(i) Site Description and Contamination Characterization: The Contractor shall provide a site description and contaminant characterization in the HASP that meets the requirements of 29 CFR 1910.120/1926.65.

(ii) Safety and Health Risk Analysis/Activity Hazard Analysis: The HASP shall address the safety and health hazards on this site for every operation to be performed. The Contractor shall review existing records and data to identify potential chemical and physical hazards associated with the site and shall evaluate their impact on field operations. Sources, concentrations (if known), potential exposure pathways, and other factors as noted in CFR 1910.120/126.65, paragraph (c)(7) employed to assess risk shall be described. The Contractor shall develop and justify action levels for implementation of engineering controls and PPE upgrades and downgrades for controlling worker exposure to the identified hazards. If there is no permissible exposure limit (PEL) or published exposure level for an identified hazard, available information from other published studies may be used as guidance. Any modification of an established PEL must be fully documented.

The HASP shall include a comprehensive section that discusses the tasks and objectives of the site operations and logistics and resources required to complete each task. The hazards associated with each task shall be identified. Hazard prevention techniques, procedures and/or equipment shall be identified to mitigate each of the hazards identified.

(iii) Staff Organization, Qualifications and Responsibilities: The HASP shall include a list of personnel expected to be engaged in site activities and certify that said personnel have completed the educational requirements stipulated in 29 CFR 1910.120 and 29 CFR 1926.65, are currently monitored under a medical surveillance program in compliance with those regulations, and that they are fit for work under "level C" conditions.

The Contractor shall assign responsibilities for safety activities and procedures. An outline or flow chart of the safety chain of command shall be provided in the HASP. Qualifications, including education, experience, certifications, and training in safety and health for all personnel engaged in safety and health functions shall be documented in the HASP. Specific duties of each on-site team member should be identified. Typical team members include but are not limited to Team Leader, Scientific Advisor, Site Safety Officer, Public Information Officer, Security Officer, Record Keeper, Financial Officer, Field Team Leader, and Field Team members.

The HASP shall also include the name and qualifications of the individual proposed to serve as Health and Safety Officer (HSO). The HSO shall have full authority to carry out and ensure compliance with the HASP. The Contractor shall provide a competent HSO on-site who is capable of identifying existing and potential hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate or control them. The qualifications of the HSO shall include completion of OSHA 40-hour HAZWOPER training, including current 8-hour refresher training, and 8-hour HAZWOPER supervisory training; a minimum of one year of working experience with the regulated compounds that have been documented to exist within Project limits; a working knowledge of Federal and State safety regulations; specialized training or documented experience (one year minimum) in personal and respiratory protective equipment program implementation; the proper use of air monitoring instruments, air sampling methods and procedures; and certification training in first aid and CPR by a recognized, approved organization such as the American Red Cross.

The primary duties of the HSO shall be those associated with worker health and safety. The Contractor's HSO responsibilities shall be detailed in the written HASP and shall include, but not be limited to the following:

- (A) Directing and implementing the HASP.
- (B) Ensuring that all Project personnel have been adequately trained in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury (29 CFR 1926.21). All personnel shall be adequately trained in procedures outlined in the Contractor's written HASP.
- (C) Authorizing Stop Work Orders, which shall be executed upon the determination of an imminent health and safety concern.
- (D) Contacting the Contractor's HSM and the Engineer immediately upon the issuance of a Stop Work order when the HSO has made the determination of an imminent health and safety concern.
- (E) Authorizing work to resume, upon approval from the Contractor's HSM.

(F) Directing activities, as defined in the Contractor's written HASP, during emergency situations; and

(G) Providing personal monitoring where applicable, and as identified in the HASP.

(iv) Employee Training Assignments: The Contractor shall develop a training program to inform employees, supplier's representatives, and official visitors of the special hazards and procedures (including PPE, its uses and inspections) to control these hazards during field operations. Official visitors include but are not limited to Federal Agency Representatives, State Agency Representatives, Municipal Agency Representatives, Contractors, subcontractors, etc. This program shall be consistent with the requirements of 29 CFR 1910.120 and 29 CFR 1926.65.

(v) Personal Protective Equipment: The plan shall include the requirements and procedures for employee protection and should include a detailed section on respiratory protection. The Contractor shall describe in detail and provide appropriate PPE to insure that workers are not exposed to levels greater than the action level for identified hazards for each operation stated for each work zone. The level of protection shall be specific for each operation and shall be in compliance with all requirements of 29 CFR 1910 and 29 CFR 1926. The Contractor shall provide, maintain, and properly dispose of all PPE.

(vi) Medical Surveillance Program: All on-site Contractor personnel engaged in 29 CFR 1910.120/1926.65 operations shall have medical examinations meeting the requirements of 29 CFR 1910.120(f) prior to commencement of work.

The HASP shall include certification of medical evaluation and clearance by the physician for each employee engaged in 29 CFR 1910.120/1926.65 operations at the site.

(vii) Exposure Monitoring/Air Sampling Program: The Contractor shall submit an Air Monitoring Plan as part of the HASP which is consistent with 29 CFR 1910.120, paragraphs (b)(4)(ii)(E), (c)(6), and (h). The Contractor shall identify specific air sampling equipment, locations, and frequencies in the air-monitoring plan. Air and exposure monitoring requirements shall be specified in the Contractor's HASP. The Contractor's CIH shall specify exposure monitoring/air sampling requirements after a careful review of the contaminants of concern and planned site activities.

(viii) Site Layout and Control: The HASP shall include a map, work zone delineation (support, contamination, reduction and exclusion), on/off-site communications, site access controls, and security (physical and procedural).

(ix) Communications: Written procedures for routine and emergency communications procedures shall be included in the Contractor's HASP.

(x) Personal Hygiene, Personal Decontamination and Equipment Decontamination: Decontamination facilities and procedures for PPE, sampling equipment, and heavy equipment shall be discussed in detail in the HASP.

(xi) Emergency Equipment and First Aid Requirements: The Contractor shall provide appropriate emergency first aid kits and equipment suitable to treat exposure to the hazards identified, including chemical agents. The Contractor will provide personnel that have certified first aid/CPR training on-site at all times during site operations.

(xii) Emergency Response Plan and Spill Containment Program: The Contractor shall establish procedures in order to take emergency action in the event of immediate hazards (i.e., a chemical agent leak or spill, fire or personal injury). Personnel and facilities supplying support in emergency procedures will be identified. The emergency equipment to be present on-site and the Emergency Response Plan procedures, as required 29 CFR 1910.120, paragraph (1)(1)(ii) shall be specified in the Emergency Response Plan. The Emergency Response Plan shall be included as part of the HASP. This Emergency Response Plan shall include written directions to the closest hospital as well as a map showing the route to the hospital.

(xiii) Logs, Reports and Record Keeping: The Contractor shall maintain safety inspections, logs, and reports, accident/incident reports, medical certifications, training logs, monitoring results, etc. All exposure and medical monitoring records are to be maintained according to 29 CFR 1910 and 29 CFR 1926. The format of these logs and reports shall be developed by the Contractor to include training logs, daily logs, weekly reports, safety meetings, medical surveillance records, and a phase-out report. These logs, records, and reports shall be maintained by the Contractor and be made available to the Engineer.

The Contractor shall immediately notify the Engineer of any accident/ incident. Within two working days of any reportable accident, the Contractor shall complete and submit to the Engineer an accident report.

(xiv) Confined space entry procedures: Confined space entry procedures, both permit required and non permit required, shall be discussed in detail.

(xv) Pre-entry briefings: The HASP shall provide for pre-entry briefings to be held prior to initiating any site activity and at such other times as necessary to ensure that employees are apprised of the HASP and that this plan is being followed.

(xvi) Inspections/audits: The HSM or HSO shall conduct Inspections or audits to determine the effectiveness of the HASP. The Contractor shall correct any deficiencies in the effectiveness of the HASP.

6-HASP Implementation: The Contractor shall implement and maintain the HASP throughout the performance of work. In areas identified as having a potential risk to worker health and

safety, and in any other areas deemed appropriate by the HSO, the Contractor shall be prepared to immediately implement the appropriate health and safety measures, including but not limited to the use of PPE, and engineering and administrative controls.

If the Engineer observes deficiencies in the Contractor's operations with respect to the HASP, they shall be assembled in a written field directive and given to the Contractor. The Contractor shall immediately correct the deficiencies and respond, in writing, as to how each was corrected. Failure to bring the work area(s) and implementation procedures into compliance will result in a Stop Work Order and a written directive to discuss an appropriate resolution(s) to the matter. When the Contractor demonstrates compliance, the Engineer shall remove the Stop Work Order. If a Stop Work Order has been issued for cause, no delay claims on the part of the Contractor will be honored.

Disposable CPC/PPE, i.e. disposable coveralls, gloves, etc., which come in direct contact with hazardous or potentially hazardous material shall be placed into 55 gallon USDOT 17-H drums and disposed of in accordance with Federal, State, and local regulations. The drums shall be temporarily staged and secured within the WSA until the material is appropriately disposed.

7-HASP Revisions: The HASP shall be maintained on-site by the Contractor and shall be kept current with construction activities and site conditions under this Contract. The HASP shall be recognized as a flexible document which shall be subject to revisions and amendments, as required, in response to actual site conditions, changes in work methods and/or alterations in the relative risk present. All changes and modifications shall be signed by the Contractor's HSM and shall require the review and acceptance by the Engineer prior to the implementation of such changes.

Should any unforeseen hazard become evident during the performance of the work, the HSO shall bring such hazard to the attention of the Contractor and the Engineer as soon as possible. In the interim, the Contractor shall take action, including Stop Work Orders and/or upgrading PPE as necessary to re-establish and maintain safe working conditions and to safeguard on-site personnel, visitors, the public and the environment. The HASP shall then be revised/amended to reflect the changed condition.

Method of Measurement:

1-Within thirty (30) calendar days of the award of the Contract, the Contractor shall submit to the Engineer for acceptance a breakdown of its lump sum bid price for this item detailing:

- (a) The development costs associated with preparing the HASP in accordance with these Specifications.
- (b) The cost per month for the duration of the Project to implement the HASP and provide the services of the HSM and the HSO.

2-If the lump sum bid price breakdown is unacceptable to the Engineer; substantiation showing that the submitted costs are reasonable shall be required.

3-Upon acceptance of the payment schedule by the Engineer, payments for work performed will be made as follows:

- (a) The lump sum development cost will be certified for payment.
- (b) The Contractor shall demonstrate to the Engineer monthly that the HASP has been kept current and is being implemented and the monthly cost will be certified for payment.
- (c) Any month where the HASP is found not to be current or is not being implemented, the monthly payment for the Environmental Health and Safety Item shall be deferred to the next monthly payment estimate. If the HASP is not current or being implemented for more than thirty calendar days, there will be no monthly payment.
- (d) Failure of the Contractor to implement the HASP in accordance with this Specification shall result in the withholding of all Contract payments.

Basis of Payment:

This work will be paid for at the Contract lump sum price for “Environmental Health and Safety” which shall include all materials, tools, equipment and labor incidental to the completion of this item for the duration of the Project to maintain, revise, monitor and implement the HASP. Such costs include providing the services of the HSM and HSO, Contractor employee training, CPC, PPE, disposal of PPE and CPC, medical surveillance, decontamination facilities, engineering controls, monitoring and all other HASP protocols and procedures established to protect the Health and Safety for all on-site workers.

Pay Item	Pay Unit
Environmental Health and Safety	L.S.

ITEM #0101002A - CONFINED SPACE HEALTH AND SAFETY

Description: The work required on Bridge No 06795, I-395 over Hammer Brook, Bridge No 06796, I-395 over Byron Brook, and Bridge No 06797, I-395 over Unnamed Brook, all in Norwich, Connecticut, will involve construction activities in areas that meet the definition of a "Confined Space" (CS) as defined in 29 CFR Part 1910.146. The types of activities as well as materials, products and procedures involved in this work will have the characteristics required to potentially create a hazardous atmosphere within the CS, thereby rendering the area a "Permit-Required Confined Space" (PRCS) work area as defined in 29 CFR 1910.146.

The Contractor shall prepare and administer a written program that protects the safety of its employees, subcontractors, the Engineer, and all other persons who may enter the PRCS work areas during the execution of the work. This program includes monitoring of air spaces in all PRCS work areas; providing proper training of all with access to the PRCS work area; and all required record keeping. The Contractor shall also furnish all required respiratory and other personal protective equipment (PPE) needed for its own employees and subcontractors including medical surveillance, testing, fit testing and training of all individuals in its safe and proper usage.

The PRCS entry program that is developed and administered by the Contractor under this Item shall apply to ALL personnel who may have a need to access the PRCS work area as part of this Project. This includes all personnel directly or indirectly employed by the Contractor and the Engineer. The Contractor shall furnish all training required to safely and effectively implement the entry program.

Applicable Regulations

At a minimum, the Contractor's work under this Item shall comply with the following Federal Regulations:

- | | |
|--------------------------------|---|
| 1. 29 CFR Part 1910.1020 | Access to Employee Exposure and Medical Records |
| 2. 29 CFR Part 1910.134 | Respiratory Protection |
| 3. 29 CFR Part 1910.146 | Permit-Required Confined Spaces |
| 4. 29 CFR Part 1910.1000 | Air Contaminants |
| 5. 29 CFR Part 1926 | Safety and Health Regulations for Construction |
| 6. 29 CFR Part 1926.24 | Fire Protection and Prevention |
| 7. 29 CFR Part 1910, Subpart Q | Welding, Cutting and Brazing |

Construction Methods: Within 30 calendar days of the award of this Contract, the Contractor shall submit to the Engineer a written Confined Space Health and Safety Plan (CS HASP) prepared by a Certified Industrial Hygienist (CIH) that fully describes the Contractor's proposed PRCS entry program required under 29 CFR Part 1910.146. This document shall describe in detail all elements of the proposed entry program including, but not limited to, the following:

1. Identification of potential hazards;
2. Measures to provide safe entrance and egress by authorized entrants;
3. Measures to prevent unauthorized entry;
4. Acceptable entry conditions;
5. Measures to isolate/restrict permit space;
6. Measures to provide ventilation required to eliminate or control atmospheric hazards;
7. Measures to monitor atmospheric conditions within the work space throughout construction;
8. Measures to monitor for flooding conditions within the culvert;
9. Measures to communicate with personnel working in the PRCS work area; provide description of how communication procedures will interface with hearing protection measures;
10. Description of method of work and equipment to be used for removal of soil/sediment and all other work inside the confined space, maintenance records of equipment shall also be furnished;
11. Required personal protective equipment;
12. Rescue and emergency equipment to be furnished;
13. Any other equipment to be furnished for safe entry into and rescue from PRCS work areas;
14. A description of how attendant(s) and entry supervisors will be deployed and their responsibilities, including a list of names and qualifications of all persons who are to have active roles as attendants, entry supervisors and air monitors;
15. Lighting equipment, including methods of grounding, to be furnished;
16. Measures for fire protection and prevention within the PRCS;
17. A description of any "Hot Work", i.e. welding, cutting or brazing to be performed within the PRCS, Hot Work Permit Requirements and safety measures to be taken;

18. Detailed procedures for:
 - a. Furnishing or summoning rescue and emergency services, including the location of telephone number and directions to the nearest hospital,
 - i. Contacting the local fire department and EMS service to determine their rescue capabilities that are available during those time periods when work in the PRCS will be taking place. Provide a written description of capabilities of outside rescue/emergency services that would be summoned in an emergency. Provide written concurrence from such fire department/EMS/outside rescue/emergency services that they will support any rescue operation in the PRCS.
 - ii. In the event the local fire and EMS services are not equipped/trained to provide CS rescue, provide a description of the measures which will be used to perform CS rescue.
 - b. Rescuing entrants from PRCS, including non-entry rescue, retrieval systems or methods,
 - c. Providing necessary emergency services to rescued entrants,
 - d. Preventing unauthorized personnel from attempting a rescue.
19. Procedures for coordinating entry operations of all individuals who have reason to enter PRCS work areas, including employees of the Contractor, his subcontractor(s), the Engineer, and employees and agents of the Department;
20. Procedures for concluding the entry after entry operations are completed;
21. Procedures for reviewing the entry permit program and making revisions to correct deficiencies;
22. Proposed training programs(s) to be conducted by the Contractor that conform to 29 CFR Parts 1910.146(g) and 1910.134(k), provide current applicable certificates of training;
23. Proposed record keeping system.
24. The name and qualifications of the individual proposed to serve as Confined Space Health and Safety Officer (CSHSO). The CSHSO shall have full authority to carry out and ensure compliance with the CS HASP. The Contractor shall provide a competent CSHSO on-site who is capable of identifying existing and potential hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate or control them. The qualifications of the CSHSO shall include completion of OSHA 40-

hour HAZWOPER training and 8-hour HAZWOPER supervisory training, completion of a Confined Space Entry Operations Program, a minimum of one year of working experience as a confined space entry supervisor, a working knowledge of Federal and State safety regulations; specialized training or documented experience (one year minimum) in personal and respiratory protective equipment program implementation; the proper use of air monitoring instruments, air sampling methods and procedures; and certification training in first aid and CPR by a recognized, approved organization such as the American Red Cross. Provide current certificates of training.

The primary duties of the CSHSO shall be those associated with worker health and safety in a confined space. The Contractor's CSHSO responsibilities shall be detailed in the written CS HASP and shall include, but not be limited to the following:

- a. Directing and implementing the CS HASP;
- b. Ensuring that all project personnel have been adequately trained in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury. All personnel shall be adequately trained in procedures outlined in the Contractor's written CS HASP;
- c. Authorizing Stop Work Orders, which shall be executed upon the determination of an imminent health safety concern;
- d. Contacting the Contractor's CIH and the Engineer immediately upon the issuance of a Stop Work order when the CSHSO has made the determination of an imminent health and safety concern;
- e. Authorizing work to resume, upon approval from the Contractor's CIH;
- f. Directing activities, as defined in the Contractor's written CS HASP, during emergency situations; and
- g. Providing personal monitoring where applicable, as identified in the CS HASP.

The Engineer will review the Contractor's submittal within four weeks. If the Engineer requires any changes, the entire document shall be resubmitted with changes. All training shall be completed prior to commencing work within the PRCS work area.

No work shall be allowed within any area deemed by the Engineer to be a confined space until the Engineer has accepted the Contractor's written CS HASP.

Training

The Contractor shall be required to train all individuals who may have reason to enter a PRCS work area in all aspects of the permit entry program in a manner that complies with 29 CFR Part 1929.146 (g).

1. The duties and responsibilities of each individual;
2. Procedures to be followed when working the PRCS work areas, including anticipated hazards;
3. Air monitoring programs;
4. Proper communication procedures;
5. Early warning signs and symptoms;
6. Emergency rescue procedures, including basic first aid and cardiopulmonary resuscitation (CPR); and
7. Proper use of respiratory equipment (if required) including fit testing and medical surveillance, in accordance with the requirements of 29 CFR Part 1910.134.

The Contractor shall keep records of the date of each training session, the purpose of the session and a list of attendees.

Medical Monitoring

If in the event respirators are required, the Contractor shall have medical evaluations completed for all of its employees, including subcontractors, who may have reason to enter a PRCS work area in accordance with 1910.134(e) and any other applicable regulations prior to starting work in the PRCS.

Storage of Materials

The Contractor shall not store any raw materials, combustible materials or waste products within any confined space areas.

Method of Measurement: Within thirty (30) calendar days of the award of the Contract, the Contractor shall submit to the Engineer for acceptance, a breakdown of the lump sum bid price for this item detailing:

1. The development costs associated with preparing the CS HASP in accordance with these Specifications;

2. The lump sum cost for employee training, including all Contractor employees, subcontractor employees, and up to ten (10) Department employees; and
3. The cost per month for the duration of the project to implement the CS HASP and provide services for the CIH and the CSHSO.

If the lump sum bid price breakdown is unacceptable to the Engineer, substantiation showing that the submitted costs are reasonable shall be required.

Upon acceptance of the payment schedule by the Engineer, payments for work performed will be made as follows:

1. The lump sum development cost will be certified for payment.
2. The lump sum cost for training will be certified for payment.
3. The Contractor shall demonstrate to the Engineer monthly that the CS HASP has been kept current and is being implemented and the monthly cost will be certified for payment.

Failure of the Contractor to implement the CS HASP in accordance with this Specification will result in the withholding of all Contract payments.

The Contractor shall submit a schedule of values for payment to the Department for review and comment.

Basis of Payment: This work will be paid for at the lump sum price for "Confined Space Health and Safety" which price shall include all materials, tools, equipment and labor incidental to the completion of this item for the duration of the project to develop, revise, monitor and implement the CS HASP. Such costs also include providing the services of the CIH and CSHSO; training; record keeping; atmospheric testing and monitoring; PPE and personal respiratory equipment; disposal of PPE; communication equipment; emergency medical and rescue equipment and personnel; medical surveillance; engineering controls; furnishing, operating and maintaining a ventilation system; and implementing all other CS HASP protocols and procedures established to protect the health and safety of on-site workers when working in the confined space.

PAY ITEM
Confined Space Health and Safety

PAY UNIT
L.S.

ITEM #0202216A – EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL

Description: This work shall consist of excavating existing channel bottom material in areas where the channel bottom is to be disturbed and regraded to create a work area for a bridge, culvert, articulated concrete block placement or cofferdam installation. This item shall also include the stockpiling and protecting of the excavated material on the Site, subsequent placement of the stockpiled material in the channel, and the removal and proper disposal of all unused and unacceptable material.

Materials: The material for this item shall consist of the existing naturally-formed rocks, cobbles, gravel, soils and clean natural sediments from within the channel.

Any material excavated from ledge (bedrock) formations or broken from larger boulders will not be accepted. Broken concrete will not be accepted.

Construction Methods: The Contractor shall submit for the Engineer's approval a proposed location for stockpiling material. The proposed location shall be upland where disruption to the stream channel or impact to wetland areas caused by moving the excavated channel bottom material to and from the stockpile are minimized during the placement of material. The Contractor shall prepare the area approved by the Engineer, suitable in size and location for stockpiling the existing channel bottom material.

The stockpile shall be located where it can remain undisturbed for the duration of the stream channel construction and shall be protected using sedimentation control measures. The stockpile area shall be cleared and cleaned adequately to prevent mixing with underlying soil or other materials, including the use of a separation barrier such as: structural fabric, polyethylene sheeting, or similar. The stockpile area shall be adequately covered to protect the excavated channel bottom material from erosion by rain or other forces.

After clearing and grubbing, the Engineer will identify the limits of the exposed channel bottom material to be excavated under this item. The Engineer will identify the bottom limit of excavation, an amount up to but not exceeding 24 inches in depth, based upon visual inspection of the channel bottom material, unless otherwise specified in the Contract. After the limits of excavation have been determined, the Contractor shall excavate the channel bottom material, separate from any other roadway, structure, channel or unsuitable material excavation in the area. After the channel bottom material, and approved supplemental streambed channel material if needed, has been placed in the stockpile area, no other excavated or off-Site material shall be placed in the stockpile.

The stockpiled channel bottom material shall be placed at the designated location(s) to the required thickness as shown on the plans, denoted on the permit application, or as directed by the Engineer. Equipment and placement techniques shall prevent integration with the surrounding material and shall keep the channel bottom material relatively homogenous. Channel material shall be placed in a manner that replicates the original condition of the channel prior to excavation.

The Contractor shall perform all containment, diversion, or other separation of the channel flow when placing the channel bottom material to minimize sediment transport downstream.

The disposal of any surplus or unsuitable material shall be in accordance with Section 2.02. Restore the stockpile area as directed by the Engineer.

If it is agreed by the Engineer that there is an insufficient quantity of excavated channel bottom material within the Project limits, the Contractor shall obtain Supplemental Streambed Channel Material as specified under that item.

Method of Measurement: This work will be measured for payment by the number of cubic yards of channel bottom material excavated, stockpiled, maintained, and accepted, including disposal of unacceptable and surplus materials.

The Engineer will delineate the horizontal pay limit prior to the start of excavation. The vertical pay limit will be measured from the top of the existing channel bottom to the bottom of excavation required specifically for the stockpiling of channel bottom material.

Any material excavated beyond the approved horizontal pay limits or deeper than the depth of channel bottom material identified and approved by the Engineer will not be measured for payment under this item. Should such additional excavation be required to complete the Contract work, it will be measured for payment separately under the applicable pay items.

Basis of Payment: Payment for this work will be made at the Contract unit price per cubic yard for "Excavation and Reuse of Existing Channel Bottom Material." The price shall include all materials, equipment, tools and labor incidental to the preparation of the stockpile area, excavation of channel bottom, hauling of the material to the stockpile, and separation of any rock ledge or concrete debris, storing, and protecting (including but not limited to sedimentation controls and covering of excavated material).

Payment for clearing and grubbing of the approved stockpile area will be included in the item "Clearing and Grubbing."

Payment for the removal and proper disposal of all unused and unacceptable material will be in accordance with Article 1.09.04 – Extra and Cost-Plus Work.

Payment for supplemental streambed channel material will be included in the item "Supplemental Streambed Channel Material." If no item appears in the proposal, the work will be in accordance with Article 1.09.04 – Extra and Cost-Plus Work.

Payment for all containment, diversion or other separation of stream flow from the excavation of channel bottom material will be included in the item "Cofferdam and Dewatering" or special provision for "Handling Water."

Excavation of material not identified by the Engineer for stockpiling and reuse in accordance with this specification will be paid in accordance with Section 2.02.

Pay Item	Pay Unit
Excavation and Reuse of Existing Channel Bottom Material	c.y.

ITEM #0202217A – SUPPLEMENTAL STREAMBED CHANNEL MATERIAL

Description: This work shall consist of procuring, transporting and placing supplemental streambed channel material meeting the visual inspection requirements herein, along stream bank/channel improvement locations as shown on the plans or denoted on the Project's permit applications. This work shall also include any necessary temporary protection and stockpiling of the supplemental streambed channel material on the Site and removal and proper disposal of all unused material.

Materials: When a sufficient quantity of material is not available from the existing streambed channel within the permitted footprint of the Site, the Contractor shall furnish visually inspected and accepted supplemental streambed channel material from an off-Site source.

The supplemental streambed channel material for this item shall be consistent with the existing naturally-formed cobbles and rocks, gravel, and clean natural sediments found within the existing channel. Rock excavated from ledge (bedrock) formations, broken from larger boulders, broken concrete or angular material will not be accepted. Rock larger than 12 inches in diameter will not be accepted. Silts and clays will not be accepted.

The visual inspection of the supplemental streambed channel material shall be performed by the Engineer at the off-Site source prior to delivery of material to the Site. The Contractor shall notify the Engineer at least 10 days in advance of the need for inspection of proposed off-Site material.

Construction Methods: At the start of construction, the Contractor shall prepare an area, approved by the Engineer, suitable in size and location for stockpiling the supplemental streambed channel bottom material. The Contractor shall select an upland location where disruption to the stream channel or impact to wetland areas caused by moving the supplemental streambed channel bottom material to and from the stockpile are minimized during the placement of material. The stockpile shall be located where it can remain undisturbed for the duration of the stream channel construction and shall be protected using sedimentation control measures.

The stockpile area shall be cleared and cleaned adequately to prevent mixing with underlying soil or other materials, including the use of structural fabric if required. The stockpile area shall be adequately covered to protect the supplemental streambed channel material from erosion by rain or other forces. After the supplemental streambed channel material and the excavated channel bottom material to be reused have been placed in the stockpile areas, no other excavated or off-Site material shall be placed in the stockpiles.

The reused and supplemental streambed channel material shall be placed at the designated location(s) to the required thickness as shown on the plans or denoted on the permit application, or as directed by the Engineer. Equipment and placement techniques shall prevent integration with the surrounding material and shall keep the channel bottom material relatively homogenous. Reused and supplemental streambed channel material shall be placed in a manner that replicates the original condition of the channel prior to excavation.

The Contractor shall perform all containment, diversion, or other separation of the channel flow when placing the reused and supplemental streambed channel material to minimize sediment transport downstream.

The disposal of any surplus or unsuitable material shall be in accordance with Section 2.02. Restore the stockpile area as directed by the Engineer.

Method of Measurement: Work under this item shall be measured for payment as provided under Article 1.09.04 – Extra and Cost-Plus Work.

The sum of money shown on the estimate and in the itemized proposal as “Estimated Cost” for this work will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount bid for the Contract.

Basis of Payment: This work will be paid for under Article 1.09.04 – Extra and Cost Plus Work.

Payment for clearing and grubbing of the approved stockpile area will be included in the item “Clearing and Grubbing.”

Payment for excavation and reuse of existing channel bottom material will be included in the item “Excavation and Reuse of Existing Channel Bottom Material.”

Payment for all containment, diversion or other separation of stream flow from the excavation of channel bottom material will be included in the item “Cofferdam and Dewatering” or special provision for "Handling Water."

Pay Item	Pay Unit
Supplemental Streambed Channel Material	est.

ITEM #0202593A –ACCESS ROAD (SITE NO. 1)**ITEM #0202594A –ACCESS ROAD (SITE NO. 2)****ITEM #0202603A –ACCESS ROAD (SITE NO. 3)****ITEM #0202604A –ACCESS ROAD (SITE NO. 4)**

Description: Work under this item shall consist of constructing permanent and temporary access to the areas around Bridge Nos. 06795 and 06796 at the location(s) shown on the plans for the purpose of constructing the work and for future maintenance. The work involved in removing, reconfiguring, or adjusting any access roads and/or restoring temporary areas to its original condition shall be included as part of this item.

Materials: A variety of materials will be necessary to construct the access roads; including but not limited to processed aggregate, geotextile fabric, anti-tracking pads, earth excavation, compacted granular fill and formation of subgrade, as shown on the plans. The preparation for the access road, as well as the removal and restoration of temporary areas, as shown on the plans, will include the sedimentation control systems, tree protection, furnishing and placing top soil, conservation seeding for slopes and soil erosion control matting Type D.

The materials shall be as noted on the plans and shall meet the requirements of pertinent Form 817 specifications or shall be of a quality acceptable to the Engineer.

Geotextile Fabric:

Geotextile Fabric shall be a fabric that is on the “Qualified Product List for Connecticut Department of Transportation” and listed under Separation, category high survival.

Construction Methods: The Contractor shall prepare the site using the sediment and erosion control measures as shown on the plans. This work shall include the installation, maintenance, and removal of the controls, as deemed necessary by the Engineer.

The composition of the access roads shall be processed aggregate, as shown on the plans.

The Contractor shall maintain a maximum of 2:1 slopes and ensure that slopes greater than or equal to this are stabilized using stone slope protection, erosion control matting, or temporary earth retaining systems, as shown on the plans or at the direction of the Engineer. This item shall also include anti-tracking pads at all egress locations as shown and detailed on the plans. There may be other locations on the project where anti-tracking pads shall be needed and shall be paid for by the square yard.

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Clearing and grubbing and tree trimming will be required for the temporary access road. Any tree shown to be within the cut/fill limits of each site are to be removed under the direction of the Engineer. Trees that are located outside the cut/fill limits but within the limits of temporary work will require tree protection during construction.

After the work has been completed, all materials used to construct the access road that is shown as temporary on the plans shall be completely removed except as noted on the plans to remain. Disturbed areas beneath and around the temporary construction access shall be restored to their original grade and condition as depicted on the plans.

Method of Measurement: This work, being paid on a lump sum basis, will not be measured for payment.

Basis of Payment: This work will be paid for at the contract Lump Sum price for “Access Road (Site No. X)”, which price shall include all work defined herein and necessary for the planning, design, construction, maintenance, removal and restoration of the temporary construction access roads and all materials, equipment, tools and labor incidental thereto.

PAY ITEM	PAY UNIT
Access Road (Site No. 1)	L.S.
Access Road (Site No. 2)	L.S.
Access Road (Site No. 3)	L.S.
Access Road (Site No. 4)	L.S.

ITEM #0202593A
 ITEM #0202594A
 ITEM #0202603A
 ITEM #0202604A

ITEM #0204401A – HANDLING WATER (SITE NO. 1)

ITEM #0204402A - HANDLING WATER (SITE NO. 2)

ITEM #0204403A - HANDLING WATER (SITE NO. 3)

Description: Work under this item shall consist of designing, furnishing, installing, maintaining, removing and disposing of a temporary water handling system. This may include water-handling-cofferdams (temporary barriers), bypass pipes, bypass pumps/hoses, temporary energy dissipation, sumps, drainage channels, and equipment and work necessary for dewatering.

A temporary water handling system redirects surface water beyond, through, or around the limits of construction to allow work to be done in the dry.

Materials: The materials required for this work shall be as shown on the plans, on the accepted working drawings, or as ordered by the Engineer.

Construction Methods: The Contractor shall prepare and submit written procedures for handling water. Working drawings, in accordance with Article 1.05.02, shall also be prepared and submitted.

The Contractor shall consider stream conditions and water elevations associated with the Site to determine the type of temporary water handling system required to redirect water away from work being performed. The system shall be designed to be compatible with the stage construction and Maintenance and Protection of Traffic, as indicated in the Contract, and shall conform to Section 1.10.

The Contractor shall be responsible for maintenance of the water handling system. If the system becomes damaged or displaced during construction, the system shall be corrected as required.

Unless otherwise provided or directed, all temporary water handling system components shall be removed and disposed of in an acceptable manner when no longer required.

Method of Measurement: The work under this item, being paid on a lump sum basis, will not be measured for payment.

Basis of Payment: This work will be paid for at the Contract lump sum price for “Handling Water (Site No. 1)”, “Handling Water (Site No. 2)” or “Handling Water (Site No. 3)” complete and accepted, which price shall include designing (including submittals and working drawings), furnishing, installing, maintaining, removing, and disposing of all temporary water handling system components as are necessary for completion of the work. This price shall include all materials, equipment, tools, labor and work incidental thereto.

A schedule of values for payment shall be submitted to the Engineer for review and comment.

Pay Item	Pay Unit
Handling Water (Site No. 1)	l.s.
Handling Water (Site No. 2)	l.s.
Handling Water (Site No. 3)	l.s.

ITEM #0204401A
ITEM #0204402A
ITEM #0204403A

ITEM #0216012A - CONTROLLED LOW STRENGTH MATERIAL

Description: Controlled Low Strength Material (CLSM) is a self consolidating, rigid setting material to be used in backfills, fills, structural fills and elsewhere as indicated on the plans, or as directed by the Engineer. The flow and set time characteristics of CLSM shall be designed to meet the specific job conditions. All CLSM material covered by this specification shall be designed to be hand excavatable at any time after placement. It shall be composed of a mixture of portland cement, aggregate, and water with the option of using fly ash, slag cement, air-entraining agents, and other approved admixtures.

Materials: All materials utilized in the CLSM mix design shall be in accordance with the applicable requirements of Article M.03.01

Composition: The composition of the CLSM shall be in accordance with the requirements set forth in Article M.03.01-Component Materials, as well as the applicable sections of ACI 229R. The Contractor shall submit each proposed mix design, with all supporting data, to the Engineer for review and approval at least two weeks prior to its use.

The setting time of CLSM materials shall be designed so as to achieve the strength necessary to comply with the time constraints called for under the Maintenance and Protection of Traffic requirements of the project specifications. The use of chloride accelerators is not permitted.

The minimum compressive strength of the CLSM material shall be 30 pounds per square inch (psi) and the maximum compressive strength of the CLSM shall be 150 pounds per square inch (psi) when tested in accordance with ASTM D4832 after 56 days.

The CLSM mix design shall utilize a nominal maximum size of No. 8 aggregate as specified in M.01.02.

CLSM mixes shall have a minimum of 20% entrained air when tested in accordance with AASHTO T152.

Construction Methods: CLSM shall only be placed when the ambient temperature is at least 32° F and rising. CLSM material shall be deposited within 2 hours of initial mixing.

CLSM may be placed by chutes, conveyors, buckets or pumps depending upon the application and accessibility of the site. Should voids or cavities remain after the placement of the CLSM, the Contractor shall modify the placement method or flow characteristics of the CLSM. Voids or cavities which have not been filled properly shall be corrected as directed by the Engineer and at the Contractor's expense.

Method of Measurement: This work will be measured for payment by the actual number of cubic yards of "Controlled Low Strength Material installed and accepted within the pay limits shown on the contract plans or as directed by the Engineer.

Basis of Payment: This work will be paid at the contract unit price per cubic yard “Controlled Low Strength Material,” which price shall include all materials, equipment, tools and labor incidental thereto.

Pay Item
Controlled Low Strength Material

Pay Unit
C.Y.

ITEM #0219011A–SEDIMENT CONTROL AT CATCH BASIN

Description: This work shall consist of furnishing, installing, cleaning, maintaining, replacing, and removing sedimentation control at catch basins at the locations and as shown on plans and as directed by the engineer.

Materials:

Sack shall be manufactured from a specially designed woven polypropylene geotextile sewn by a double needle machine, using a high strength nylon thread. Sack shall be manufactured by one of the following or an approved equal:

Siltsack®

SI Geosolutions: www.sigeosolutions.com
(800)621-0444

DandySack™

Dandy Products Inc.
P.O. Box 1980
Westerville, Ohio 43086
Phone: 800-591-2284
Fax: 740-881-2791
Email: dlc@dandyproducts.com
Website: www.dandyproducts.com

FLeXstormInletFilters

Inlet & Pipe Protection
24137 W. 111th St - Unit A
Naperville, IL 60564
Telephone: (866) 287-8655
Fax: (630) 355-3477

The sack shall be manufactured to fit the opening of the catch basin or drop inlet. Sack shall have the following features: two dump straps attached at the bottom to facilitate the emptying of sack and lifting loops as an integral part of the system to be used to lift sack from the basin. The sack shall have a restraint cord approximately halfway up the sack to keep the sides away from the catch basin walls, this cord is also a visual means of indicating when the sack should be emptied.

ConstructionMethods:

Sedimentation Control System at Catch Basin shall be installed by the Contractor at locations shown on the plans or as directed by the Engineer in accordance with the applicable sections of Section 2.19 of the Standard Specifications and the details in the plans. Once the restraint cord is covered with sediment, the sack shall be emptied, properly disposed of by the Contractor, cleaned and placed back into the basin. Installation, maintenance and removal shall be per manufacturer instructions and recommendations.

Method of Measurement:

Sediment Control at Catch Basin will be measured as each installed, maintained, accepted, and removed. There will be no separate measurement for maintenance or replacement due to failure of the sack or its components (holes in the sack, broken straps/loops or restraint cord) associated with this item.

Basis of Payment

Payment for this work will be made at the Contract unit price per each “Sediment Control at Catch Basin” complete in place and accepted, which price shall include all materials, equipment, tools and labor incidental to installation, maintenance throughout construction, replacement, removal and proper disposal of the sediment control material and surplus material.

Pay Item

Sediment Control at Catch Basin

Pay Unit

Each

ITEM #0406275A - FINE MILLING OF BITUMINOUS CONCRETE (0 TO 4 INCHES)

Description: This work shall consist of the milling, removal, and disposal of existing bituminous concrete pavement.

Construction Methods: The Contractor shall remove the bituminous concrete material using means acceptable to the Engineer. The pavement surface shall be removed to the line, grade, and existing or typical cross-section shown on the plans or as directed by the Engineer.

The bituminous concrete material shall be disposed of offsite by the Contractor at an approved disposal facility unless otherwise stated in the Contract.

Any milled surface, or portion thereof, that is exposed to traffic shall be paved within five (5) calendar days unless otherwise stated in the plans or Contract.

The equipment for milling the pavement surface shall be designed and built for milling bituminous concrete pavements. It shall be self propelled with sufficient power, traction, and stability to maintain depth and slope and shall be capable of removing the existing bituminous concrete pavement.

The milling machine shall be equipped with a built-in automatic grade averaging control system that can control the longitudinal profile and the transverse cross-slope to produce the specified results. The longitudinal controls shall be capable of operating from any longitudinal grade reference, including string line, contact ski (30 feet minimum), non-contact ski (20 feet minimum), or mobile string line (30 feet minimum). The transverse controls shall have an automatic system for controlling cross-slope at a given rate. The Engineer may waive the requirement for automatic grade or slope controls where the situation warrants such action.

The machine shall be able to provide a 0 to 4 inch deep cut in one pass. The rotary drum of the machine shall use carbide or diamond tipped tools spaced not more than $\frac{5}{16}$ inch apart. The forward speed of the milling machine shall be limited to no more than 45 feet/minute. The tools on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture.

The machine shall be equipped with an integral pickup and conveying device to immediately remove material being milled from the surface of the roadway and discharge the millings into a truck, all in one operation. The machine shall also be equipped with a means of effectively limiting the amount of dust escaping from the milling and removal operation.

When milling smaller areas or areas where it is impractical to use the above described equipment, the use of a lesser equipped milling machine may be permitted when approved by the Engineer.

Protection shall be provided around existing catch basin inlets, manholes, utility valve boxes, and any similar structures. Any damage to such structures as a result of the milling operation is the Contractor's responsibility and shall be repaired at the Contractor's expense.

To prevent the infiltration of milled material into the storm drainage system, the Contractor shall take special care to prevent the milled material from falling into the inlet openings or inlet grates. Any milled material that has fallen into inlet openings or inlet grates shall be removed at the Contractor's expense.

Surface Tolerance: The milled surface shall provide a satisfactory riding surface with a uniform textured appearance. The milled surface shall be free from gouges, longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, improper use of equipment, or poor workmanship. The Contractor, under the direction of the Inspector, shall perform random spot-checks with a Contractor supplied ten-foot straightedge to verify surface tolerances at a minimum of five (5) locations per day. The variation of the top of two ridges from the testing edge of the straightedge, between any two ridge contact points, shall not exceed ¼ inch. The variation of the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed ¼ inch. Any unsatisfactory surfaces produced are the responsibility of the Contractor and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

The depth of removal will be verified by taking measurements every 250 feet per each pass of the milling machine, or as directed by the Engineer. These depth measurements shall be used to monitor the average depth of removal.

Where a surface delamination between bituminous concrete layers or a surface delamination of bituminous concrete on Portland cement concrete causes a non-uniform texture to occur, the depth of milling shall be adjusted in small increments to a maximum of +/- ½ inch to eliminate the condition.

When removing bituminous concrete pavement entirely from an underlying Portland cement concrete pavement, all of the bituminous concrete pavement shall be removed leaving a uniform surface of Portland cement concrete, unless otherwise directed by the Engineer.

Any unsatisfactory surfaces produced by the milling operation are the Contractor's responsibility and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

No vertical faces, transverse or longitudinal, shall be left exposed to traffic unless the requirements below are met. This shall include roadway structures (catch basins, manholes, utility valve boxes, etc.). If any vertical face is formed in an area exposed to traffic, a temporary paved transition shall be established according to the requirements shown on the plans. If the milling machine is used to form a temporary transition, the length of the temporary transition shall conform to Special Provision Section 4.06 –Bituminous Concrete, "Transitions for Roadway Surface," the requirements shown on the plans, or as directed by the Engineer. At all

permanent limits of removal, a clean vertical face shall be established by saw cutting prior to paving.

Roadway structures shall not have a vertical face of greater than one (1) inch exposed to traffic as a result of milling. All structures within the roadway that are exposed to traffic and greater than one (1) inch above the milled surface shall receive a transition meeting the following requirements:

For roadways with a posted speed limit of 35 mph or less*:

1. Round structures with a vertical face of greater than 1 inch to 2.5 inches shall be transitioned with a hard rubber tapered protection ring of the appropriate inside diameter designed specifically to protect roadway structures.
2. Round structures with a vertical face greater than 2.5 inches shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.
3. All rectangular structures with a vertical face greater than 1 inch shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.

*Bituminous concrete tapers at a minimum 24 to 1 (24:1) taper in all directions may be substituted for the protection rings if approved by the Engineer.

For roadways with a posted speed limit of 40, 45 or 50 mph:

1. All structures shall receive a transition of bituminous concrete formed at a minimum 36 to 1 (36:1) taper in the direction of travel. Direction of travel includes both the leading and trailing side of a structure. The minimum taper shall be 24 to 1 (24:1) in all other directions.

For roadways with a posted speed limit of greater than 50 mph:

1. All structures shall receive a transition of bituminous concrete formed at a minimum 60 to 1 (60:1) taper in the direction of travel. Direction of travel includes both the leading and trailing side of a structure. The minimum taper shall be 24 to 1 (24:1) in all other directions.

All roadway structure edges and bituminous concrete tapers shall be clearly marked with fluorescent paint. The paint shall be maintained throughout the exposure to traffic.

The milling operation shall proceed in accordance with the requirements of the "Maintenance and Protection of Traffic" and "Prosecution and Progress" specifications, or other Contract requirements. The more stringent specification shall apply.

Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a sweeper truck. The sweeper truck shall be equipped with a water tank and be capable of removing the millings and loose debris from the surface. The sweeper truck shall operate at a forward speed that allows for the maximum pickup of millings from the roadway surface. Other

sweeping equipment may be provided in lieu of the sweeper truck where acceptable by the Engineer.

Any milled area that will not be exposed to live traffic for a minimum of 48 hours prior to paving shall require a vacuum sweeper truck in addition to, or in lieu of, mechanical sweeping. The vacuum sweeper truck shall have sufficient power and capacity to completely remove all millings from the roadway surface including any fine particles within the texture of the milled surface. Vacuum sweeper truck hose attachments shall be used to clean around pavement structures or areas that cannot be reached effectively by the main vacuum. Compressed air may be used in lieu of vacuum attachments if approved by the Engineer.

Method of Measurement: This work will be measured for payment by the number of square yards of area from which the milling of asphalt has been completed and the work accepted. No area deductions will be made for minor unmilled areas such as catch basin inlets, manholes, utility boxes and any similar structures.

Basis of Payment: This work will be paid for at the Contract unit price per square yard for “Fine Milling of Bituminous Concrete (0 to 4 Inches).” This price shall include all equipment, tools, labor, and materials incidental thereto.

No additional payments will be made for multiple passes with the milling machine to remove the bituminous surface.

No separate payments will be made for cleaning the pavement prior to paving; providing protection and doing handwork removal of bituminous concrete around catch basin inlets, manholes, utility valve boxes and any similar structures; repairing surface defects as a result of the Contractors negligence; providing protection to underground utilities from the vibration of the milling operation; removal of any temporary milled or paved transition; removal and disposal of millings; furnishing a sweeper truck and sweeping after milling. The costs for these items shall be included in the Contract unit price.

Pay Item	Pay Unit
Fine Milling of Bituminous Concrete (0 to 4 Inches)	S.Y.

ITEM #0406287A - RUMBLE STRIPS - AUTOMATED

Description:

Work under this item shall consist of installing rumble strips on asphalt highway shoulders where shown on the plans or where directed by the Engineer, and in conformance with these specifications.

Construction Methods:

The Contractor shall pre-mark the location of the edge of the cut, and the beginning and ending points of the sections, prior to the installation of the rumble strips. The Engineer shall review and approve the locations.

The Contractor shall arrange for a technical representative, from the company which produces the milling machine to be used on the project, who will be required to be on-site from the beginning of the operation in order to ensure results that meet the requirements of the plans and specifications until such time the Engineer is satisfied.

Rumble strips should not be installed on bridge decks, in acceleration and deceleration lanes, at drainage structures, at loop detector sawcut locations, or in other areas identified by the Engineer.

Automated (Wide Shoulders):

The equipment shall be able to install the rumble strips in sections where the shoulder width from the edge line to an obstruction is greater than or equal to 4 feet. Where there are no obstructions, the equipment shall be used in sections where the shoulder width from the edge line is a minimum of 3 feet. The equipment shall consist of a rotary type cutting head with a maximum outside diameter of 24" and shall be a minimum of 16" long. The cutting head(s) shall have the cutting tips arranged in such a pattern as to provide a relatively smooth cut (approximately 1/16 of an inch between peaks and valleys) in one pass. The cutting head shall be on its own independent suspension from that of the power unit to allow the tool to self align with the slope of the shoulder or any irregularities in the shoulder surface. The equipment shall include suitable provisions for the application of water to prevent dusting. The Contractor shall use a machine capable of creating the finished pattern at a minimum output of 60 rumble strips per minute.

Manual (Narrow Shoulders):

The equipment shall be able to install the rumble strips in sections where the shoulder width from the edge line to an obstruction is between 3 feet and 4 feet. The cutting head(s) shall have the cutting tips arranged in such a pattern as to provide a relatively smooth cut (approximately 1/16 of an inch between peaks and valleys) in one pass. The equipment shall include suitable provisions for the application of water to prevent dusting.

Finished Cut (Automated or Manual)

The rumble strips shall have finished dimensions of 7" (+/- 1/2") wide in the direction of travel and shall be a 16" (+/- 1/2") long measured perpendicular to the direction of travel. The depressions shall have a concave circular shape with a minimum 1/2" depth at center (maximum allowable depth is 5/8" measured to a valley). The rumble strips shall be placed in relation to the roadway according to the patterns shown in the plans or on the Rumble Strip Details. Alignment of the edge of the cut shall be checked and verified by the Engineer.

The cutting tool shall be equipped with guides to provide consistent alignment of each cut in relation to the roadway.

The Contractor shall pick up any waste material resulting from the operation in a manner acceptable to the Engineer. This waste material shall be disposed of in accordance with Subarticle 2.02.03-10(a).

The work area shall be returned to a debris-free state prior to re-opening to traffic.

The Contractor shall provide all traffic control according to the Maintenance and Protection of Traffic Specification included elsewhere in the contract.

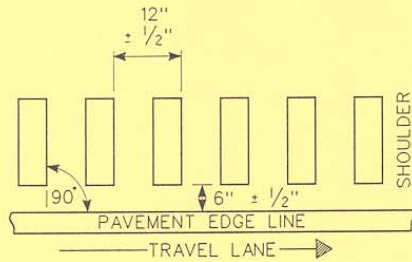
Method of Measurement:

This work will be measured for payment by the actual number of feet of shoulder where the rumble strips are placed and accepted. This distance shall be measured longitudinally along the edge of pavement with deductions for bridge decks, acceleration and deceleration lanes, drainage structures, loop detector sawcut locations, and other sections where the rumble strips were not installed.

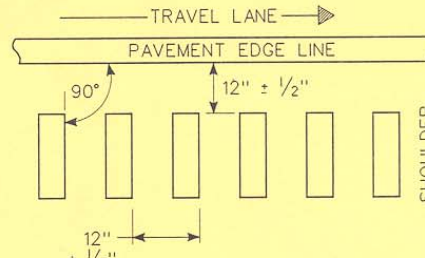
Basis of Payment:

This work will be paid for at the Contract unit price per foot for "Rumble Strips - Automated" or "Rumble Strips - Manual." The price shall include furnishing all equipment, tools, labor, a technical representative and work incidental thereto and also disposal of any waste material resulting from the operation. The Contractor will not be paid under the item "Rumble Strips - Manual" if the field conditions allow for the use of the "Rumble Strips - Automated" item, even if the manual method was used.

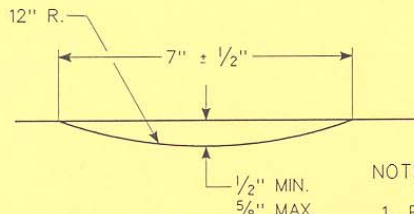
DETAILS AND SECTIONS OF RUMBLE STRIPS



LOCATION DETAIL (TYP.)
LEFT SHOULDER



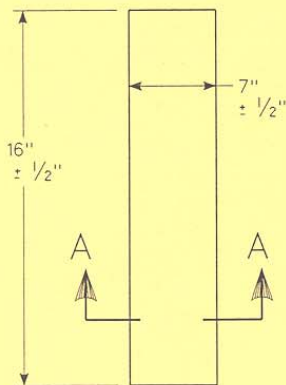
LOCATION DETAIL (TYP.)
RIGHT SHOULDER



SECTION A-A
NO SCALE

NOTES:

1. RUMBLE STRIP ALIGNMENT SHALL GENERALLY BE STRAIGHT AND OFFSET APPROXIMATELY 6" IN THE LEFT SHOULDER AND 12" IN THE RIGHT SHOULDER FROM THE OUTER EDGE OF THE EDGE LINE AND SHALL BE AT LEAST 12" FROM THE LONGITUDINAL JOINT IN COMPOSITE PAVEMENTS. THIS OFFSET MAY BE ADJUSTED TO ACCOMMODATE VARIATIONS IN THE EDGE LINE AND THE SHOULDER WIDTH.



PLAN DETAIL

FILE: RUMBLE.MDS

CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY. OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

RUMBLE STRIP DETAILS

ENGINEER *Erika B. Smith* DATE 10-18-99

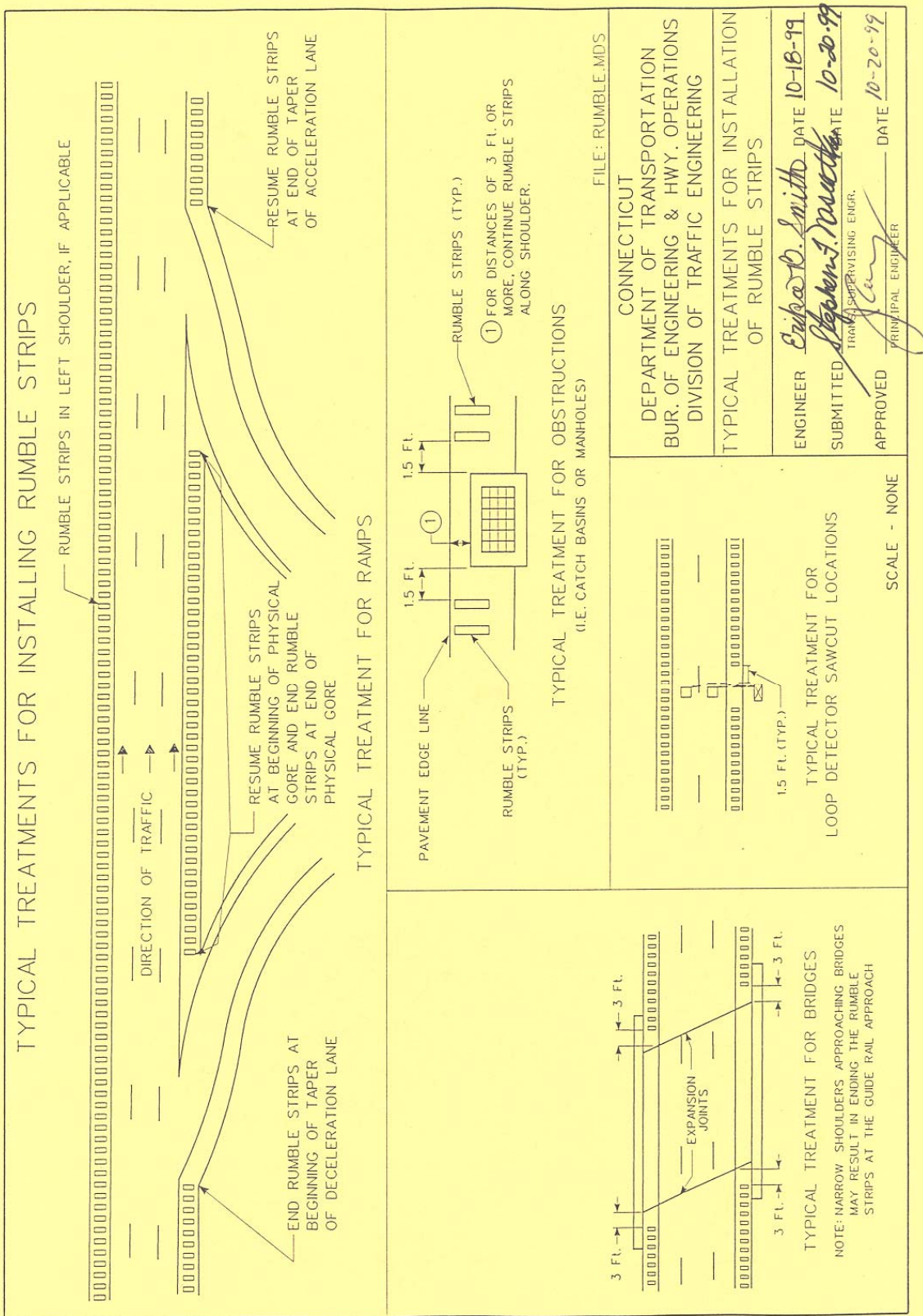
SUBMITTED *Stephen J. Masiecki* DATE 10-20-99
TRAFFIC SUPERVISING ENGR.

APPROVED *J. Long* DATE 10-20-99
PRINCIPAL ENGINEER

SCALE - NONE

ITEM # 0406287A

ITEM # 0406288A



ITEM #0406289A - REMOVAL OF RUMBLE STRIPS

Description:

Work under this item shall consist of removing rumble strips through milling and repaving with hot mix asphalt (HMA) where shown on the plans or where directed by the Engineer, and in conformance with these specifications. The surface lift of the existing pavement shall be removed by milling out the existing rumble strip to a depth of 1.5 to 2.5 inches. The milled surface shall be swept by hand or machine and then be blown clean with compressed air or a hot air lance. Tack coat is to be applied to the milled surface and any vertical or semi-vertical walls formed by the milling. The milled out area shall then be filled and compacted with HMA S0.375.

Definitions:

Surface lift of pavement: The thickness of the last lift of pavement placed prior to performing crack sealing. A lift is defined as single bituminous-concrete mixture placed at a defined thickness in a single paver pass (or by handwork.)

Materials:

Materials for this work shall consist of the following:

Hot-mix Asphalt (specifically HMA S0.375) conforming to the requirements of Sections 4.06 and M.04 of the Standard Specifications.

Tack coat conforming to the material requirements for tack coat in Sections 4.06 and M.04 of the Standard Specifications.

Equipment:

Equipment for this work shall include, but is not limited to, the following:

Milling machine – A milling machine designed and built for milling HMA pavements. It shall be self propelled with sufficient power, traction, and stability to maintain depth.

The rotary drum of the machine shall utilize carbide tip tools spaced not more than 5/8 inches apart. Use of a fine-milling drum with a tighter tooth spacing of 0.3 inches is desirable, but optional. The forward speed of the milling machine shall be limited to no more than 45 feet/minute. The tools on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture. It must include dust control equipment during the removal process.

It shall be capable of removing the existing pavement to a width of 2 to 10 inches wider than the rumble strip.

A wider milling width may be used in cases where two rumble strips are located near and parallel to each other, as may occur in a median area; see Construction Methods.

Sweeper – A hand broom is acceptable for smaller areas when approved by the Engineer. If a mechanized sweeper is used, it shall be equipped with a water tank and be capable of removing the

millings and loose debris from the surface. Other sweeping or vacuum type equipment may be provided in lieu of the sweeper where acceptable by the Engineer.

Air compressor – The unit shall consist of an air compressor capable of producing 100 psi, oil free, compressed air for blowing the milled pavement surface clean.

Hot air lance – The unit shall be designed for cleaning and drying the pavement surface. It shall consist of an air compressor capable of delivering 100 psi, oil free heated air. The compressed air emitted from the tip of the lance shall be flame free and be capable of achieving a temperature of at least 1500°F.

Paving and compaction equipment – All equipment used to place and compact the hot mix asphalt required for this work shall meet the requirements of Section 4.06 of the Standard Specifications, except no grade and slope control shall be required. Also, due to the nature of this work, it is expected that much of the placement of hot mix asphalt will require hand work. Either vibratory plate compactors or rollers may be used for compaction.

Construction Methods:

The Contractor shall pre-mark the location of the beginning and ending points of the sections, prior to the removal of the rumble strips. The Engineer shall review and approve the limits of removal.

The width of milling shall be as specified on the Plans or other specifications. If no other width specification exists, the width of milling shall be 2 to 10 inches wider than the existing rumble strip. Rumble strips are typically about 16 inches wide. If there are two rumble strips located near and parallel to one another, as may occur in median areas, and if they both can be removed by a single pass of a wider milling machine without adversely affecting drainage, safety, or quality of results, then a wider milling machine may be used. In this case the length measured for pay will be the sum of the lengths of the two individual rumble strips. Milling widths wider than specified above may be used with the written permission of the Engineer.

The depth of removal shall be as shown on the Plans, or as detailed in specifications, or as directed by the Engineer, generally from 1.5 to 2.5 inches. The intent is to remove the surface lift. If there are no Plans or other specifications, mill 1.5 to 2.5 inches as needed to match the thickness of the surface lift. The Engineer may alter the milling depth based on conditions discovered as work is in progress. It is expected that the milling depth will not exceed 2.5 inches. If the surface lift is 3 inches thick and it is in good condition, as determined by the Engineer, mill only 1.5 inches deep, unless directed otherwise by the Plans, project specifications, or Engineer.

As specified in the requirements for milling, the milled surface shall be swept clean (by hand if necessary.) Once all millings are removed by sweeping, the milled areas shall be allowed to dry if necessary. Any moisture in or on the milled areas must be allowed to evaporate or be removed with the assistance of a hot air lance as specified above. Once the milled area is deemed dry by the Engineer it shall be blown with compressed or hot lance air, as specified above, so that no debris or dust is present on or within the milled area.

Once deemed clean by the Engineer, the milled area, including the sides/walls of the milled area, shall receive an application of tack coat as specified above and in Section 4.06 of the Standard Specifications.

After the tack coat has had sufficient time to cure or break, HMA S0.375 (Superpave Level 2) shall be placed and compacted to the requirements above and in Section 4.06 of the Standard Specification. It shall be compacted to match the elevation of the surrounding pavement surface.

At all times the Contractor is required to meet the density and compaction and all other requirements specified in Sections 4.06 and M.04 of the Standard Specifications and any supplementals that have been issued by the bid date of the project.

The Contractor shall resurface the milled area prior to opening the roadway to traffic. The milled area shall be swept, cleaned with compressed air, tacked and repaved in the same day.

Precaution should be taken to avoid damage to the existing roadway materials that are to remain in place. If damage occurs, it must be repaired by the Contractor at no additional cost to the State. The methods employed in performing the work and all equipment, tools, machinery and plant used in handling material and executing any part of the work shall be subject to the approval of the Engineer before the work is started; and whenever found unsatisfactory, it shall be changed and improved as required by the Engineer.

The Contractor shall pick up any waste material resulting from the operation in a manner acceptable to the Engineer. This waste material shall be disposed of in accordance with Subarticle 2.02.03-10(a).

Method of Measurement:

This work will be measured for payment by the actual number of linear feet of rumble strips removed. This distance shall be measured longitudinally along the edge of pavement with deductions for bridge decks, acceleration and deceleration lanes, drainage structures, loop detector sawcut locations, and other sections where the rumble strips were not previously installed. If two rumble strips are near one another and are removed by a single milling machine pass, the length measured for pay will be the sum of the lengths of the two rumble strips.

Basis of Payment:

This work will be paid for at the Contract unit price per linear foot for "Removal of Rumble Strips." The price shall include the removal of the existing rumble strips, furnishing all materials, placement, and compaction of the HMA, equipment, tools, labor, and work incidental thereto and also disposal of any waste material resulting from the operation.

Pay item
Removal of Rumble Strips

Pay Unit
L.F.

ITEM #0406314A – 80 MIL PAVEMENT MARKING GROOVE 5” WIDE

ITEM #0406315A – 80 MIL PAVEMENT MARKING GROOVE 7” WIDE

Description:

Work under this item shall consist of grooving the pavement surface in a continuous or regularly spaced fashion for the placement of recessed pavement markings. Unless otherwise noted, the groove shall be 1 inch wider than the anticipated pavement marking. The groove for double-yellow centerline markings shall consist of two grooves, each 5 inches wide.

Groove Width: 5 inches wide for 4-inch markings
7 inches wide for 6-inch markings

Groove Depth: 0.080 inches ± 0.010 inches

The groove shall not be installed continuously for intermittent pavement markings, but only where markings are to be applied.

The groove shall not be installed on metal bridge decks, on bridge joints, at drainage structures, at loop detector sawcut locations, or in other areas identified by the Engineer.

Equipment:

The grooving equipment shall be equipped with a free-floating, depth-controlled head which provides a consistent groove depth over irregular pavement surfaces. The grooving head shall only be equipped with diamond saw blades. Any ridges in the bottom of the groove shall have a maximum height of 0.015 inches.

The grooving equipment shall be capable of installing a groove 6 inches away from any vertical or horizontal obstruction.

Construction Methods:

The pavement marking groove shall be installed in accordance with the current ConnDOT pavement marking standard drawings.

The Contractor shall establish control points for measuring offsets and pre-marks along the entire distance of pavement being grooved. Prior to installation of the groove, the Contractor shall verify the equipment is capable of installing the correct width and spacing of the groove. The control points, pre-marks, and equipment will be reviewed by the Engineer prior to commencement of the work.

The groove will be considered defective if any edge of the groove varies more than 0.25 inch in a 10-foot length, or if the alignment of the groove visibly deviates from the normal alignment of the road.

Final Cleaning: The Contractor shall immediately collect all debris and dust resulting from the grooving operation by vacuuming the pavement groove and adjacent pavement surface. Collected debris and any waste material shall be properly disposed of by the Contractor.

The work area shall be returned to a debris-free state prior to re-opening to traffic.

Repair of Unacceptable Groove:

The Contractor shall repair any defective groove(s) to the satisfaction of the Engineer. All work in conjunction with this repair shall be performed at no additional cost to the State.

Pavement Marking Requirements:

The Contractor is required to install permanent epoxy resin pavement markings in the grooves before the lane or roadway is opened to live traffic. If the permanent pavement markings cannot be installed before the lane or roadway is opened to live traffic, temporary 0.005-inch hot-applied waterborne pavement markings without glass beads shall be installed before the lane or roadway is opened to live traffic at no additional cost to the State. Within 10 calendar days, permanent epoxy resin pavement markings shall be applied in the groove over the 0.005-inch hot-applied waterborne pavement markings.

Groove Depth Gauge:

The Contractor shall supply the Engineer with two accurate, easily readable gauges with which to verify groove depth for the duration of the project. The gauges shall be delivered no less than one week prior to the anticipated beginning of grooving operations. Gauges shall be accompanied by manufacturer's instructions for their use. The gauges will be returned to the Contractor at the conclusion of the project.

Method of Measurement:

This work will be measured for payment by the number of linear feet of groove installed in the pavement as ordered and accepted by the Engineer.

Basis of Payment:

This work will be paid for at the contract unit price per linear feet of "Pavement Marking Groove" installed in the pavement and accepted. This price shall include cleaning of the pavement, all materials, equipment, tools, depth gauges, and labor incidental thereto, and disposal of any waste material resulting from the operation.

Pay Item

80 Mil Pavement Marking Groove 5" Wide
80 Mil Pavement Marking Groove 7" Wide

Pay Unit

L.F.
L.F.

ITEM #0503866A – REMOVAL OF EXISTING CULVERT (SITE NO. 1)

Work under this item shall conform to the requirements of Section 5.03 of the Standard Specifications amended as follows:

5.03.01 - Description: *Delete Paragraph and add the following.*

This work shall include the partial removal and disposal of existing asphaltic coated corrugated metal pipe arch culvert as indicated on the plans.

5.03.03 – Construction Methods:

1. Submittals. Delete Paragraph and add the following.

The Contractor shall prepare and submit written procedures and working drawings for removal, in accordance with 1.05.02. The submittal shall address the following:

- proposed equipment and removal method(s)
- operating and storage location(s) of equipment and materials
- containment and disposal of debris

5.03.05 - Basis of Payment: *Replace the first paragraph with the following.*

This work shall be paid for at the contract lump sum price for "Removal of Existing Culvert", which price shall include disposal of material and all materials, equipment, tools, and labor incidental to the removal and disposal of the culvert.

Pay Item	Pay Unit
Removal of Existing Culvert	LS

ITEM #0507568A – TEMPORARY STEEL PLATE

Work under this item shall conform to the requirements of Section 5.07, amended as follows:

Description: Add the following:

Catch basins shall have tops removed and shall be covered with steel plates during construction staging where shown on the contract plans or as ordered by the Engineer.

Materials: Add the following:

Steel plate shall conform to ASTM A 709, Grade 36.

Construction Methods: Add the following:

Where catch basins are shown on the plans to be covered during construction staging, the Contractor shall remove the existing (or new) catch basin top and place a minimum 1-1/4" thick steel plate over the opening, prior to the placement of temporary pavement. The plate shall bear on the catch basin walls a minimum of 8" around the entire perimeter of the opening.

The plate shall be removed and disposed of by the Contractor when the construction staging allows for the placement of the permanent catch basin top.

Method of Measurement: Add the following:

The quantity to be paid for under this item shall be the number of temporary steel plates installed and accepted where shown on the plans or as ordered by the Engineer.

Basis of Payment: Add the following:

The installation of temporary steel plates on catch basins shall be paid for at the contract unit price each for "TEMPORARY STEEL PLATE" which price shall include all materials, equipment, tools and labor incidental thereto. No additional payment shall be made for installation of the permanent catch basin top.

ITEM #0509001A - WELDED STUDS

Section 5.09 — Welded Studs is hereby amended as follows:

5.09.01 - Description: Add the following:

This work also includes furnishing and installing alternate No. 5 reinforcing bar stud anchors as shown on the plans when it has been determined by the Engineer that the condition of the existing metal pipe cannot support normal welded studs.

5.09.02 - Materials: Add the following:

Material for alternate style studs shall conform to Section M.06.01 "Reinforcing Steel", bar designation No. 5, minimum, or as directed by the Engineer. The bar shall be fabricated to conform to the detail in the contract drawings.

5.09.03 - Construction Methods: Add the following:

If it is determined by the Engineer that the existing metal pipe has deteriorated to the point that it will not accept a welded stud, he/she may direct the Contractor to install the alternate style stud as shown in the plans. In the event that a high rock profile prohibits construction of the alternate stud as shown on the plan, the stud location and detail may be modified as directed by the Engineer to facilitate the work based on field conditions at the site during construction.

5.09.05 - Basis of Payment: Add the following:

Alternate style studs, if used as directed by the Engineer, will also be paid for at the contract unit price each for "Welded Studs".

Pay Item
Welded Studs

Pay Unit EA.

ITEM #0601183A - PRECAST CONCRETE CUT-OFF WALL**ITEM #0601277A - PRECAST CONCRETE BRIDGE COMPONENTS**

Description: Work under this item consists of furnishing and installing concrete cutoff wall(s) including return walls, and precast concrete headwall(s) as shown on the plans and as ordered by the Engineer. This item also includes all hardware, inserts, dowels for connections, reinforcing steel and joint materials as shown on the plans.

Materials:

- The concrete mix design shall meet the requirements of M.03.02, Class PCC05562, and shall be submitted to the Engineer.
- All reinforcing steel, including dowel bar mechanical connectors, shall be galvanized and shall meet the requirements of M.06.01.
- The grouted sleeve system shall be galvanized and consist of a steel sleeve filled with non-shrink, high-early-strength grout that is capable of developing not less than 125% of the yield strength, F_y , of the bar reinforcement in tension and compression. The total slip of the bar within the splice sleeve of the connector after loading to 30.0 ksi in tension and relaxing to 3.0 ksi shall not exceed 0.01 in. between gage points clear of the splice sleeve. The grout used in the splice sleeve shall be as recommended by the grout sleeve manufacture.
- All threaded concrete inserts, lifting fixtures, and miscellaneous hardware cast into precast concrete components shall be galvanized in accordance with ASTM A153 or ASTM B695 Grade 50. All portions of the lifting and seating devices shall be recessed from the finished concrete surface.
- Non-shrink grout shall meet the requirements of M.03.05 and be suitable for submerged applications.
- Structural non-shrink grout shall meet the requirements of M.03.05, obtain a mix design compressive strength no less than the adjacent concrete components and be suitable for submerged applications.

Construction Methods:

1. Submittals: All submittals shall include a title sheet with the following:

- Project number, town and crossing.
 - Bridge number, when shown on the plans.
 - Design code, as applicable.
 - Contact information for fabricator – contact information shall include name and address of the fabricator and the name of contact person with phone number and email address.
- (a) Shop Drawings - Precast Concrete Components:** Prior to fabrication, the Contractor shall submit an individually packaged set of shop drawings for the precast concrete components for each precast box culvert location to the Engineer for review, in accordance with the plans and 1.05.02. Each shop drawing package shall include details necessary for fabrication of each unique component, handling and installation of the precast concrete components, supporting documents for all materials incorporated into the precast concrete components and for other materials provided by the fabricator.

(b) Working Drawings - Lifting and Seating Devices : Prior to fabrication, the Contractor shall submit working drawings and supporting computations for the embedded lifting and seating devices required for the handling and installation of the precast concrete components at each box culvert location to the Engineer for review in accordance with 1.05.02. Prior to applying load to the embedded devices, the concrete shall attain the minimum concrete compressive strength associated with the safe working load of the device.

(c) Working Drawings - Installation of Precast Concrete Components: Prior to installation of the precast concrete components, the Contractor shall submit working drawings and supporting computations for the lifting and placement of the precast concrete components, to the Engineer for review in accordance with 1.05.02. Cranes shall be operated in accordance with the Connecticut Department of Public Safety regulations. The Contractor shall be responsible for verifying the weight of each lift. The working drawing submittal shall include, but not be limited to the following:

- Plan of the work area showing all structures, roads, railroad tracks, Federal and State regulated areas as depicted on the plans, overhead and subsurface utilities, property lines, or any other information relative to erection. No picks shall be allowed over vehicular, pedestrian, railway or vessel traffic.
- A detailed narrative describing the lifting and installation sequence.
- Manufacturer's data sheet for the crane(s) including the load/capacity chart. The capacity of the crane shall be adequate for the total lift/pick load including rigging, spreaders and other materials. In the area of railroads and navigable waterways, the capacity shall be as required by the regulatory authorities.
- Manufacturer's data sheets and product data sheets for all rigging (slings, spreader bars, blocks, etc.), lifting devices, and other connecting equipment and hardware listing the number, type, size, arrangement and capacity of each.
- Location of each crane for each pick.
- Crane support measures, including any support beneath the outriggers such as bearing pads, crane mats, planking or special decking, or other means to transfer the crane's total weight (including the lifted load) into the earth or structure beneath it.
- Delivery location of each component.
- Boom length and the lift and setting radius for each pick (or maximum lift radius).
- Pick point location(s) on each component.
- Lifting weight of each component including rigging (clamps, spreader beams, etc.)

(d) Product Data – Field Installed Materials: Prior to installation of the precast concrete components, the Contractor shall submit product data for field installed materials, such as non-shrink grout, structural non-shrink grout, geotextile, etc., not addressed in other submissions to the Engineer for review in accordance with 1.05.02.

2. Fabrication and Manufacture: The fabrication and manufacture of the precast concrete components shall meet the requirements of M.08.02-4 as supplemented by the following:

(a) Reinforcing Steel: Reinforcing steel shall be fabricated and installed in accordance with Articles 6.02.03-2 through 6.02.03-5. The welding of reinforcement is not permitted.

- (b) **Test Cylinders:** During the casting of the components, the Contractor shall cast a minimum of four 4 inch × 6 inch test cylinders in accordance with AASHTO T23 during each production run. Cylinders shall be cured under the requirements of ASTM C31 and shall be used to confirm that the concrete meets the requirements of M.03.02.
- (c) **Placing Concrete:** Concrete shall not be deposited in the forms until the Contractor has inspected the reinforcing steel, including all other embedded components, and has documented such inspection.

Concrete shall not be deposited into the forms when the ambient temperature is below 40°F or above 100°F, unless adequate heating or cooling procedures have been previously approved by the Engineer. The concrete temperature shall be 60°F to 90°F at the time of placement.

Truck-mixed or transit-mixed concrete will not be allowed.

Production during the winter season, from November 15 to March 15 inclusive, will be permitted only on beds located in a completely enclosed structure of suitable size and dimension that provides a controlled atmosphere for the protection of the casting operation and the product.

Outside concreting operations will not be permitted during rainfall unless the operation is completely under cover.

The concrete shall be vibrated internally, or externally, or both, as needed to provide adequate flow and consolidation of the concrete. The vibration shall be provided in such a manner as to avoid displacement of reinforcing steel, forms, or other components. There shall be no interruption in the placement of concrete. Concrete shall be placed and vibrated sufficiently to produce a surface free from imperfections such as honeycombing, segregation, cracking, or checking.

Any deficiencies noted in the components may be cause for rejection.

- (d) **Finishing:** All fins, runs, or mortar shall be removed from the concrete surfaces which will remain exposed. Form marks on exposed surfaces shall be smoothed by grinding. All exposed, outside concrete surfaces shall be given a grout clean-down finish in accordance with 6.01.03-10.
 - (e) **Handling and Storage:** Any precast concrete components damaged during storage, transportation or handling shall be repaired or replaced by the Contractor, at its own expense, as directed by the Engineer.
 - (f) **Repairs:** The Contractor shall submit to the Engineer, for review, any proposed methods or materials to be used in the repair of precast concrete components or defective surfaces. Precast concrete components with defective area greater than 10% as determined by the Engineer will be rejected.
- 3. Fabrication Tolerances:** Tolerances of forming precast concrete components shall be as follows:

- (a) **Dimensions:** The dimensions shall be within 1/4 inch of the thicknesses shown in the design.
4. **Pre-assembly of Headwall:** Precast headwalls shall be assembled to ensure proper alignment and placement of the splice sleeves.
5. **Installation:** The installation of the precast concrete components shall be in accordance with the plans and the following:
- (a) Prior to installing the inlet and outlet end box culvert sections, a bed of non-shrink grout shall be placed on the cut-off walls. The end box culvert sections shall be connected to the cut-off wall using galvanized dowels installed in cast or drilled holes and bonded with non-shrink grout.
- (b) All box culvert lap joints shall be sealed with rubber gaskets and must provide a silt-tight fit. A positive means, through the use of seating devices, shall be used for pulling each section against the adjacent section to assure a silt-tight joint. The gasket shall be uniformly compressed to a minimum of 1/2 of its uncompressed width. The joint opening between adjacent seated sections on all interior surfaces of the culvert shall be uniform and match the width shown on the plans. The interior surfaces on either side of the lap joints of the adjacent seated sections shall form a smooth and continuous plane, free from irregularities.
- All portions of the lifting and seating devices that extend to or beyond the finished concrete surface shall be removed. All fixtures or holes cast into the components for lifting or seating shall be completely filled with non-shrink grout and finished smooth and flush with the adjacent concrete surface.
- The surface preparation, mixing, placing, curing, and finishing of the non-shrink grout shall follow the written instructions provided by the manufacturer of the grout. The Contractor shall furnish the Engineer with copies of the instructions.
- (c) Precast headwall shall be supported and braced prior to grouting the splice sleeves and placing the structural non-shrink grout at the construction joint between the end culvert section and headwall. The headwall shall not be backfilled until the grout in the splice sleeve and construction joint has fully cured.

Method of Measurement:

The work for the precast concrete cut-off wall, including return walls, shall be measured for payment by the linear feet of wall installed and accepted. The work for the precast concrete headwalls being paid on a lump sum basis, will not be measured for payment.

Basis of Payment: The work for the precast concrete cut-off walls will be paid for at the Contract unit price per linear foot for “Precast Concrete Cut-Off Wall”, completed in place and accepted, which price shall include all equipment, materials, tools and labor incidental to the manufacture, shipping, repair and installation of the precast concrete cut-off walls at the locations shown on the plans.

The work for the precast concrete headwalls shall be paid for at the contract lump sum price for "Precast Concrete Bridge Components", completed in place and accepted, which price shall include all equipment, materials, tools and labor incidental to the manufacture, shipping, repair and installation of the precast concrete headwalls at the locations shown on the plans.

Pay Item	Pay Unit
Precast Concrete Cut-off Wall	l.f.
Precast Concrete Bridge Components	ls

ITEM #0601406A – 5' X 5' PRECAST CONCRETE BOX CULVERT

Description: Work under this item consists of furnishing and installing a precast concrete box culvert(s) as shown on the plans and as ordered by the Engineer. This item also includes all hardware, inserts, dowels for connections, reinforcing steel and joint materials as shown on the plans.

Materials:

- The concrete mix design shall meet the requirements of M.03.02, Class PCC05562, and shall be submitted to the Engineer.
- All reinforcing steel, including dowel bar mechanical connectors, shall be galvanized and shall meet the requirements of M.06.01.
- All threaded concrete inserts, lifting fixtures, and miscellaneous hardware cast into precast concrete components shall be galvanized in accordance with ASTM A153 or ASTM B695 Grade 50. All portions of the lifting and seating devices shall be recessed from the finished concrete surface.
- Non-shrink grout shall meet the requirements of M.03.05 and be suitable for submerged applications.
- Gaskets shall meet the requirements of ASTM D1056, C1677 or C990.
- Geotextiles shall be the “Separation (High Survivability)” type and shall be selected from the Department’s Qualified Product List.

Construction Methods:

1. Submittals: All submittals shall include a title sheet with the following:

- Project number, town and crossing.
 - Bridge number, when shown on the plans.
 - Design code, as applicable.
 - Contact information for fabricator – contact information shall include name and address of the fabricator and the name of contact person with phone number and email address.
- (a) Shop Drawings - Precast Concrete Components:** Prior to fabrication, the Contractor shall submit an individually packaged set of shop drawings for the precast concrete components for each precast box culvert location to the Engineer for review, in accordance with the plans and 1.05.02. Each shop drawing package shall include details necessary for fabrication of each unique component, handling and installation of the precast concrete components, supporting documents for all materials incorporated into the precast concrete components and for other materials provided by the fabricator.
- (b) Working Drawings - Lifting and Seating Devices :** Prior to fabrication, the Contractor shall submit working drawings and supporting computations for the embedded lifting and seating devices required for the handling and installation of the precast concrete components at each box culvert location to the Engineer for review in accordance with 1.05.02. Prior to applying load to the embedded devices, the concrete shall attain the minimum concrete compressive strength associated with the safe working load of the device.

(c) **Working Drawings - Installation of Precast Concrete Components:** Prior to installation of the precast concrete components, the Contractor shall submit working drawings and supporting computations for the lifting and placement of the precast concrete components, to the Engineer for review in accordance with 1.05.02. Cranes shall be operated in accordance with the Connecticut Department of Public Safety regulations. The Contractor shall be responsible for verifying the weight of each lift. The working drawing submittal shall include, but not be limited to the following:

- Plan of the work area showing all structures, roads, railroad tracks, Federal and State regulated areas as depicted on the plans, overhead and subsurface utilities, property lines, or any other information relative to erection. No picks shall be allowed over vehicular, pedestrian, railway or vessel traffic.
- A detailed narrative describing the lifting and installation sequence.
- Manufacturer's data sheet for the crane(s) including the load/capacity chart. The capacity of the crane shall be adequate for the total lift/pick load including rigging, spreaders and other materials. In the area of railroads and navigable waterways, the capacity shall be as required by the regulatory authorities.
- Manufacturer's data sheets and product data sheets for all rigging (slings, spreader bars, blocks, etc.), lifting devices, and other connecting equipment and hardware listing the number, type, size, arrangement and capacity of each.
- Location of each crane for each pick.
- Crane support measures, including any support beneath the outriggers such as bearing pads, crane mats, planking or special decking, or other means to transfer the crane's total weight (including the lifted load) into the earth or structure beneath it.
- Delivery location of each component.
- Boom length and the lift and setting radius for each pick (or maximum lift radius).
- Pick point location(s) on each component.
- Lifting weight of each component including rigging (clamps, spreader beams, etc.)

(d) **Product Data – Field Installed Materials:** Prior to installation of the precast concrete components, the Contractor shall submit product data for field installed materials, such as non-shrink grout, geotextile, etc., not addressed in other submissions to the Engineer for review in accordance with 1.05.02.

2. Fabrication and Manufacture: The fabrication and manufacture of the precast concrete components shall meet the requirements of M.08.02-4 as supplemented by the following:

- (a) **Reinforcing Steel:** Reinforcing steel shall be fabricated and installed in accordance with Articles 6.02.03-2 through 6.02.03-5. The welding of reinforcement is not permitted.
- (b) **Test Cylinders:** During the casting of the components, the Contractor shall cast a minimum of four 4 inch × 6 inch test cylinders in accordance with AASHTO T23 during each production run. Cylinders shall be cured under the requirements of ASTM C31 and shall be used to confirm that the concrete meets the requirements of M.03.02.
- (c) **Placing Concrete:** Concrete shall not be deposited in the forms until the Contractor has inspected the reinforcing steel, including all other embedded components, and has documented such inspection.

Concrete shall not be deposited into the forms when the ambient temperature is below 40°F or above 100°F, unless adequate heating or cooling procedures have been previously approved by the Engineer. The concrete temperature shall be 60°F to 90°F at the time of placement.

Truck-mixed or transit-mixed concrete will not be allowed.

Production during the winter season, from November 15 to March 15 inclusive, will be permitted only on beds located in a completely enclosed structure of suitable size and dimension that provides a controlled atmosphere for the protection of the casting operation and the product.

Outside concreting operations will not be permitted during rainfall unless the operation is completely under cover.

The concrete shall be vibrated internally, or externally, or both, as needed to provide adequate flow and consolidation of the concrete. The vibration shall be provided in such a manner as to avoid displacement of reinforcing steel, forms, or other components. There shall be no interruption in the placement of concrete. Concrete shall be placed and vibrated sufficiently to produce a surface free from imperfections such as honeycombing, segregation, cracking, or checking.

Any deficiencies noted in the components may be cause for rejection.

- (d) **Finishing:** All fins, runs, or mortar shall be removed from the concrete surfaces which will remain exposed. Form marks on exposed surfaces shall be smoothed by grinding. All exposed, outside concrete surfaces shall be given a grout clean-down finish in accordance with 6.01.03-10.
- (e) **Handling and Storage:** Any precast concrete components damaged during storage, transportation or handling shall be repaired or replaced by the Contractor, at its own expense, as directed by the Engineer.
- (f) **Repairs:** The Contractor shall submit to the Engineer, for review, any proposed methods or materials to be used in the repair of precast concrete components or defective surfaces. Precast concrete components with defective area greater than 10% as determined by the Engineer will be rejected.

3. Fabrication Tolerances: Tolerances of forming precast concrete box sections shall be as follows:

- (a) **Internal Dimensions:** The internal dimensions shall be within 1% of the design dimensions or within 1 1/2 inches, whichever is less.
- (b) **Roof, Floor and Wall Thickness:** The roof, floor and wall thickness shall be within 1/4 inch of the thicknesses shown in the design.
- (c) **Laying Length of Opposite Surfaces:** Variations in laying lengths of two opposite surfaces of the box section shall be less than 1/8 inch/foot of internal span up to 3/4 inch maximum.

- (d) **Length of Section:** The length of a section shall not vary from the designed length by more than 1/2 inch in any box section.
4. **Pre-assembly of Box Sections:** Box sections shall conform to all dimensions within tolerances specified herein. Adjacent sections shall be assembled without a gasket at the manufacturing plant to ensure that all tolerances are met prior to shipping. All sections that will be joined with mechanical connectors shall be pre-assembled, complete with fasteners, to confirm alignment. The Department shall be given at least 2 working days' notice to inspect and evaluate the sections prior to shipping.
5. **Installation:** The installation of the precast concrete box sections and components shall be in accordance with the plans and the following:
- (a) The installation of the precast concrete box sections shall proceed as required by the sequence of construction, stage construction plans, and the special provisions entitled "Prosecution and Progress" and "Maintenance and Protection of Traffic."
- (b) Prior to installing the inlet and outlet end box culvert sections, a bed of non-shrink grout shall be placed on the cut-off walls. The end box culvert sections shall be connected to the cut-off wall using galvanized dowels installed in cast or drilled holes and bonded with non-shrink grout.
- (c) All box culvert lap joints shall be sealed with rubber gaskets and must provide a silt-tight fit. A positive means, through the use of seating devices, shall be used for pulling each section against the adjacent section to assure a silt-tight joint. The gasket shall be uniformly compressed to a minimum of 1/2 of its uncompressed width. The joint opening between adjacent seated sections on all interior surfaces of the culvert shall be uniform and match the width shown on the plans. The interior surfaces on either side of the lap joints of the adjacent seated sections shall form a smooth and continuous plane, free from irregularities.
- (d) After its installation, any box section, as determined by the Engineer, not acceptable in vertical or horizontal alignment for any reason, including but not limited to settlement, displacement, excess camber or misfit, shall be removed by the Contractor and correctly installed, as directed by the Engineer and at the Contractor's expense.
- (e) The lap joints on the exterior of the roof and the interior of the floor and the lap joints on the interior and exterior of the walls (full height on each side) shall be filled with non-shrink grout after seating the sections. The exposed portions of the lap joints within the haunches or fillets on the interior of the culvert sections shall also be filled with non-shrink grout. The non-shrink grout shall be finished smooth and flush with the adjacent concrete surface.

All portions of the lifting and seating devices that extend to or beyond the finished concrete surface shall be removed. All fixtures or holes cast into the sections for lifting or

seating shall be completely filled with non-shrink grout and finished smooth and flush with the adjacent concrete surface.

The surface preparation, mixing, placing, curing, and finishing of the non-shrink grout shall follow the written instructions provided by the manufacturer of the grout. The Contractor shall furnish the Engineer with copies of the instructions.

Prior to the passage of flowing water over the with non-shrink grout, the non-shrink grout shall attain a minimum compressive strength of 3,000 psi.

(f) Geotextile shall be placed on the exterior surface of the roof and walls of the culvert over the lap joints between the culvert sections. The geotextile shall extend 12 inches to each side of the joint and shall be attached to the culvert with silicone caulk.

6. Erection Tolerances: The Contractor shall be responsible for ensuring the overall length of the box culvert meets the layout requirements on the plans within all acceptable tolerances as specified in the contract.

Method of Measurement: The work for the precast concrete box culvert will not be measured for payment but will be paid for by the linear foot of precast concrete box culvert as dimensioned on the plans along each box culvert cell, completed and accepted.

Basis of Payment: The work for the precast concrete box culvert will be paid for at the Contract unit price per linear foot for “(Size) Precast Concrete Box Culvert,” completed in place and accepted, which price shall include all equipment, materials, tools and labor incidental to the manufacture, shipping, repair and installation of the precast concrete box culvert of the specified size(s) at the locations shown on the plans.

Pay Item	Pay Unit
5' X 5' Precast Concrete Box Culvert	l.f.

ITEM #0601930A – SLIP-LINING GROUT

Description: This item consists of furnishing and placing non-shrink grout for the purpose of completely filling the annular space between the slip-lined pipe (culvert) and the host pipe (culvert) as shown on the plans or as directed by the Engineer. The flow and set time characteristics of the slip-lining grout shall be designed to meet the specific site conditions. The grout shall be composed of a mixture of Portland cement and water with the option of using fly ash, slag cement, air-entraining agents, and other admixtures with the Engineer's approval.

Materials: The material for this work shall be in conformance with Articles M.03.01 – Component Materials and M.03.02 – Mix Design Requirements, and as follows:

1. **Reduced Density Cement Grout (Cementitious):** Neat cement grout shall contain only cement, water, and possibly a flowability performance-enhancing additive such as fly ash, silica fume, chemical dispersants or thixotropic agents. The grout mixture shall not contain thickening aggregates or sand.
 - a. **Compressive Strength:** The grout shall attain a minimum 28 day compressive strength of 300 psi.
 - b. **Density:** The Contractor shall design a grout mix with a density that will not float the slip liner pipe. Density shall be verified by ASTM C138 or by other methods as approved by the Engineer.
2. **Cellular Grout (Cellular Concrete):** Cellular grout shall contain the same materials as neat cement grouts, blended with pre-generated aqueous foam to form a macroscopic non-interconnected air cells uniformly distributed throughout the grout. The air cells may account for up to 60% of the grout mix. Foaming agent shall be added to the grout on-site by a licensed Foam Contractor.
 - a. **Compressive Strength:** The cellular grout shall have a minimum compressive strength of 500 psi in 28 days.
 - b. **Density:** The Contractor shall design a grout mix with a density that will not float the slip liner pipe. Density shall be verified by ASTM C138 or by other methods as approved by the Engineer.

Mix Design: The Contractor shall submit each proposed mix design, with all supporting data, to the Engineer for review and approval at least two (2) weeks prior to use. Mixes shall be developed to completely fill the annular space between the host pipe and the slip-lined pipe and shall meet the following requirements:

1. Accommodate the minimum size of the annular void.
2. Accommodate the void size of the surrounding pipe.
3. Accommodate the absence or presence of groundwater.
4. Provide the acceptable strength and durability.
5. Set-up or harden to prevent movement of the slip-liner pipe.
6. Shrinkage shall not exceed 0.5% by volume.

During the grout curing process, heat is generated which may warp or deform plastic pipes. The mix shall be designed so that the maximum temperature of the grout directly around the pipe does not exceed 140°F.

Construction Methods: The Contractor shall establish proposed grout material and mixes, equipment, placement procedures, applicator, set-up, and criteria that the grouting operations shall meet. The grouting system shall have sufficient gauges, monitoring devices, and tests to determine the effectiveness of the grouting operations. The grouting operation shall be modified if the grouting does not perform as submitted or as approved by the Engineer.

Prior to the pipe slip-lining operation, voids or serious deterioration in the host pipe shall be filled and the host pipe shall be cleaned as specified in the item “Clean Existing Culvert – Greater Than 42” Diameter.”

Bulkheads shall be placed at the ends of each pipe to seal the annular space from grout leakage. Any temporary bulkheads shall not be removed until after the grout has set.

The slip-lined pipe shall be equipped with grout ports, or a system of low pressure grout pipes and vents shall be used to enable the grout to be installed. The slip-lined pipe shall be blocked or supported so as to prevent floatation/deformation during the grouting operation.

When there is a significant change in elevation between the ends of the slip-lined pipe, the grout may exert additional pressure on the liner pipe. The method of grout installation must be evaluated to prevent the collapse of the liner pipe.

Standing or running water in the annular space shall be removed or controlled to maintain the correct water ratio of the grout mixture. The annular space shall be grouted by injecting grout from one end of the pipe segment and allowing it to flow towards the other end. The annular space shall be vented to assure uniform filling of the void space.

Pressure in the annular space shall be limited to prevent damage to the slip-lined pipe or to prevent grout from infiltrating the gasket/band of the slip-lined pipe. Regardless of the grout pressure, the Contractor shall be responsible for any damage or distortion to the slip-lined pipe due to the grouting operation.

The Contractor shall establish proposed grout material and mixes, equipment, placement procedures, applicator, set-up, and criteria that the grouting operations shall meet. The grouting system shall have sufficient gauges, monitoring devices, and tests to determine the effectiveness of the grouting operations. The grouting operation shall be modified if the grouting does not perform as submitted or as approved by the Engineer.

The grout materials shall be mixed in equipment of sufficient size and capacity to provide the desired amount of grout material for each stage in a single operation. The equipment shall be capable of mixing the grout at densities required for the approved procedure and shall also be capable of changing densities as dictated by field conditions any time during the grouting operation. Gauges shall be attached immediately adjacent to an injection port at the bulkhead or grout port; the gauge shall have accuracy with no more than 2% error over the full range of the gauge operation.

Method of Measurement: The quantity of slip-lining grout shall be measured for payment by the number of cubic yards, completed and accepted by the Engineer. Low pressure grout tubes will not be measured for payment but will be included as part of this item. Grout ports will be paid as part of the slip-line pipe item. Repairing and cleaning the host pipe shall be included under the item “Clean

Existing Culvert – Greater Than 42” Diameter.”

Basis of Payment: This work will be paid at the Contract unit price per cubic yard for “Slip-Lining Grout” completed and accepted in place, which price shall include all materials, tools, equipment, removal of grout ports within the specification, and labor incidental thereto. The cost of the system of low pressure grouts pipes and vents, if used, shall also be included in the cost of this item. The cost of supporting the slip-lined pipe during the grouting operation shall be included under the separate slip-lined pipe item. The cost of providing and installing grout ports, if used, shall also be included. The cost of repairing and cleaning the host pipe shall be paid under the item “Clean Existing Culvert – Greater Than 42” Diameter.”

Pay Item	Pay Unit
Slip-Lining Grout	c.y.

ITEM #0601954A – EPOXY INJECTION CRACK REPAIR

Description: This item shall consist of surveying the existing areas, locating all cracks to be repaired under this item, and rebonding the cracked concrete structures with a two component modified epoxy resin system injected into the cracked structure under low pressure using continuous positive displacement metering and mixing equipment as directed in accordance with these specifications.

Work under this item is limited to crack widths greater than 1/16” and less than 1/4”. The Contractor shall not perform any repair work without prior approval by the Engineer for locations, limits, and type of repairs.

Materials: The modified epoxy resin shall be a pre-qualified epoxy resin (see Appendix A). A Materials Certificate and a Certificate of Compliance in according with Article 1.06.07 shall accompany each batch or lot of the material delivered to the job site, to verify the epoxy resins conformance with the manufacturers supplied infrared spectroscopy test results. A sample of liquid epoxy resin component A and B shall be taken and shall consist of one pint of each batch of each component represented in each shipment. The samples shall be presented to the Laboratory a minimum of 14 calendar days before incorporation of any of the batch into the work. The Laboratory shall conduct an Infrared Spectroscopy Test on the samples (see Appendix A, attached). Each test result shall be compared to the test results on file with the Laboratory from the “Prequalification Procedures”. Two materials are considered to be identical if all of the absorption points agree as to wavelength and relative magnitude of the peaks in comparison with the other points of absorption.

A batch of each component will be defined as that quantity of material that has been subjected to the same unit chemical or physical mixing process intended to make the final product substantially uniform.

Each component shall be packaged in steel containers not larger than 5 gallons in volume. The containers shall have lug type crimp lids with ring seals, shall be new, not less than 0.024-inch nominal thickness, and shall be well sealed to prevent leakage. If a lining is used in the containers it shall be of such character as to resist any action by the components. Each container shall be clearly labeled with the designation (component A or B), manufacturer’s name, and date of manufacturer, batch number and the following warning:

CAUTION: This material will cause severe dermatitis if it is allowed to come in contact with the skin or eyes. Use gloves and protective creams on the hands. Should this material contact the skin, wash thoroughly with soap and water. Do not attempt to remove this material from the skin with solvents. If any gets in the eyes, flush for 10 minutes with water and secure immediate medical attention.

Any material, which shows evidence of crystallization or a permanent increase in viscosity or settling of pigments that cannot be readily redispersed with a paddle, shall not be used.

Construction Methods: A survey shall be undertaken by the Contractor on the area designated to be repaired, under the direction and to the satisfaction of the Engineer, to determine the exact limits and location of the area to be repaired under this item.

At the time of mixing, components A and B and the substrate temperature shall be between 50° and 85° Fahrenheit, unless the material has been pre-qualified at a temperature less than 75° Fahrenheit, in which case this lesser temperature shall govern the use of the material. Any heating of the adhesive components shall be done by application of indirect heat. Immediately prior to filling the tanks of the mixing equipment, each component shall be thoroughly stirred with a paddle. Separate paddles shall be used to stir each component.

Injection ports shall be inserted in the cracks at intervals not less than the thickness of the concrete being injected. At the end of a crack or at a point where the thickness of the crack becomes less than .005 inches, the first port shall be half the distance from this point. The Contractor may use either surface injection ports or insertable injection ports as recommended by the manufacturer of the epoxy.

Drilling of the injection ports shall be done with a hollow drill bit to which vacuum is applied with an industrial vacuum cleaner (such as Black and Decker No. 95 Vackar or equivalent). The drill shall not contact any steel reinforcing or pre-stressing strands or ducts. A pachometer shall be used to locate the embedded steel.

Spacing of the ports shall be such that the injected adhesive will substantially fill the crack without excessive waste. If necessary to meet this requirement, the spacing of the ports shall be revised as approved by the Engineer as the injection process progresses.

The surface of the crack between ports shall be sealed with tape or other temporary surface sealant, which is capable of retaining the epoxy adhesive in the crack during pressure injection, and shall remain in places until the epoxy has hardened. Sealant tape and/or temporary surface sealant shall also be removed and any spillage of epoxy shall also be removed. No clean up on surfaces not generally viewed by the public will be required unless the surface sealant will interfere with subsequent surface treatments.

Epoxy adhesive shall be pumped into the cracks through the injection ports. The pump, hose, injection gun and appurtenances shall properly proportion and mix the epoxy and shall be capable of injecting the epoxy at a sufficient rate and pressure to completely fill all designated cracks. A suitable gasket shall be used on the head of the injection gun to prevent the adhesive from running down the face of the concrete. Pumping pressure shall be kept as low as practicable.

The temperature of the concrete shall not be less than 50° Fahrenheit at the time epoxy is injected, unless the epoxy has been pre-qualified at a lower temperature as hereinbefore provided, in which case the lower temperature shall govern.

For a crack with uniform thickness, the epoxy adhesive shall be forced into the first port at one end of the crack until adhesive runs in substantial quantity from the next adjacent port. The first port shall then be sealed and injection started at the next port. Injection shall then continue from port to port in this manner until the crack is fully injected.

Cracks with non-uniform thickness shall have the epoxy adhesive forced into the port at the widest separation in the crack until adhesive runs in substantial quantity from the two adjacent ports. The first port shall then be sealed and injection started at the adjacent port corresponding to the shortest length of the crack. Injection shall then continue from port to port in this manner until the short side of the crack is fully injected. Then, beginning with the port that is filled with epoxy adhesive but not sealed, injection shall continue from port to port until the crack is fully injected.

For slanting or vertical cracks, pumping shall start at the lower end of the crack. Where approximately vertical and horizontal cracks intersect, the vertical crack below the intersection shall be injected first. The ports shall be sealed by removing the fitting, filling the void with epoxy and covering with tape or surface sealant.

Before starting injection work and at 2-hour intervals during injection work when requested by the Engineer, a 3-fluid ounce sample of mixed epoxy shall be taken from the injection gun. Should these samples show any evidence of improper proportioning or mixing, injection work shall be suspended until the equipment or procedures are corrected.

Samples obtained above shall be used directly, without further stirring, to make test pieces for the Slant Shear Strength on Dry Concrete. One test piece shall be made at the beginning, middle and end of daily operations. The samples shall be allowed to cure for 7 days in the "Concrete Cylinder Curing Box". On the 7th day the samples shall be removed to the laboratory and tested in accordance with the requirements for Slant Shear Strength (see Appendix A, attached).

Each sample shall be numbered consecutively and dated (with a waterproof marker) and it shall be noted which sample represents which part of the structure.

Technical Advisor: The Contractor shall provide the Engineer with a notarized statement showing a specific record of epoxy injection repairs actually made by the Contractor and/or a specific record of training of his employees in epoxy injection repairs as taught by the manufacturer of the epoxy product. If the statement is not produced or is deemed insufficient by the Engineer, the Contractor shall obtain the services of a Technical Advisor who is employed by the manufacturer of the epoxy resin. The Technical Advisor shall assist the Engineer and the Contractor in the correct use of the injection resin. The Advisor shall be a qualified representative approved by the Engineer, and shall be at the site of the work when the work begins in connection with the epoxy injection and at such other times as the Engineer may request until completion of this item.

Method of Measurement: This work will be measured for payment by the number of linear feet, which have been designated by the Engineer to be injected and which were subsequently filled with epoxy, shall be measured.

Where cracks are designated for injection on opposite sides of a concrete member and the epoxy adhesive injected on one side penetrates through the members to completely fill the crack on the opposite side, payment will be made for the cracks in both sides as though injection had been performed on both sides, except that no payment will be made for such cracks on the opposite side that were not designated by the Engineer for injection.

Where a crack designated for injection extends around the corner of a concrete member, the length of crack on both faces will be measured for payment.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for "Epoxy Injection Crack Repair", complete in place, which price shall include all work and services called for herein including all preparation, materials, equipment, tools, labor and cleanup incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Epoxy Injection Crack Repair	L.F.

APPENDIX A

Prequalification Procedure

The Prequalification Procedure shall consist of the following test procedure on the mixed epoxy resin at a temperature of 77°F, unless the Contractor desires to use the material at a lower temperature than 50°F, in which case the lower temperature shall be used to condition the material and test pieces.

TEST: VISCOSITY

Requirements: 900 centipoise max. @20°F (±2°)
4,000 centipoise max. @any test temperature

Test Method: ASTM D 2393

TEST: GEL TIME (POT LIFE)

Requirement: 4 to 60 minutes

Test Method:

A. Apparatus

1. Unwaxed paper cups, 8 oz., 2¼ inches at base (Dixie Cup No. 4338 or equivalent).
2. Wooden tongue depressor with ends cut square (Puritan No. 705 or equivalent).
3. Stainless steel spatula with blade 6" x 1" and with end cut square.
4. Stopwatch, 1 second or smaller divisions.
5. Balance, 0.1 gram divisions.

B. Test Procedure

1. Condition both A and B components to required temperature (±2°F).
2. Measure proper volumes of well-mixed components A and B into an 8-oz. unwaxed cup to yield total mass of 60 (±2.0 grams).
3. Start stopwatch immediately and mix components for 60 seconds, stirring with a wooden tongue decompressor taking care to scrape the sides and bottom of the cup periodically.
4. Place the sample at the required temperature (±2°F) on a wooden bench top, which is free of excessive drafts.
5. Probe the mixture once with the tongue depressor every 30 seconds starting 4 minutes from the time of mixing.
6. The time at which a soft stringy mass forms in the cup is the gel time.

TEST: SLANT SHEAR STRENGTH ON WET CONCRETE

Requirements: 1700 psi min. after 7 days of cure in air at the required temperature ($\pm 2^{\circ}\text{F}$)

TEST: SLANT SHEAR STRENGTH ON DRY CONCRETE

Requirements: 4500 psi min. after 7 days of cure in air at the required temperature ($\pm 2^{\circ}\text{F}$)

TEST: SLANT SHEAR STRENGTH**A. Materials**

1. Ottawa sand, ASTM C109
2. Portland cement, Type II
3. Water

B. Apparatus

1. Suitable mold to make diagonal concrete mortar blocks with a square base with 2-inch sides and having one diagonal face 2" x 4" starting about 3/4-inch above the base. The diagonal faces of two such blocks are bonded together producing a block of dimensions 2" x 2" x 5".
2. Block made from the following composition:
 - Ottawa sand, ASTM C109 30.1 lbs.
 - Portland cement, Type II 12.1 lbs.
 - Water 4.8 lbs.

Cure blocks 28 days in a fog room. Dry and lightly sandblast diagonal faces.

3. Suitable test press.

B. Test Procedure

Condition the components for 4 hours at the required temperature ($\pm 2^{\circ}\text{F}$). Without entrapping air, stir the separate components for 30 seconds and place the proper volumes of each component on a plate and mix with a spatula for 60 + 5 seconds. Apply a coat approximately 0.010-inch thick to each diagonal surface. Place four 1/8-inch square pieces of shim stock 0.012-inch thick on one block to control final film thickness. Before pressing the coated surface together, leave the blocks so that the coated surfaces are horizontal until the epoxy reacts slightly to prevent excessive flow. Press diagonal surfaces of each block together by hand and remove excess epoxy adhesive.

Align the blocks so that the ends and sides are square and form a block 2" x 2" x 5". Use blocks of wood or metal against each 2" x 2" end, to keep diagonal faces from slipping until epoxy hardens.

After the required cure time, apply a suitable capping compound to each of the 2" x 2" bases, and test by applying a compression load with a Universal Test Machine or other suitable testing apparatus at the rate of 5000 lbs./min, until failure.

Report results in pounds per square inch

$$= \frac{\text{Load in Pounds}}{4}$$

For wet shear strength, soak another set of blocks in water for 24 hours at the required temperature ($\pm 2^\circ\text{F}$). Remove and wipe off excess water. Prepare, cure, and test sample according to above test procedure.

TEST: TENSILE STRENGTH

Requirements: 4500 psi Min.

TEST: ELONGATION

Requirements: 15% Max.

Test Method: TENSILE STRENGTH AND ELOGATION

A. Apparatus

1. Leveling table about 12" x 8" with removable rim ¼-inch thick by ½-inch wide.
2. Mylar or similar plastic sheeting 0.004-inches thick.
3. Air circulation oven capable of maintaining 158°F ($\pm 3^\circ\text{F}$).
4. Cutting die, Figure I
5. Thickness gauge, ⅛-inch.
6. Release agent, non-silicone type.

B. Procedure

1. Place Mylar sheet on leveling table.
2. Coat inside edge and bottom of rim with the release agent and secure to table with screws.
3. Level the table.
4. Mix sufficient volume of well-mixed component A and well mixed component B in the proper volumes so as to be able to form a layer ⅛-inch deep when placed inside the ring on the leveling table.
5. Introduce as few bubbles as possible during mixing.

6. Flush surface of epoxy with a heat gun or Bunsen burner to remove air bubbles on surface. Repeat if necessary.
7. Allow the specimen to cure for 18 hours at the required temperature ($\pm 2^{\circ}\text{F}$).
8. Remove specimen from table and strip off Mylar sheet. Cure specimen for 5 hours at 158°F ($\pm 3^{\circ}\text{F}$).
9. Allow specimen to cool to the required temperature and cut specimens using cutting die shown in Figure I.
10. Proceed as specified in ASTM D 638, using 0.2-inches/minute test rate and 1-inch gauge length.

TEST: INFRARED SPECTROSCOPY

Requirement: Infrared Spectroscopy Tests shall be obtained of Components A and B

Test Method: RECORDING SPECTROPHOTOMETER

A. Apparatus

1. Perkin–Elmer Model 137-B Infracord Spectrophotometer, automatic recording system from 2.5 microns to 15 microns with a two-speed recorder. Comparable results can be obtained with similar resolution.
2. Disk holder for a one-inch diameter disk.
3. Two sodium chloride crystal disks one-inch in diameter.
4. Sorvall SS-3 Automatic Superspeed Centrifuge, or comparable centrifuge, which is able to separate the liquid and solid phases of the epoxy components without previous dilution with solvents.

B. Procedure

1. Place about 15 grams of component A into a stainless steel centrifuge table.
2. Counterbalance with component B in a second centrifuge tube.
3. Centrifuge the two components at 17000 rpm until there is a supernatant liquid layer present in each tube. This takes 20 to 30 minutes.
4. Place a drop of component A liquid layer on a sodium chloride disk.
5. Place another sodium chloride disk over the drop, rotate, and press down until the liquid has flowed into a uniform layer of proper thickness between the two sodium chloride disks.
6. Place the disks in the holder and run an absorption curve with the infrared spectrophotometer.
7. More or less liquid may be used between the disks so as to produce a maximum absorption of 0.7 to 1.0 for the strongest absorption point on the curve.
8. Clean the disks with toluene and dry.
9. Repeat steps 4 through 8 with the liquid layer from component B.
10. Record each curve in order that they may be used for comparison purposes with lots of material delivered to the job site.

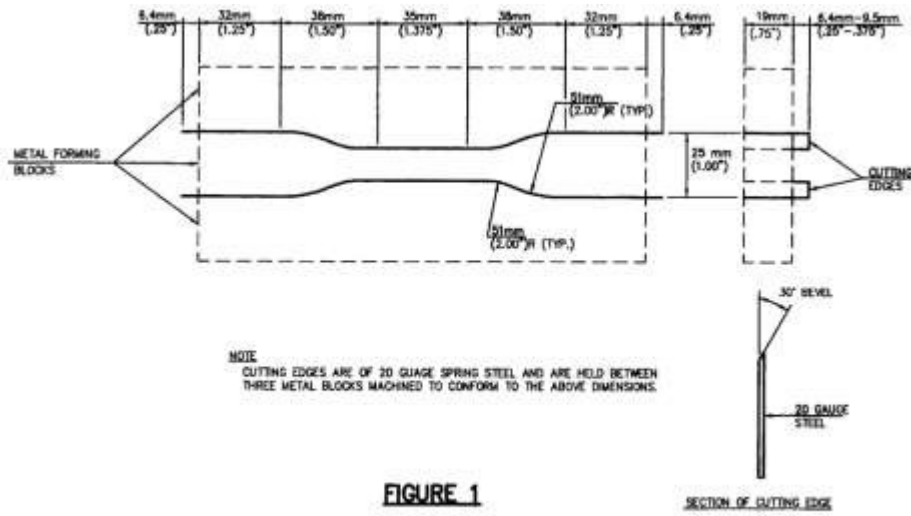


FIGURE 1
CUTTING DIE FOR TENSILE TEST
N.T.S.

ITEM #0602910A - DRILLING HOLES AND GROUTING DOWELS

Description: Work under this item shall consist of drilling holes in existing concrete and grouting reinforcing dowels at the locations shown on the plans, in accordance with the plans, the manufacturer's recommendations, and as directed by the Engineer. For the purposes of this specification, a dowel is defined as a reinforcing bar.

Materials: The chemical anchoring material shall conform to Subarticle M.03.07.

Construction Methods: Before fabricating any materials, the Contractor shall submit manufacturer's specifications and installation for the chemical anchoring material to the Engineer for review in accordance with Article 1.05.02.

Holes for the dowels shall be located as shown on the plans. The holes shall clear the existing reinforcement and provide the minimum cover as shown on the plans. A pachometer shall be used to locate existing reinforcing steel. If existing reinforcing is encountered during the drilling operation, the holes shall be relocated and the uncompleted holes shall be filled with the chemical anchoring material and finished smooth and flush with the adjacent surface.

If the depth and diameter of a hole is not shown on the plans, the hole shall conform to the manufacturer's recommendations for the diameter of the dowel being anchored such that the grouted dowels will be able to develop, in tension, 100 percent of its specified yield strength.

Hole drilling methods shall not cause spalling, cracking, or other damage to the existing concrete. The weight of the drill shall not exceed 14 lbs. Those areas damaged by the Contractor shall be repaired by him in a manner suitable to the Engineer and at no expense to the State.

Prior to placing the chemical anchoring material in the holes, the holes shall be cleaned of all dirt, moisture, concrete dust and other foreign material. The dowel and the chemical anchoring material shall be installed in the holes in accordance with the chemical anchoring material manufacturer's recommendations.

The Contractor, as directed by the Engineer, shall take adequate precautions to prevent any materials from dropping to the area below, which may result in damage to any existing construction or to adjoining property. Should any damage occur to the structure as a result of the Contractor's operations, the Contractor shall make repairs at his own expense. The repair work shall be approved in advance and shall be of a quality acceptable to the Engineer.

Method of Measurement: This work will be measured for payment by the actual number of drilled holes in which dowels are embedded and accepted.

Basis of Payment: This work will be paid for at the contract unit price each for "Drilling Holes and Grouting Dowels," which price shall include drilling and preparing holes, furnishing and installing the

ITEM #0602910A

chemical anchoring material in the holes and all material, equipment, tools and labor incidental thereto.

Reinforcing bars will be paid for under the item “Deformed Steel Bars - Galvanized”.

<u>Pay Item</u>	<u>Pay Unit</u>
Drilling Holes and Grouting Dowels	EA

ITEM #0602910A

ITEM #0603736A - SPECIAL PAINTING TREATMENT

Description: This special provision provides requirements for the materials, and installation of Special Painting Treatment, which work shall include the wet blast cleaning and field painting of the structure.

Materials: Cleaning abrasive material shall be clean water and clean sand. The coating (paint) material shall be ASTM A849 Class B Asphaltic.

The asphaltic coating, as applied, shall meet the following requirements, when tested according to Article 10 of ASTM A849.

Softening Point:	200°F min.
Penetration (Original Material):	35 to 65 dmm
Penetration (Residue from Loss on Heating):	85% of original penetration
Flash Point:	450°F min.
Solubility:	99% min.
Specific Gravity:	0.98 min. at 77°F
Loss on Heating:	1% max.

Shock: Acceptable of not more than one of the four test specimens shows a crack

Flow: Acceptable if the flow does not exceed 3/8" for either of the 2 test specimens.

Imperviousness: There shall not be any loosening or separation of the asphalt coating from the substrate at the end of the 48 hour test.

The contractor shall provide for testing of field applied coating and submit a Certified Test Report in accordance with Article 1.06.07.

Construction Methods: Prior to wet blast cleaning, the Contractor shall clean existing 7'-11" x 5'-7" asphaltic coated corrugated metal pipe as described in Article 6.53.03 and as directed by the Engineer.

Wet Blasting may be accomplished with premixed, nozzle-mixed, or post mixed water and sand. The pipe shall be cleaned of all dirt, oil, grease, or other foreign matter. Precautions shall be taken to protect 7'-11" x 5'-7" asphaltic coated corrugated metal pipe at all times. All workmen shall be experienced and skilled in the use of the equipment used. The Engineer reserves the right to prohibit use of any equipment or method deemed inappropriate for the intended work.

All wet blasting materials (i.e. water, sand, debris, material removed from pipe, etc.) shall be contained, collected and properly disposed of off-site by the Contractor. It is the Contractor's responsibility to determine the expected amount of wet blasting materials that will be generated during construction activities, select the appropriate collection and management method and size its container capacity to meet those needs. Washing wet blasting materials downstream will not

be permitted.

All surfaces to be coated shall be dried prior to application.

Coating shall be applied according to manufacturer's written instructions.

Prior to any work, the Contractor shall schedule a field meeting with the Engineer to delineate the areas which will require special painting treatment. The coating shall be applied after grouting voids under the pipe and welding the studs. Field painting may be performed prior to the construction of the concrete invert lining, as approved by the Engineer. There shall be no painting on the concrete surfaces and any corrective work required to remove paint from the concrete surface as directed by the Engineer shall be performed at no additional cost to the State.

The coating shall be applied to a minimum thickness of 0.05 inch measured on the crest of the corrugations. Coating that is bruised, broken, disbanded, or otherwise damaged will be repaired to the satisfaction of the engineer. Repair coating shall be of equal thickness to the specified coating and shall have equal adherence.

Method of Measurement: Special Painting Treatment will be measured for payment by the number of square feet of pipe cleaned, painted and accepted. The measurement shall be the straight line length of pipes covered, not including the corrugations. Cleaning of the existing 7'-11" x 5'-7" asphalt coated corrugated metal pipe, as described in Article 6.53.03, will be paid for under item Clean Existing Culvert – Greater than 42" Diameter.

Basis of Payment: Work under this item will be paid for at the Contract unit price per square foot for "Special Painting Treatment", which price shall include all materials, tools, equipment, testing and labor incidental to the work described herein.

<u>Pay Item</u>	<u>Pay Unit</u>
Special Painting Treatment	S.F

ITEM #0611002A - PRESSURE GROUTING

Description: Work under this item consists of furnishing and installing low pressure grout to fill voids under the existing corrugated metal pipe due to deterioration, penetrations, and erosion. This work shall be completed prior to the installation of the pipe lining.

Materials: The grout materials shall consist of Portland cement (Portland cement and fly ash) and/or additives as described in the following subsections of Section M.03.0 1.

Portland Cement	M.03.01-3
Water	M.03.01-4
Air-Entraining Admixtures	M.03.01-5a
Fine Aggregate	M.03.01-2
Fly Ash	M.03.01-3c.1
Chemical Admixtures	M.03.01-5b
Accelerating Admixtures	AASHTO M-194 Type "C"

Portland cement shall comply with ASTM C-150, C-150 Type I, II, or III.

Mixing water shall be potable and free from deleterious amounts of acids, alkali, salts, oils and organic materials which would adversely affect the setting time or strength of the concrete.

Admixtures for reducing water, accelerating set, etc. may be used when specifically approved by the Engineer, and must be used in accordance with the admixture manufacturer's recommendations.

Compressive Strength:

The grout shall have a minimum penetration resistance of 75 psi in 24 hours when tested in accordance with ASTM C 403 and a minimum compressive strength of 300 psi in 28 days when tested in accordance with ASTM C 495 or C 109. Hydraulic cement or a similar approved material may be used in localized areas as approved by the Engineer.

Performance Requirements:

The Contractor shall submit the proposed grout mix, methods, plans of the grouting operations. The grouting system shall have sufficient gauges, monitoring devices and tests to determine the effectiveness of the grouting operation and to ensure compliance with the liner pipe specifications and design parameters.

Mix Designs:

One or more mixes shall be developed to completely fill the voids based on the following requirements:

- 1) Size of corrugated metal pipe deterioration
- 2) Void (size) of the surrounding soil
- 3) Absence or presence of groundwater
- 4) Sufficient strength and durability as approved by the Engineer
- 5) Provide less than 1 percent shrinkage by volume

A Materials Certificate will be required confirming the conformance to the requirements set forth in this specification.

Construction Methods:

The grout shall be mixed to a flowable consistency with proportions as recommended by the manufacturer based on site conditions.

The grout shall be placed to fill the erosion voids under the corrugated culvert plate, and at locations as directed by the engineer, with a low pressure pumping system.

The material shall not be placed on frozen ground.

The material may be placed in confined spaces containing standing water.

Any substitutions for pressure grouting shall be submitted to the Engineer for approval.

Submittals and Required Calculations:

The Contractor shall submit the following for review by the Engineer:

- a) The proposed grout mix design(s) with corresponding densities and viscosities.
- b) Initial set time of the grout.
- c) The proposed grouting method including a description and/or depiction of the various stages.
- d) The maximum injection pressures.
- e) The 24-hour and 28 day compressive strengths.
- g) Certification that the grouting plan conforms to all guidelines, cautions, and restrictions of the HDPE pipe lining manufacturer, these specifications and the contract plans for this project.

Method of Measurement: This item will be measured by the number of cubic yards of low pressure grout installed and accepted.

Basis of Payment: This work will be paid for at the contract unit price per cubic yard for "Pressure Grouting" which price shall include all materials, tools, equipment and labor incidental to the work described herein.

The work to line the existing culvert shall be paid for separately under either the special provision for 54" Corrugated High Density Polyethylene Pipe.

The filling of holes and voids in the existing corrugated metal pipe is to be paid for under the item "Pressure Grouting."

Pay Item

Pressure Grouting

Pay Unit

C.Y.

ITEM #0651641A – 54” CORRUGATED HIGH DENSITY POLYETHYLENE PIPE

Description: Work under this item shall consist of fabricating, furnishing, and installing a pipe with an inside diameter of 54”, with appurtenances, which is to be “slip-lined” into an existing culvert. Also included in this item are the guide rails, grout ports, and spacers required for the installation of the slip-lined pipe(s). The description of the proposed culvert is listed below:

Bridge	Brook Name	Existing Culvert	Proposed Lining Pipe
06796	Byron Brook	72” A.C.C.M.P.	54” Corrugated High Density Polyethylene Pipe

Materials: Materials for these items shall conform as listed below:

1. Pipe:

- a. The pipe shall conform to Subarticle M.08.01 of Form 817.
- b. The length of the pipe sections shall be to the Manufacturer’s standard lengths or alternate lengths as required by the existing site conditions and approved by the Engineer.
- c. Grout port fittings, if used, shall be installed in predrilled holes in the pipe as directed by the Manufacturer and approved by the Engineer.
- d. Alignment bolts, if used, shall be installed in the liner pipe as directed by the Manufacturer and approved by the Engineer. The alignment bolts shall meet Manufacturer’s specifications.
- e. Internal or external style gasket/bands shall be utilized to seal the joints between the pipe sections. Pipe joints shall be water tight so as not to allow the penetration of “Slip-Lined Grout” into the pipe joint. Other joint sealing methods shall be as recommended by the Manufacturer and approved by the Engineer.

2. Guide Rails and Spacers: Structural Steel or pressure treated wood guide rails and spacers shall be used to provide a sliding surface for the liner pipe.

Construction Methods: The Contractor shall install the pipes in accordance to the Manufacturer’s requirements. Each existing culvert shall be inspected to determine the location of any obstacles that may prevent proper installation of the slip-lined pipe(s) and comply with the Water Handling plan. Prior to beginning any work, the Contractor shall provide working drawings in accordance to Article 1.05.02-2 that illustrate the means of access, the method of water diversion and of installing the liner pipe. Also included in the drawing should be the method that will be used for the “Slip-Lining Grout” process.

The Contractor shall schedule a meeting with the Department personnel to present the construction methods prior to the start of any construction operations.

Prior to the slip-lining operation, the existing culvert shall be inspected, cleaned of loose coatings, debris and sedimentation. Also, the existing culvert deterioration or pipe voids shall be repaired with appropriate materials, such as hydraulic cement, to keep groundwater out of the annular space prior to the installation of the "Slip-Lining Grout" which will fill the space between the existing and proposed pipes. A ten-foot sample of each liner pipe shall be furnished to verify its fit inside the existing culvert. If the proposed liner pipe will not pass the full length of the existing pipe as proposed, the Engineer shall be notified immediately. The Contractor shall be solely responsible for damage to the existing culvert and/or the proposed liner pipe due to the slip-lining operation.

Guide Rails: The location of the guide rails shall be as shown on the plans to establish the required invert elevation or as approved by the Engineer. Guide rails shall have gaps, throughout the length of the existing culvert, to allow for the "Slip-Lining Grout" process to infiltrate between the guide rails. The gaps shall be two (2) feet in length and spaced every ten (10) feet throughout the length of the existing culvert.

Method of Measurement: This work will be measured for payment by the actual number of linear feet of liner pipe installed and accepted. Guide rails, and grout ports will not be measured for payment but will be included in the contract unit price. Cleaning the host pipe shall be measured in accordance with the item "Clean Existing Culvert – Greater than 42" Diameter". Slip-lining grout will be measured in accordance with the item for "Slip-Lining Grout".

Basis of Payment: This work will be paid for at the contract unit price per linear foot for "54" Corrugated High Density Polyethylene Pipe". The price shall include the design, fabrication, coordination and preparation, construction, furnishing, installing, sample pipes, inspection, grout port fittings, alignment bolts, guiderails, liner pipe joints, and all hardware required for the installation of the liner pipe. The work of cleaning the host pipe prior to the slip-lining operation will be paid under the item "Clean Existing Culvert – Greater than 42" Diameter". Grouting between the host pipe will be paid under the item "Slip-Lining Grout". The filling of any voids within the host pipe will be paid under the item "Pressure Grouting".

Pay Item Pay	Unit
54" Corrugated High Density Polyethylene Pipe	l.f.

ITEM #0717000A – EARTH RETAINING SYSTEM LEFT IN PLACE

Replace Section 7.17 in its entirety with the following:

Description: Work under this item shall consist of designing and providing a flexible earth retaining system left in place at the locations shown on the plans, in accordance with the plans, the manufacturer's recommendations, and as directed by the Engineer. For the purposes of this specification, a flexible earth retaining system is defined as a Geosynthetically Reinforced Soil System (GRSS). Contractor may submit alternate methods for approval.

Materials:

GRSS Geosynthetic Reinforcing Element: Provide a geogrid or geotextile primary and secondary reinforcing elements tested and certified to meet the minimum requirements for geosynthetic products in accordance with AASHTO Specifications for Highway Bridges, Geosynthetic Reinforcement.

GRSS Backfill: Provide backfill material conforming to M.02.05-Pervious Structure Backfill.

GRSS Welded Wire Forms: Provide welded wire forms and wire struts as required, conforming to the material requirements of M.06.01.03. Wire and Welded Steel Wire Fabric. Provide geotextile face wrap material meeting the requirements of M.08.01-19 Geotextiles.

Construction Methods:

GRSS Submittal: Submit calculations for the proposed GRSS, signed and sealed by a professional engineer licensed in CT. Submit geogrid or geotextile reinforcing element certifications, verifying that the material meets the design and material requirements, to the Engineer prior to start of work. Begin work only after receiving the Engineer's approval. Supply on-site technical assistance from a representative of the geosynthetic reinforcing element manufacturer until such time as outside consultation is no longer required.

GRSS Storage of Geosynthetic: Store and protect geosynthetic materials in accordance with manufacturer's recommendations prior to installation.

GRSS Excavation and Disposal: Excavation shall be conducted in accordance with the applicable Structure Excavation items and the details specified in the contract documents.

Geosynthetic Reinforcing Element: Place and secure the primary and secondary reinforcing element in accordance with the manufacturer's recommendations, in continuous strips without joints, seams or connections throughout the embedment length, to the line, grade and orientation shown in the contract documents. Place reinforcing elements to lay flat with no creases and pull taut to remove any slack prior to placement of backfill.

ITEM #0717000A

Welded Wire Forms: Place welded wire forms as required by design. Position and connect the welded wire forms to overlap 2 in. with adjacent forms and connect with wire ties. Install wire struts as required to stiffen the welded wire forms.

Geotextile Face Wrap: Place geotextile face wrap as shown in the contract documents. If used in conjunction with welded wire forms, place the geotextile face wrap so as to conform closely to the welded wire forms.

Backfill: Replace any damaged geosynthetic prior to placement of any overlying material at no cost to the State. Place the backfill onto the geosynthetic reinforcing elements in such a manner that no damage occurs. Progress placement of backfill materials so as to minimize the development of slack in the reinforcing element. The thickness of a compacted lift of backfill is not to exceed 12 in. or the measured vertical distance between geosynthetic layers, whichever is less. Compact the backfill to a minimum of 95% of Standard Proctor Maximum Density. Only hand operated equipment is allowed within 3 ft. of the face. Lift thickness may have to be reduced to achieve required compaction.

Method of Measurement: Earth Retaining System Left In Place will be measured for payment by the square foot. This area will be measured or computed from the horizontal and vertical payment limits shown on the plans or as ordered. If no payment limits are shown on the plans, the limits used for payment will be the actual horizontal limit of temporary earth retaining system installed and accepted, and the vertical limit as measured from the bottom of the exposed face of the wall system to the top of the retained earth behind the system

Basis of Payment: This work will be paid for at the contract unit price per square foot for "Earth Retaining System Left In Place" which price shall include only the cost of material left in place, and associated design, material, equipment, tools and labor incidental thereto.

Pay Item

Earth Retaining System Left In Place

Pay Unit

s.f.

ITEM #0728014A – 3/4” CRUSHED STONE

Section 7.28 is supplemented as follows:

7.28.01 – Description: Work under this item shall consist of crushed stone or gravel placed along the widened shoulders on Bridge 06797 to the limits and for the depth shown on the plans, or as directed by the Engineer.

7.28-05 – Basis of Payment: This work shall be paid for at the contract unit price per cubic yard for “3/4” Crushed Stone”, complete in place, which price shall include all materials, tools, equipment and labor incidental thereto.

Pay Item
3/4” Crushed Stone

Pay Unit
c.y.

ITEM #0728014A

ITEM #0917010A – REPAIR GUIDERAIL

Description: Work under this item shall consist of the repair of newly installed guiderail. It shall be repaired in the locations originally installed and fabricated in conformity with the lines, designations, dimensions, and details shown on the plans or as ordered by the Engineer.

Materials: The material for guiderail shall meet the requirements as specified within the original applicable contract items.

When repairing guiderail, the Contractor shall reuse any undamaged existing guiderail elements, timber rail, wire rope, appropriate posts, delineators, lap bolts, and other hardware within the project limits as approved by the Engineer to repair the guiderail. The Contractor shall use new materials when any components of the existing railing are damaged or missing and cannot be obtained from other guiderail systems being removed or converted within the Project limits.

Construction Methods: The repair of guiderail shall be in accordance with contraction methods as specified within the original applicable contract items.

Guiderail, including end anchors, which has been installed in final condition and accepted by the Engineer, shall be eligible for reimbursement for repairs subject to the conditions described below. If multiple runs are to be installed in a single stage as indicated in the contract documents, determination for reimbursement shall be made when all runs within the stage are complete and accepted as previously described. On projects without designated stages, guiderail installations must be complete and serving the intended function as determined by the Engineer.

When newly installed guiderail is damaged by public traffic, the following conditions must be satisfied prior to reimbursement for payment;

1. The damage must have been caused solely by the traveling public.
2. The contractor shall provide satisfactory evidence that such damage was caused by public traffic. Such as accident reports obtained from the Connecticut Department of Public Safety, police agencies or insurance companies; statements by reliable, unbiased eyewitnesses; or identification of the vehicle involved in the accident.
3. The contractor shall attempt to collect the costs from the person or persons responsible for the damage and provide documentation of those efforts to the satisfaction of the Engineer.
4. If such evidence cannot be obtained, the Engineer may determine that the damage was not caused by the Contractor and reimbursement for payment is warranted.

This repair provision does not relieve the Contractor of the requirements of Section 1.07, any other contractual requirements for maintenance and protection of traffic and final acceptance and relief of responsibility for the project.

The contractor shall remain responsible for the safety and integrity of the guiderail system for the duration of the project. In the event the guiderail is damaged, the Contractor shall provide sufficient cones, drums and other traffic control devices to provide safe passage by the public. When ordered by the Engineer, the Contractor shall furnish replacement parts and immediately repair the guiderail, but in no case more than 24 hours after notification from the Engineer. In non-emergency situations, the guiderail shall be repaired within 72 hours. The repaired guiderail or anchorages, when completed, shall conform to these specifications for a new system. The Contractor shall be responsible for the removal and the proper disposal of all damaged material and debris.

Method of Measurement: Guiderail damaged solely by the traveling public will be measured for payment. Damage caused by the Contractor's equipment or operations will not be measured for payment.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for repair of guiderail will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount bid for the contract.

Basis of Payment: Repair of guiderail will be paid for in accordance with Article 1.09.04 as required to restore the rail to its full working condition in conformance with these specifications for a new system. There will be no payment for maintenance and protection of traffic for work associated with this item unless, in the opinion of the Engineer, the sole purpose of the maintenance and protection of traffic is for repair of the guiderail.

<u>Pay Item</u>	<u>Pay Unit</u>
Repair Guiderail	est. (est.)

ITEM #0950040A - CONSERVATION SEEDING FOR SLOPES

Description: The work included in this item shall consist of providing an accepted stand of established conservation grasses by furnishing and placing seed as shown on the plans, permits, or as directed by the Engineer within the wetland mitigation Sites(s) or other areas when required.

Materials: All conservation grass mixture sources shall be locally obtained within the Northeast USA (New England, New York, Pennsylvania, New Jersey, Delaware, or Maryland) in order to preserve and enhance the diversity of native conservation grass species.

Three qualified conservation seed mixtures are detailed below:

- 1. New England Conservation/Wildlife Mix**, New England Wetland Plants, Inc. 820 West Street Amherst, MA 01002, or equal. Rate shall be 1 pound PLS per 1,750 sq. ft.
- 2. Mesic to Dry Native Pollinator Mix**, Ernst Conservation Seeds, Inc. 8884 Mercer Pike, Meadville, PA 16335, or equal. Rate shall be 1 pound PLS per 2,178 sq. ft.
- 3. Vermont Conservation and Wildlife**, Vermont Wetland Plant Supply, LLC, P.O. Box 153, Orwell, VT 05760, or equal. Rate shall be 1 pound PLS per 2,180 sq. ft.

Fertilizer, if required, shall meet the requirements of Article M.13.03.

Mulch shall meet the requirements of Article M.13.05.

Erosion control matting shall be bio-degradable and meet the requirements of Article M.13.09.

All conservation seed mixture sources shall be reviewed and approved by the Engineer in advance of purchase and prior to application.

The Materials Certificate for all seed mixtures shall have a statement that certifies that the seed mixture does not include any invasive species pursuant to Connecticut General Statutes Sec. 22a-381d or any State Threatened or State Endangered species pursuant to Connecticut General Statutes Sec. 26-303. The seed tags from the bags are to be removed by the Engineer upon delivery and attached to the Materials Certificate. Seeding shall not occur if these requirements are not met.

All approved seed mixtures shall be obtained in sufficient quantities to meet the pure live seed (PLS) application rates as determined by the seed analysis of the mixture.

Construction Methods: Construction methods shall be those established as agronomically acceptable and feasible and shall be approved by the Engineer. The methods described in Article 9.50.03 shall be amended as follows:

Conservation seeding for slopes for wetland mitigation Site(s): Seeding shall occur during the fall season immediately following construction of the wetland mitigation Site(s). Seeding for wetland mitigation Site(s) must occur from August 15th to October 31st.

For non-wetland mitigation Site(s), seeding shall occur during the dates specified in Article 9.50.03-2.

If seed is purchased in bulk rather than by PLS, the rate of application must be adjusted to meet the required PLS seeding rate. This seeding rate shall be increased by the appropriate percentage as determined by the following formula based off of the information provided on the seed tags at delivery.

$(\text{Germination Percentage} \times \text{Purity Percentage}) / 100 = \text{Percentage PLS}$

The Engineer will verify that the seed is applied at a rate that will allow for 100 percent PLS. Mowing will not be allowed within areas that are seeded with conservation seed mix, unless authorized by the Engineer.

Method of Measurement: This work will be measured for payment by the number of square yards of surface area of accepted established conservation grasses as specified.

Basis of Payment: This work will be paid for at the Contract unit price per square yard for “Conservation Seeding for Slopes,” which price shall include all materials, maintenance, equipment, tools, labor, and work incidental thereto. Partial payment of up to 50% may be made for work completed, but not accepted. Full payment shall not be made until the area has been accepted by the Engineer.

Pay Item	Pay Unit
Conservation Seeding for Slopes	s.y.

ITEM #0950043A - WETLAND GRASS ESTABLISHMENT

Description: The work included in this item shall consist of providing an accepted stand of established wetland grasses by furnishing and placing seed as shown on the plans, permits, or as directed by the Engineer within the Wetland Mitigation Area(s) or other areas when required.

Materials: All wetland grass mixture sources shall be locally obtained within the Northeast USA including New England, New York, Pennsylvania, New Jersey, Delaware, or Maryland in order to preserve and enhance the diversity of native wetland grass species.

The placement of fertilizer, mulch or bio-degradable erosion control matting will not be allowed within any wetland area.

All wetland seed mixture sources shall be approved by the Engineer prior to purchase.

Three (3) qualified wetland seed mixtures are as follows:

1. **New England Wet Mix (Wetland Seed Mix)**, New England Wetland Plants, Inc. 820 West Street Amherst, MA 01002, or equal. Rate shall be 1 pound PLS per 2,500 sq. ft.
2. **OBL Wetland Mix**, Ernst Conservation Seeds, Inc. 8884 Mercer Pike, Meadville, PA 16335, or equal. Rate shall be 1 pound PLS per 2,000 sq. ft.
3. **Vermont Wetland Shrub**, Vermont Wetland Plant Supply, LLC, P.O. Box 153, Orwell, VT 05760, or equal. Rate shall be 1 pound PLS per 2,420 sq. ft.

All seed mixtures must be reviewed and approved by the Engineer prior to application. All seed Materials Certificates must have seed mixtures that shall not include any invasive species pursuant to Connecticut General Statute Sec. 22a-381d, or any State Threatened or State Endangered species known pursuant to Connecticut General Statute Sec. 26-303 which would be a violation of the Connecticut Endangered Species Act. The seed tags from the bags are to be removed by the Engineer upon delivery and attached to the Materials Certificate. No seeding shall occur if the requirements are not met.

All approved seed mixtures shall be obtained in sufficient quantities to meet the pure live seed (PLS) application rates as determined by the seed analysis of the mixture.

Construction Methods: Construction methods shall be those established as agronomically acceptable and feasible and approved by the Engineer.

Wetland grass establishment seeding for Wetland Mitigation Site(s): Seeding shall occur during the fall season immediately following construction of the wetland site(s). Fall seeding must occur from August 15th to October 31th.

Wetland grass establishment seeding for areas other than the Wetland Mitigation Site(s), when required: Seeding dates shall adhere to Form 817 Section 9.50 – Turf Establishment.

Seeding shall be applied to wetland areas that will not be routinely inundated. If seed is purchased in bulk rather than by PLS, the rate of application must be adjusted to meet the required PLS seeding rate. This seeding rate shall be increased by the appropriate percentage based on the information provided on the seed tags at delivery, as determined by the following formula:

$$(\text{Germination Percentage} \times \text{Purity Percentage})/100 = \text{Percentage PLS}$$

The Engineer shall verify that the seed is applied at a rate that will allow for 100% PLS.

Method of Measurement: This work will be measured for payment by the number of square feet of surface area of established wetland seed mixture, planted, and accepted as specified or by the number of square feet of surface area of seeding actually covered as specified.

Basis of Payment: This work shall be paid at the Contract unit price per square foot for “Wetland Grass Establishment,” which price shall include all materials maintenance, equipment, tools, labor, transportation, operations and all work incidental thereto. Partial payment of up to 50% may be made for work completed, but not accepted. Full payment shall not be made until the area has been accepted by the Engineer.

Pay Item	Pay Unit
Wetland Grass Establishment	s.f.

ITEM #0952051A - CONTROL AND REMOVAL OF INVASIVE VEGETATION

Description: This work shall include the development and implementation of an Invasive Vegetation Removal Plan (IVRP) to outline the materials, labor, and equipment the Contractor plans to use for the complete eradication and treatment of the invasive vegetation. The work shall also include the identification, excavation, removal, and off-Site disposal of unwanted vegetation as indicated on the plan sheets, permits or as directed by the Engineer.

All invasive vegetation listed on the following websites will be subject to eradication:

- Connecticut Invasive Plant Working Group (CIPWG) Invasive Plants Council (http://cipwg.uconn.edu/invasive_plant_list/)
- US Army Corps of Engineers (ACOE) New England District Compensatory Mitigation Guidance Appendix K (http://www.nae.usace.army.mil/portals/74/docs/regulatory/Mitigation/2016_New_England_Compensatory_Mitigation_Guidance.pdf)

All vegetation designated for removal shall be eradicated in its entirety in accordance with the IVRP submitted by the Contractor and approved by the Engineer. Certain situations may require the full and complete mechanical excavation of invasive vegetation including its entire root system. The use of herbicides will not be permitted between the dates of October 1 and May 31.

Materials: All herbicides shall be registered for the species being treated and shall be formulated as applicable for target-species foliar treatment, cut surface, or injection applications. Where work in or immediately adjacent to wetlands is necessary, the product label(s) for any chemical/adjuvant formulation applied must indicate that the formulation is approved for aquatic environments.

Construction Methods:

1. IVRP: Prior to any ground disturbance within the Project limits, the Contractor shall submit an IVRP to the Engineer for review and approval. Within 30 days of receipt of the submittal, the Engineer will notify the Contractor whether the IVRP is approved, rejected or requires modifications by the Contractor. If any part of the plan is not approved, the Contractor shall promptly make any necessary changes and re-submit the entire plan for approval. The entire plan must be approved in writing prior to beginning any work on Site. In all cases, mechanical means shall be considered before the use of herbicides. If mechanical means is neither feasible nor recommended, an explanation must be provided in the IVRP. All removal methods shall prevent the spread of seeds – no mowing or “Brush Hog” equipment will be allowed. The approved methods must be capable of total removal and eradication of all identified invasive species in the designated areas throughout the Contract and the 1-Year Plant Establishment Period.

The IVRP shall include a schedule and outline with the following information:

- 1) The Contractor’s methods of determining invasive vegetation surveyed limits, including:
 - a. Stake out the limits prior to the initial treatment
 - b. Maintain a record of the staked limits throughout the life of the Contract
- 2) Identification of the type(s) of invasive species present within the field surveyed limits

- 3) A marked up plan sheet outlining the invasive species limits and identifying the types of invasive species present within those limits and total square yards of proposed removal
- 4) For each species present on-Site, the following shall be described:
 - a. Methods to eradicate specific invasive plant species for the life of the Contract (e.g. mechanical, herbicide, etc.) shall include any initial, intermediate and 1-Year Plant Establishment Period Treatment eradication methods for each plant species
 - b. Types and concentrations of any herbicides to be used, including any adjuvants, SDS sheets, types of tools or machinery to be used
 - c. Schedules showing dates and eradication methods for the initial, intermediate, and 1-Year Plant Establishment Period Treatments. This schedule must take into consideration stage construction, the time period required between herbicide application, and the physical removal of the target species wherever such methodology is employed
- 5) All invasive species are considered controlled materials and are to be taken off-Site to an approved disposal facility. For disposal methods:
 - a. Provide address of location, current permits / letters from the town authorizing such activity and a Site map (complete with regulated areas)
 - b. Wood chips from invasive species are not allowed to be stockpiled or reused on-Site
 - c. Wood chipping on-Site will be allowed if temporarily stored in a properly contained enclosure and removed at the end of the treatment cycle
 - d. Invasive plants shall not be buried on-Site
- 6) Proof of CT DEEP licensure for herbicide application
- 7) A description of safety equipment required
- 8) Procedures for handling chemical spills

Where certain species of invasive vegetation are present and identified on the plan sheets, permits, or as identified in the field by the Engineer, the removal via bulk mechanical excavation of such vegetation and the underlying soils may be required as directed. The approved method must be capable of the removal of all soil to a depth where invasive plant material and root system is no longer evident, or as directed by the Engineer.

Whether the Contractor's method of removal is by mechanical excavation or cutting and spraying of herbicides, invasive species must be removed separately from clearing and grubbing operations and disposed at an approved location as described in the Contractor's IVRP.

No equipment or vehicles other than that required to complete the work will be permitted in the areas designated for invasive vegetation removal. Any equipment used to process invasive vegetation, such as chippers and transport vehicles, must be cleaned prior to further use.

Any invasive species control and removal work performed throughout the duration of the Contract that causes damage or soil disturbance shall be repaired at the Contractor's expense within 7 days. It is the Contractor's responsibility to identify additional areas of concern for invasive vegetation within the limits of the Project, notify the Engineer, and to amend the IVRP.

The Contractor shall be responsible to identify invasive vegetation at all times of the year and to prepare a plan for its eradication without assistance.

All treatments, with the exception of an initial mechanical excavation of invasive species, will not be allowed outside of the optimal growing season between the dates of October 1 and May 31.

Herbicide applications will not be permitted during any rain event or during windy conditions. Broadcast or uncontrolled spray application will not be permitted and care must be taken to avoid contacting non-target native species. If any non-target native species to remain within the Project limits are inadvertently treated with herbicide and perish, the Contractor will be responsible to replace in-kind species at no cost to the State.

Remove all twining vines in treetops to the greatest extent possible without damaging the branches of the supporting desired vegetation. Cut and remove vines overtopping tree canopies to the extent practical. Climbing spikes will not be permitted for aerial work.

The Contractor shall also:

- 1) Maintain the labels for herbicides being used in his/her possession
- 2) Conduct all herbicide formulations and applications, including the addition of appropriate surfactants and other adjuvants, in strict conformance with the manufacturer's recommendation and per requirements of regulatory agencies
- 3) Maintain a written record of herbicide application, including the formulation, concentration, area treated, and date for each application. The records are to be provided by the commercial applicator and submitted to the Engineer following each treatment

Flush cut brush and trees shall not be more than 2 inches above the ground line. Prune out any branches on non-treatment plants that are damaged during removal of vegetation. All corrective pruning shall conform to the National Arborists Association Pruning Standards.

Wherever removal operations result in exposed soils, disturbed areas shall be vegetatively stabilized with the appropriate seed mix and protected with hay, cellulosic fiber mulch, or erosion control matting.

Once the IVRP is approved, a field review shall be scheduled for the Contractor and Engineer to review the limits of invasive species removal (surveyed and flagged by the Contractor prior to the meeting), the specific species required to be removed, and the Contractor's submitted invasive species removal plan. At this time, the Engineer may identify additional invasive species or designate additional areas for removal that are not included with the Contractor's submitted IVRP.

If changes are required to the approved IVRP during the life of the Contract, these changes shall be documented by the Contractor and resubmitted to the Engineer for review and approval a minimum of 10 days prior to beginning of the additional work associated with the change. The Contractor shall provide a 10 day work notice to the Engineer prior to proceeding with each treatment.

2. Treatments: The treatment schedule below may be modified based on field conditions at the discretion of the Engineer. The Contractor shall provide a 10 day work notice to the Engineer prior to proceeding with each treatment. In all cases, each treatment must be reviewed once the work is performed, and accepted before payment is made for that treatment stage.

Initial Treatment: Shall commence at the beginning of the Contract time, prior to clearing and grubbing activities. Any invasive species found within a proposed cut slope shall be fully eradicated to the satisfaction of the Engineer prior to any earth work operations. After the completion of the initial treatment, the work must be reviewed and accepted by the Engineer prior to any earth excavation in that area. If herbicide is the initial treatment method, a minimum of 14 days is required prior to clearing and grubbing operations, so the herbicide application can take effect.

Intermediate Treatment(s): Shall be conducted during the optimal growing season between the dates of June 1 and September 30 for invasive species up to and including 10 days prior to plant installation or at the end of the Project if no landscaping plan is in the Contract. Optimal treatment times may be specific to the species being treated and this must be considered and documented when developing the Invasive Vegetation Removal Plan. Several treatments may be required to treat all species that are present.

1-Year Plant Establishment Period Treatment: Treatments as needed or as directed by the Engineer shall be conducted throughout the 1-Year Plant Establishment Period or when required under another Contract item.

Method of Measurement: This work will be measured for payment by the number of square yards of invasive vegetation identified, surveyed, treated and eradicated as required including any required re-treatment of any regrowth or new growth. No additional payment will be made for subsequent treatments. The area for removal will be surveyed and flagged prior to treatment and measured. After a review of the surveyed limits, the Engineer may designate additional areas for removal that are not shown on the plans. These additional areas will be measured for payment and included as part of the Contract work.

Where selective removal is required, the square yards of the drip line of the invasive vegetation will be measured for payment.

Basis of Payment: This work will be paid for at the Contract unit price per square yard for "Control and Removal of Invasive Vegetation." This payment shall include all labor, surveys, materials, tools, and equipment necessary for limits of the invasive area(s); maintenance of the limits throughout the Project; species identification; and cutting, excavation, treating, re-treating, removal, and off-Site disposal of designated invasive plant material. Off-Site disposal of residue shall include the loading, transport, dumping, and fees associated with legal off-site disposal.

- Upon approval of the required IVRP, the Contractor will receive a payment equal to 10% of the estimated Contract value

- Upon initial herbicide or mechanical removal treatment methods as it is described in the IVRP, the Contractor will receive a payment equal to 20% of all areas receiving treatment
- Upon successful completion of the initial treatment period, as determined during the review by the Engineer, the Contractor will receive a payment equal to 20%
- Upon successful completion of the intermediate treatment period as determined during the Site review by the Engineer, the Contractor will receive a payment equal to 20%
- Upon successful completion of the 1-Year Plant Establishment Period covering all treated areas on the Project (or the last treatment for those Projects which may not include a 1-Year Plant Establishment Period), the Contractor will receive final payment equal to the measured areas in place and treated, less any previous payments

Where bulk excavation is required for removal, this work shall be covered under the Contract Item “Earth Excavation” for all excavation in excess of 2 feet. All other vegetation not designated as invasive vegetation shall be removed in compliance with the Item “Clearing and Grubbing” in accordance with Section 2.01.

Vegetative stabilization of disturbed areas will be paid for under the respective Contract Items: “Turf Establishment,” “Wetland Grass Establishment,” or “Conservation Seeding for Slopes.”

Pay Item	Pay Unit
Control and Removal of Invasive Vegetation	s.y.

ITEM #0969062A - CONSTRUCTION FIELD OFFICE, MEDIUM

Description: Under the item included in the bid document, adequate weatherproof office quarters with related furnishings, materials, equipment and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, furnishings, materials, equipment, and services are for the exclusive use of CTDOT forces and others who may be engaged to augment CTDOT forces with relation to the Contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02. This office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

Furnishings/Materials/Supplies/Equipment: All furnishings, materials, equipment and supplies shall be in like new condition for the purpose intended and require approval of the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below:

Description \ Office Size	Small	Med.	Large	Extra Large
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400	400	1000	2000
Minimum number of exterior entrances.	2	2	2	2
Minimum number of parking spaces.	7	7	10	15

Office Layout: The office shall have a minimum square footage as indicated in the table above, and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by CTDOT personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women), in separately enclosed rooms that are properly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the CTDOT and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel, wiring, outlets, etc., to serve the electrical requirements of the field office, including: lighting, general outlets, computer outlets, calculators etc., and meet the following minimum specifications:

- A. 120/240 volt, 1 phase, 3 wire
- B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
- C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
- D. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each desk and personal computer table (workstation) location.
- E. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.
- F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
- G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120 volt, straight blade.
- H. After work is complete and prior to energizing, the State's CTDOT electrical inspector, must be contacted at 860-594-2240. (Do Not Call Local Town Officials)
- I. Prior to field office removal, the CTDOT Office of Information Systems (CTDOT OIS) must be notified to deactivate the communications equipment.

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient heating, air conditioning and ventilation equipment to maintain a temperature range of 68°-80° Fahrenheit within the field office.

Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium and Large field office this shall consist of the installation of two (2) telephone lines: one (1) line for phone/voice service and one (1) line dedicated for the facsimile machine. For an Extra-Large field office this shall consist of four (4) telephone lines: three (3) lines for phone/voice service and one (1) line dedicated for facsimile machine. The Contractor shall pay all charges.

Data Communications Facility Wiring: Contractor shall install a Category 6 568B patch panel in a central wiring location and Cat 6 cable from the patch panel to each PC station, Smart Board location, Multifunction Laser Printer/Copier/Scanner/Fax, terminating in a (Category 6 568B) wall or surface mount data jack. The central wiring location shall also house either the data circuit with appropriate power requirements or a category 5 cable run to the location of the installed data circuit. The central wiring location will be determined by the CTDOT OIS staff in coordination with the designated field office personnel as soon as the facility is in place.

For Small, Medium and Large field offices the Contractor shall run a CAT 6 LAN cable a minimum length of 25 feet for each CTDOT networked device (including but not limited to: smartboards and Multi-Function Laser Printer/Copier/Scanner/Fax) to LAN switch area leaving an additional 10 feet of cable length on each side with terminated RJ45 connectors. For an Extra-Large field office the Contractor shall run CAT 6 LAN cables from workstations, install patch panel in data circuit demark area and terminate runs with RJ45 jacks at each device location. Terminate runs to patch panel in LAN switch area. Each run / jack shall be clearly labeled with an identifying Jack Number.

The Contractor shall supply cables to connect the Wi-Fi printer to the Contractor supplied internet router and to workstations/devices as needed. These cables shall be separate from the LAN cables and data Jacks detailed above for the CTDOT network.

The number of networked devices anticipated shall be at least equal to the number of personal computer tables, Multi-Function Laser Printer/Copier/Scanner/Fax, and smartboards listed below.

The installation of a data communication circuit between the field office and the CTDOT OIS in Newington will be coordinated between the CTDOT District staff, CTDOT OIS staff and the local utility company once the Contractor supplies the field office phone numbers and anticipated installation date. The Contractor shall provide the field office telephone number(s) to the CTDOT Project Engineer within 10 calendar days after the signing of the Contract as required by Article 1.08.02. This is required to facilitate data line and computer installations.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:

Furnishing Description	Office Size
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	Small	Med.	Large	Extra Large
	Quantity			
Office desk (2.5 ft. x 5 ft.) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	1	3	5	8
Standard secretarial type desk and matching desk chair that has pneumatic seat height adjustment and dual wheel casters on the base.	-	-	-	1
Personal computer tables (4 ft. x 2.5 ft.).	2	3	5	8
Drafting type tables (3 ft. x 6 ft.) and supported by wall brackets and legs; and matching drafters stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1	1	1	2
Conference table, 3 ft. x 12 ft.	-	-	-	1
Table – 3 ft. x 6 ft.	-	-	-	1
Office Chairs.	2	4	8	20
Mail slot bin – legal size.	-	-	1	1
Non-fire resistant cabinet.	-	-	2	4
Fire resistant cabinet (legal size/4 drawer), locking.	1	1	2	3
Storage racks to hold 3 ft. x 5 ft. display charts.	-	-	1	2
Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.	1	1	2	2
Double door supply cabinet with 4 shelves and a lock – 6 ft. x 4 ft.	-	-	1	2
Case of cardboard banker boxes (Min 10 boxes/case)	1	1	2	3
Open bookcase – 3 shelves – 3 ft. long.	-	-	2	2
White Dry-Erase Board, 36" x 48" min. with markers and eraser.	1	1	1	1
Interior partitions – 6 ft. x 6 ft., soundproof type, portable and freestanding.	-	-	6	6
Coat rack with 20 coat capacity.	-	-	-	1
Wastebaskets - 30 gal., including plastic waste bags.	1	1	1	2
Wastebaskets - 5 gal., including plastic waste bags.	1	3	6	10
Electric wall clock.	-	-	-	2
Telephone.	1	1	1	-
Full size stapler 20 (sheet capacity, with staples)	1	2	5	8
Desktop tape dispensers (with Tape)	1	2	5	8
8 Outlet Power Strip with Surge Protection	3	4	6	9
Rain Gauge	1	1	1	1
Business telephone system for three lines with ten handsets, intercom capability, and one speaker phone for conference table.	-	-	-	1
Mini refrigerator - 3.2 c.f. min.	1	1	1	1

Hot and cold water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1	1	1	1
Microwave, 1.2 c.f. , 1000W min.	1	1	1	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*	*	*	*
Electric pencil sharpeners.	1	2	2	2
Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.	1	1	2	4
Small Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Related Hardware and Software</u> .	1	1		
Large Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Related Hardware and Software</u> .			1	1
Field Office Wi-Fi Connection as specified below under <u>Computer Related Hardware and Software</u>	1	1	1	1
Wi-Fi Printer as specified below under <u>Computer Related Hardware and Software</u> .	1	1	1	1
Digital Camera as specified below under <u>Computer Related Hardware and Software</u> .	1	1	3	3
Video Projector as specified below under <u>Computer Related Hardware and Software</u> .	-	-	-	1
Smart Board as specified below under <u>Computer Related Hardware and Software</u> .	-	-	-	1
Infrared Thermometer, including annual third party certified calibration, case, and cleaning wipes.	1	1	1	2
Concrete Curing Box as specified below under Concrete Testing Equipment.	1	1	1	1
Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.	1	1	1	1
Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.	1	1	1	1
First Aid Kit	1	1	1	1
Flip Phones as specified under <u>Computer Related Hardware and Software</u> .	-	-	-	-
Smart Phones as specified under <u>Computer Related Hardware and Software</u> .	-	-	-	-

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

Computer Related Hardware and Software: The CTDOT will supply by its own means the actual Personal Computers for the CTDOT representatives. The Contractor shall supply the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors, and Smart Board(s) as well as associated hardware and software, must meet the requirements of this specification as well as the latest minimum specifications posted, as of the project advertising date, at CTDOTs web site <http://www.ct.gov/dot/cwp/view.asp?a=1410&q=563904>

Within 10 calendar days after the signing of the Contract but before ordering/purchasing the Wi-Fi Printer (separate from the Multifunction Laser Printer/Copier/Scanner/Fax), Field Office Wi-Fi, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projector(s) and Smart Board(s) as well as associated hardware, the Contractor must submit a copy of their proposed order(s) with catalog cuts and specifications to the Administering CTDOT District for review and approval. The Wi-Fi Printer, Wi-Fi Router, Flip Phones, Smart Phones, digital cameras, Projector(s) and Smart Board(s) will be reviewed by CTDOT District personnel. The Multifunction Laser Printer/Copier/Scanner/Fax will be reviewed by the CTDOT OIS. The Contractor shall not purchase the hardware, software, or services until the Administering CTDOT District informs them that the proposed equipment, software, and services are approved. The Contractor will be solely responsible for the costs of any hardware, software, or services purchased without approval.

The Contractor and/or their internet service provider shall be responsible for the installation and setup of the field office Wi-Fi, Wi-Fi printer, and the configuration of the wireless router as directed by the CTDOT. Installation will be coordinated with CTDOT District and Project personnel.

After the approval of the hardware and software, the Contractor shall contact the designated representatives of the CTDOT administering District, a minimum of 2 working days in advance of the proposed delivery or installation of the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors and Smart Board(s), as well as associated hardware, software, supplies, and support documentation.

The Contractor shall provide all supplies, paper, maintenance, service and repairs (including labor and parts) for the Wi-Fi printers, copiers, field office Wi-Fi, fax machines and other equipment and facilities required by this specification for the duration of the Contract. All repairs must be performed with-in 48 hours. If the repairs require more than a 48 hours then an equal or better replacement must be provided.

Once the Contract has been completed, the hardware and software will remain the property of the Contractor.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Rain Gauge: The Contractor shall supply install and maintain a rain gauge for the duration of the project, meeting these minimum requirements. The rain gauge shall be installed on the top of a post such that the opening of the rain gauge is above the top of the post an adequate distance to avoid splashing of rain water from the top of the post into the rain gauge. The Location of the rain gauge and post shall be approved by the Engineer. The rain gauge shall be made of a durable material and have graduations of 0.1 inches or less with a minimum total column height of 5 inches. If the rain gauge is damaged the Contractor shall replace it prior to the next forecasted storm event at no additional cost.

Concrete Testing Equipment: If the Contract includes items that require compressive strength cylinders for concrete, in accordance with the Schedule of Minimum Testing Requirements for Sampling Materials for Test, the Contractor shall provide the following equipment.

- A) Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.
- B) Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.
- C) Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T119, Standard Test Method for Slump of Hydraulic-Cement Concrete.

All testing equipment will remain the property of the Contractor at the completion of the project.

Insurance Policy: The Contractor shall provide a separate insurance policy, with no deductible, in the minimum amount of five thousand dollars (\$5,000) in order to insure all State-owned data equipment and supplies used in the office against all losses. The Contractor shall be named insured on that policy, and the CTDOT shall be an additional named insured on the policy. These losses shall include, but not be limited to: theft, fire, and physical damage. The CTDOT will be responsible for all maintenance costs of CTDOT owned computer hardware. In the event of loss, the Contractor shall provide replacement equipment in accordance with current CTDOT equipment specifications, within seven days of notice of the loss. If the Contractor is unable to provide the required replacement equipment within seven days, the CTDOT may provide replacement equipment and deduct the cost of the equipment from monies due or which may become due the Contractor under the Contract or under any other contract. The Contractor's financial liability under this paragraph shall be limited to the amount of the insurance coverage required by this paragraph. If the cost of equipment replacement required by this paragraph should exceed the required amount of the insurance coverage, the CTDOT will reimburse the Contractor for replacement costs exceeding the amount of the required coverage.

Maintenance: During the occupancy by the CTDOT, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office

quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, cleaning restrooms, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

There will not be any price adjustment due to any change in the minimum computer related hardware and software requirements.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for “Construction Field Office, Medium,” which price shall include all material, equipment, labor, service contracts, licenses, software, repair or replacement of hardware and software, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements of this specified this specification.

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Field Office, Medium	Month

ITEM #0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description *is supplemented by the following:*

The Contractor shall maintain and protect traffic as described by the following and as limited in the special provision for Section 1.08 - Prosecution and Progress:

Interstate I-395

The Contractor shall maintain and protect the minimum number of through lanes and shoulders on a paved travel path not less than 12 feet in width per lane during the hours dictated in the special provision for Article 1.08.04 – Limitation of Operations.

The Contractor will be permitted to halt traffic during the allowable periods. If more than one 10 minute period is required, then the Contractor shall allow all stored vehicles to proceed through the work area prior to the next stoppage.

I-395 Ramps

The Contractor shall maintain and protect existing traffic operations, with the following exceptions:

1. During the allowable periods and when the Contractor is actively working, the Contractor will be permitted to maintain and protect a minimum of 1 lane of traffic on a paved travel path not less than 12 feet in width.

Article 9.71.03 - Construction Methods *is supplemented as follows:*

General

The Contractor is required to delineate any raised structures within the travel lanes, so that the structures are visible day and night, unless there are specific Contract plans and provisions to temporarily lower these structures prior to the completion of work.

The Contractor shall schedule operations so that pavement removal and roadway resurfacing shall be completed full width across a roadway or bridge section by the end of a work shift, or as directed by the Engineer.

When the installation of all intermediate courses of bituminous concrete pavement is completed for the entire roadway, the Contractor shall then install the final course of bituminous concrete pavement.

When the Contractor is excavating adjacent to the roadway, the Contractor shall provide a 3 foot shoulder between the work area and travel lanes, with traffic drums spaced every 50 feet. At the end of the work shift if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary bituminous concrete traversable slope of 4:1 or flatter that is acceptable to the Engineer.

The Contractor, during the course of any active overhead construction work, shall close the lanes directly below the work area for the entire length of time overhead work is being undertaken.

When an existing sign is to be relocated or replaced, the work shall be completed during the same work shift.

The field installation of a signing pattern shall constitute interference with existing traffic operations and shall not be allowed, except during the allowable periods.

On limited-access highways, construction vehicles entering travel lanes shall not be allowed without a lane closure. The lane closure shall be of sufficient length to allow vehicles to enter or exit the work area at the posted speed limit, in order to merge with existing traffic.

Existing Signing

The Contractor shall maintain all existing overhead and side-mounted signs within the Project limits throughout the duration of the Project. The Contractor shall temporarily relocate signs and sign supports as many times as deemed necessary, and shall install temporary sign supports if necessary and as directed by the Engineer.

Requirements for Winter

The Contractor shall schedule a meeting with representatives of the Department, including the offices of Maintenance and Traffic, and the Town of Norwich to determine any interim traffic control measures the Contractor shall accomplish prior to winter to provide safety to motorists and permit adequate snow removal procedures. This meeting shall be held prior to October 31 of each year and will include, but not be limited to, discussion of the status and schedule of the following items: lane and shoulder widths, pavement restoration, traffic signal work, pavement markings, and signing.

Signing Patterns

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory.

Pavement Markings - Limited Access Highways, Turning Roadways and Ramps

During construction, the Contractor shall maintain all pavement markings throughout the limits of the project.

Interim Pavement Markings

The Contractor shall install painted pavement markings, which shall include lane lines (broken lines), edge lines, stop bars, lane-use arrows and gore markings, on each intermediate course of bituminous concrete pavement and on any milled surface by the end of the work day/night. All painted pavement markings will be paid under the appropriate items.

If the Contractor does not install permanent Epoxy Resin Pavement Markings by the end of the work day/night on exit ramps where the final course of bituminous concrete pavement has been installed, the Contractor shall install temporary 12 inch wide white stop bars. The temporary stop bars shall consist of Temporary Plastic Pavement Marking Tape and shall be installed by the end of the work day/night. Stop bars may consist of two 6 inch wide white markings or three 4 inch wide white markings placed side by side. The Contractor shall remove and dispose of these markings when the permanent Epoxy Resin Pavement Markings are installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

If an intermediate course of bituminous concrete pavement will be exposed throughout the winter, then Epoxy Resin Pavement Markings should be installed unless directed otherwise by the Engineer.

Final Pavement Markings

The Contractor should install painted pavement markings on the final course of bituminous concrete pavement by the end of the work day/night. If the painted pavement markings are not installed by the end of the work day/night, then Temporary Plastic Pavement Marking Tape shall be installed as described above and the painted pavement markings shall be installed by the end of the work day/night on Friday of that week.

If Temporary Plastic Pavement Marking Tape is installed, the Contractor shall remove and dispose of these markings when the painted pavement markings are installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

The Contractor shall install permanent Epoxy Resin Pavement Markings in accordance with Section 12.10 entitled "Epoxy Resin Pavement Markings" after such time as determined by the Engineer.

Traffic Control During Construction Operations

The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for a safer and more efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

Traffic Control Patterns

Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder or is within the clear zone. For each situation, the installation of traffic control devices shall be based on the following:

- Speed and volume of traffic.
- Duration of operation.
- Exposure to hazards.

Traffic control patterns shall be uniform, neat, and orderly in order to command respect from the motorist.

Lane reduction tapers should be placed so that the entire length of the taper is installed on a tangent section of roadway and the entire taper area can be seen by the motorist.

All existing conflicting signs shall be removed, covered with an opaque material, or turned so that they are not legible to oncoming traffic prior to implementing a traffic control pattern. The existing signs shall be uncovered or reinstalled once the pattern is removed.

A buffer area should be provided during installation of a traffic control pattern and maintained for the duration of the work. The buffer area shall be free of any equipment, workers, materials, and parked vehicles.

Construction Traffic Control Plans 19 through 25 should be used for moving operations such as line striping, rumble strips, pothole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

Traffic control patterns are not required for vehicles on an emergency patrol type activity or for a short duration stop of up to one hour, as long as the equipment is contained within the shoulder. Flashing lights, arrow boards, truck-mounted or trailer-mounted impact attenuators, and appropriate Trafficperson(s) shall be used when required.

In a situation not adequately covered by the Construction Traffic Control Plans, the Contractor shall contact the Engineer for assistance prior to setting up a traffic control pattern.

Placement of Signs

Signs shall be placed in a position that allows motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. On multi-lane divided highways, advance warning signs shall be installed on both sides of the highway. On directional roadways (on-ramps, off-ramps, one-way roads) where the sight distance to signs is restricted, these signs should be installed on both sides of the roadway.

Allowable Adjustment of Signs and Devices Shown on the Construction Traffic Control Plans

The Construction Traffic Control Plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans.

The proper application of the Construction Traffic Control Plans and installation of traffic control devices is dependent upon actual field conditions.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

Adjustments to the Construction Traffic Control Plans shall only be made at the direction of the Engineer.

Table 1 indicates the minimum taper lengths required for a lane closure based on the posted speed limit and lane width of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the Construction Traffic Control Plans cannot be achieved.

Table 1 – Minimum Taper Length

POSTED SPEED LIMIT (MPH)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE (FEET)	
	FREEWAYS	SECONDARY ROADS
30 OR LESS	180	165
35	245	225
40	320	295
45	540	495
50	600	550
55	660	605
65	780	715

1. Work Zone Safety Meetings

- 1.a) Prior to the commencement of work, a Work Zone Safety Meeting shall be conducted with representatives from DOT Construction, Connecticut State Police (Local Barracks), Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the Project. DOT Traffic Engineering shall be invited to the Work Zone Safety Meeting. Other Work Zone Safety Meetings during the course of the Project should be scheduled as needed.
- 1.b) A Work Zone Safety Meeting Agenda shall be developed and used at the Meeting to outline the anticipated traffic control issues during the construction of this Project. Any issues that can't be resolved at these Meetings will be brought to the attention of the District Engineer and the Office of Construction. The agenda shall include:
 - i. Review Project scope of work and time;
 - ii. Review Section 1.08, Prosecution and Progress;
 - iii. Review Section 9.70, Trafficpersons;
 - iv. Review Section 9.71, Maintenance and Protection of Traffic;
 - v. Review Contractor's schedule and method of operations;
 - vi. Review special concern areas: ramps, turning roadways, medians, lane drops, etc.;
 - vii. Open discussion of work zone questions and issues;
 - viii. Discussion of review and approval process for changes in Contract requirements as they relate to work zone areas.

2. General

- 2.a) **Traffic control patterns shall only be installed if the required minimum number of signs, traffic cones, traffic drums, and other equipment (i.e. one Arrow Board for each lane closed, two Truck-Mounted or Trailer-Mounted Attenuators (TMAs), Changeable Message Sign, etc.) are on Site.**
- 2.b) The Contractor shall have spare maintenance and protection of traffic equipment (TMAs, Arrow Board, Changeable Message Sign(s), construction signs, traffic cones, traffic drums, etc.) available at all times in case of mechanical failures, etc. Spare maintenance and protection of traffic equipment installed as a result of a sudden equipment breakdown shall be replaced by the Contractor within 24 hours.
- 2.c) Failure of the Contractor to have the required minimum number of signs, personnel, and equipment, which results in the pattern not being installed, shall not be a reason for a time extension or claim for lost time.
- 2.d) In cases of differences of opinion between the Contractor and the Inspection staff, the Contractor shall follow the directions of the Engineer. The matter shall be brought to the

District Office for resolution immediately or, in the case of work after regular business hours, on the next business day.

3. Installing and Removing Traffic Control Patterns

- 3.a) Lane closures shall be installed beginning with the advance warning signs and proceeding forward toward the work area.
- 3.b) Lane closures shall be removed in the reverse order, beginning at the end of the work area, or traffic control pattern, and proceeding back toward the advance warning signs.
- 3.c) Stopping traffic may be allowed within the allowable hours stated in Section 1.08.04:
 - i. For those activities stated within the Contract.
 - ii. During paving, milling operations, or similar activities where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway so traffic does not travel across the longitudinal joint or difference in roadway elevation.
 - iii. To move slow moving equipment across live traffic lanes into the work area.
- 3.d) The Contractor shall adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.
- 3.e) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging with or exiting from the mainline traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.
- 3.f) Workers are prohibited from crossing the travel lanes on limited access roadways to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

4. Implementation of Rolling Road Block (RRB)

- 4.a) Temporary road closures using a RRB may be allowed on limited access highways for operations associated with the installation and removal of temporary lane closures. RRB may be allowed for the installation and removal of lead signs and lane tapers only and shall meet the following requirements:
 - i. Refer to the Limitation of Operations Chart provided in Section 1.08.04 for the hours allowed for implementing a RRB operation. The Contractor shall only implement a RRB operation within the hours shown in the Chart.
 - ii. In areas with good sight lines and full shoulders, signs on the side of the road opposite the traffic pattern should be installed in a separate operation.
 - iii. TMAs equipped with Arrow Boards shall be used to slow traffic to implement the RRB. State Police Officers in marked vehicles may be used to support the implementation of the RRB. The RRB shall start by having all vehicles, including TMAs and police vehicles, leave the shoulder or on-ramp and accelerate

- to normal roadway speeds in each lane. The vehicles will then position themselves side by side and decelerate to the RRB speed on the highway.
- iv. A Pre-Warning Vehicle, as specified elsewhere in the Contract, shall be used to advise the motorists that sign pattern installation or removal is underway.
 - v. The RRB duration shall not exceed 15 minutes from the start of the traffic block until all lanes are opened as designated in the Limitation of Operations chart. If the RRB duration exceeds 15 minutes on 2 successive shifts, no further RRB will be allowed until the Contractor obtains approval for a revised installation procedure from the District.
 - vi. RRB shall not be used to expand a lane closure pattern to an additional lane during the shift. The workers and equipment required to implement the additional lane closure should be staged from within the closed lane. TMAs (and State Police if available) shall be used to protect the workers installing the taper in the additional lane.
 - vii. Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days shall be allowed for review and comment by the District.
 - viii. The Engineer and the Contractor will review and discuss the RRB procedures (including any revisions) in advance of the work. The implementation of the agreed upon plan will be reviewed with the State Police during the Work Zone Safety Meeting held before each shift involving temporary lane closures. If the State Police determine that alternative procedures should be implemented for traffic control during the work shift, the Department and Contractor will attempt to resolve any discrepancies with the duty sergeant at the Troop. If the discrepancies are unable to be resolved prior to the start of the shift, then the work will proceed as recommended by the Department. Any unresolved issues shall be addressed the following day.

5. Use of Arrow Boards

- 5.a) On limited access roadways, one Arrow Board shall be used for each lane that is closed. The Arrow Board shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the Construction Traffic Control Plans. Additional Arrow Boards shall be deployed if sight distances are limited.
- 5.b) On non-limited access roadways, the use of an Arrow Board for lane closures is optional. The roadway geometry, sight distance, and traffic volume shall be considered in the decision to use the Arrow Board.
- 5.c) A vehicle displaying an arrow board shall be equipped with high-intensity rotating, flashing, oscillating, or strobe lights.
- 5.d) The flashing arrow mode shall be used for lane closure (merge) tapers.

- 5.e) The flashing arrow mode shall not be used for temporary alternating one-way traffic operations or to laterally shift lanes of traffic.
- 5.f) The flashing double arrow mode shall only be used for closing a center lane on a multilane roadway where adjacent left and right lanes remain open.
- 5.g) For shoulder work or roadside work near the shoulder, the Arrow Board shall be positioned in the shoulder and the flashing alternating diamond mode should be used.
- 5.h) The flashing alternating diamond caution mode should also be used when supplemental Arrow Boards are positioned in an already closed lane.

6. Use of Truck-Mounted or Trailer-Mounted Impact Attenuators (TMAs)

- 6.a) On limited access roadways, lane closures shall use a minimum of two TMAs to install and remove traffic control patterns. If two TMAs are not available, then the pattern shall not be installed.
- 6.b) On non-limited access roadways, the use of TMAs to install and remove patterns closing a lane(s) is optional. The roadway geometry, sight line distance, and traffic volume shall be considered in the decision to utilize the TMAs.
- 6.c) On limited access roadways, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane to establish the advance and transition signing. The Arrow Board mounted on the TMA shall be in the arrow mode when taking the lane. The sign truck and workers shall be at sufficient distance ahead of the second TMA. In no case shall the TMA be used as the sign truck or a work truck. Once the transition is in place, the TMAs shall travel in the closed lane until all Portable Changeable Message Signs, signs, Arrow Boards, and cones/drums are installed. The Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when traveling in the closed lane.
- 6.d) A TMA shall be placed prior to the first work area in the pattern. If there are multiple work areas within the same pattern, then additional TMAs shall be positioned at each additional work area as needed. The Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when in the closed lane.
- 6.e) TMAs shall be positioned a sufficient distance prior to the workers or equipment being protected to allow for appropriate vehicle roll-ahead in the event that the TMA is hit, but not so far that an errant vehicle could travel around the TMA and into the work area. For additional placement and use details, refer to Section 18.06. Some operations, such as paving and concrete repairs, do not allow for placement of the TMA(s) within the specified distances. In these situations, the TMA(s) shall be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.

- 6.f) TMAs will be paid for in accordance with how the unit is used. If it is used as a TMA and is in the proper location as specified, then it will be paid for at the specified hourly rate for Truck-Mounted or Trailer-Mounted Impact Attenuator. When the TMA is used as an Arrow Board, it will be paid for at the daily rate for Arrow Board. If a TMA is used to install and remove a pattern and is also used as an Arrow Board in the same day, then the unit will be paid for as a Truck-Mounted or Trailer-Mounted Impact Attenuator for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove). If the TMA is also used as an Arrow Board during the same day, then the unit will only be paid for at the daily rate as an Arrow Board.

7. Use of Traffic Drums and Traffic Cones

- 7.a) On limited-access highways, ramps, and turning roadways:
- i. Traffic drums shall be used for taper channelization.
 - ii. Traffic drums shall be used to delineate raised catch basins and other hazards.
 - iii. Traffic cones with a minimum height of 42 inches may be used in place of drums in the tangent section of a closed lane or shoulder.
 - iv. Traffic cones less than 42 inches in height shall not be used.
- 7.b) On all roadways:
- i. Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 36-hour duration.
 - ii. Traffic cones shall not be left unattended.
 - iii. Traffic cones with a minimum height of 42 inches shall be used when the posted speed limit is 45 MPH or above.
- 7.c) Typical spacing of traffic drums and/or cones shown on the Construction Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

8. Use of Barricade Warning Lights

- 8.a) Barricade Warning Lights may be installed on channelizing devices when used in a merge taper. The Barricade Warning Lights shall flash in a sequential pattern when used in a merge taper. The successive flashing shall occur from the upstream end (beginning) of the merge taper to the downstream end (end) of the merge taper.
- 8.b) Type C Barricade Warning Lights may be used at night to delineate the edge of the travel way.
- c) Type B Barricade Warning Lights shall be used on post-mounted advanced warning signs.

9. Use of Portable Changeable Message Signs (PCMS)

- 9.a) On limited access roadways, one PCMS shall be used in advance of the traffic control pattern for all lane closures. Prior to installing the pattern, the PCMS shall be installed and in operation, displaying the appropriate lane closure information. The PCMS shall be positioned ½ to 1 mile ahead of the start of the lane closure taper. If the distance to the nearest exit ramp is greater than the specified ½ to 1 mile distance, then an additional PCMS shall be positioned a sufficient distance ahead of the exit ramp (and before the previous on-ramp where practical) to alert motorists to the work and therefore offer them an opportunity to take the exit.
- 9.b) On non-limited access roadways, the use of PCMS for lane closures is optional. The roadway geometry, sight line distance, and traffic volume shall be considered in the decision to use the PCMS.
- 9.c) PCMS should be placed off the shoulder of the roadway and behind a traffic barrier, if practical. Where a traffic barrier is not available to shield the PCMS, it should be placed off the shoulder and outside of the clear zone. If a PCMS has to be placed on the shoulder of the roadway or within the clear zone, it should be placed on the paved shoulder with a minimum of five traffic drums placed in a taper in front of it to delineate its position. The taper shall meet minimum distance requirements for a shoulder closure. The PCMS shall be protected if it is used for a continuous duration of 36 hours or more.
- 9.d) The PCMS shall be removed from the clear zone and have the display screen cleared and turned 90 degrees away from the roadway when the PCMS is no longer required.
- 9.e) The PCMS should not be used within 1,000 feet of an existing PCMS or Variable Message Sign (VMS).
- 9.f) A PCMS message shall:
- i. consist of no more than two phases;
 - ii. contain no more than three lines of text per phase;
 - iii. have no more than eight characters per line, including spaces.
- 9.g) The PCMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs. The PCMS should not be used for generic messages (ex.: Road Work Ahead, Bump Ahead, Gravel Road, etc.) or for messages that need to be displayed for long periods of time, such as during stage construction. These types of messages should be displayed with construction signs. Special signs shall be coordinated with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.
- 9.h) Typical messages that are allowed on the PCMS are shown below. Approval must be received from the Office of Construction for any message(s) different than the typical messages shown in Figure 1.
- 9.i) All messages shall comply with the information provided in Tables 2 and 3.

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Message No.</u>	<u>Phase 1</u>	<u>Phase 2</u>
1	LEFT LANE CLOSED	MERGE RIGHT	9	LANES CLOSED AHEAD	REDUCE SPEED
2	2 LEFT LANES CLOSED	MERGE RIGHT	10	LANES CLOSED AHEAD	USE CAUTION
3	LEFT LANE CLOSED	REDUCE SPEED	11	EXIT XX CLOSED	USE EXIT YY
4	2 LEFT LANES CLOSED	REDUCE SPEED	12	EXIT XX CLOSED USE YY	FOLLOW DETOUR
5	RIGHT LANE CLOSED	MERGE LEFT	13	2 LANES SHIFT AHEAD	USE CAUTION
6	2 RIGHT LANES CLOSED	MERGE LEFT	14	3 LANES SHIFT AHEAD	USE CAUTION
7	RIGHT LANE CLOSED	REDUCE SPEED			
8	2 RIGHT LANES CLOSED	REDUCE SPEED			

Figure 1: Typical PCMS Messages

Table 2: Acceptable Abbreviations

Word Message	Standard Abbreviation	Word Message	Standard Abbreviation
Access	ACCS	Minimum	MIN
Afternoon / Evening	PM	Minor	MNR
Ahead	AHD	Minute(s)	MIN
Alternate	ALT	Monday	MON
Avenue	AVE, AV	Morning / Late Night	AM
Bicycle	BIKE	Mount	MT
Blocked	BLKD	Mountain	MTN
Boulevard	BLVD	National	NATL
Bridge	BR	Normal	NORM
CB Radio	CB	North	N
Center	CTR	Northbound	NBND
Center	CNTR	Oversized	OVRSZ
Chemical	CHEM	Parking	PKING
Circle	CIR	Parkway	PKWY
Compressed Natural Gas	CNG	Pavement	PVMT
Condition	COND	Pedestrian	PED
Congested	CONG	Place	PL
Construction	CONST	Pounds	LBS
Court	CT	Prepare	PREP
Crossing	XING	Quality	QLTY
Crossing (other than highway-rail)	XING	Right	RT
Downtown	DWNTN	Road	RD
Drive	DR	Roadwork	RDWK
East	E	Route	RT, RTE
Eastbound	EBND	Saint	ST
Electric Vehicle	EV	Saturday	SAT
Emergency	EMER	Service	SERV
Entrance, Enter	ENT	Shoulder	SHLDR
Exit	EX	Slippery	SLIP
Express	EXP	South	S
Expressway	EXPWY	Southbound	SBND
Feet	FT	Speed	SPD
Freeway	FRWY, FWY	State, county, or other non-US or non-Interstate numbered route	[Route Abbreviation determined by highway agency]**
Friday	FRI	Street	ST
Frontage	FRNTG	Sunday	SUN
Hazardous	HAZ	Telephone	PHONE
Hazardous Material	HAZMAT	Temporary	TEMP
High Occupancy Vehicle	HOV	Terrace	TER
Highway	HWY	Thruway	THWY
Highway-Rail Grade Crossing	RR XING	Thursday	THURS

Hospital	HOSP	Tons of Weight	T
Hour(s)	HR, HRS	Traffic	TRAF
Information	INFO	Trail	TR
International	INTL	Travelers	TRVLRS
Interstate	I-	Tuesday	TUES
Junction / Intersection	JCT	Turnpike	TPK
Lane	LN	Two-Way Intersection	2-WAY
Left	LFT	Two-Wheeled Vehicles	CYCLES
Liquid Propane Gas	LP-GAS	Upper	UPR
Local	LOC	US Numbered Route	US
Lower	LWR	Vehicle(s)	VEH, VEHS
Maintenance	MAINT	Warning	WARN
Major	MAJ	Wednesday	WED
Maximum	MAX	West	W
Mile(s)	MI	Westbound	WBND
Miles Per Hour	MPH		

** A space and no dash shall be placed between the abbreviation and the number of the route.

Table 3: Unacceptable Abbreviations

Unacceptable Abbreviation	Intended Word	Common Misinterpretation
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (Merge)
LT	Light (Traffic)	Left
PARK	Parking	Park
POLL	Pollution (Index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
WRNG	Warning	Wrong

10. Use of State Police Officers

- 10.a) State Police may be used only on limited access highways and secondary roadways that are under their primary jurisdiction. A minimum of one Officer may be used per critical sign pattern; however, a State Police presence is not required. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer. Left lane closures may also be implemented without State Police presence in areas with only moderate traffic and wide, unobstructed medians. It may be desirable to have a State Police presence, when available, under specific situations, such as nighttime lane closures; left lane closures with minimal width for setting up advance signs and staging; lane and shoulder closures on turning roadways/ramps or mainline where sight distance is minimal; and closures where extensive turning movements or traffic congestion regularly occur; however, they are not required.
- 10.b) If a State Police presence is provided, once the pattern is in place, the State Police Officer should be positioned in a non- hazardous location in advance of the pattern to provide advance warning to the motorist. If traffic backs up beyond the beginning of the pattern, then the State Police Officer shall reposition so that they are located prior to the backup. The State Police Officer should not be located immediately behind or within the roll ahead area of any TMA or within the work zone buffer area. The State Police Officer shall not be positioned in such a way that the State Police Officer obstructs any construction warning signs or PCMS from view of the motorist.
- 10.c) Other functions of the State Police Officer(s) may include:
- i. Assisting construction vehicles entering and exiting the work area.
 - ii. Enforcement of motor vehicle laws within the work area, if specifically requested by the Engineer.
- 10.d) State Police Officers assigned to a work site shall take direction from the Engineer.

NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.
2. SIGNS (AA), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED IN ADVANCE TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.
3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.
4. TRAFFIC CONES AND PORTABLE CONSTRUCTION SIGNS SHALL NOT BE LEFT UNATTENDED.
5. ALL CONFLICTING SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.
6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 48 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.
7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT ≤ 40 MPH).
8. IF THIS PLAN IS TO REMAIN IN OPERATION FROM SUNSET TO SUNRISE, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.
9. A PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF MILE TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.
10. SIGN (P) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT (MILES PER HOUR)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE
30 OR LESS	180'
35	245'
40	320'
45	540'
50	600'
55	660'
65	780'

CONSTRUCTION TRAFFIC CONTROL PLAN

NOTES

SCALE: NONE

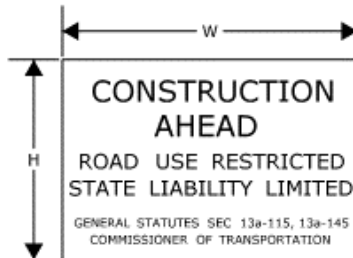
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

Tracy L. Fogarty
PRINCIPAL ENGINEER

Tracy L. Fogarty, P.E.
2019.08.13 06:47:47-04107

SERIES 16 SIGNS



		W	H
16-E	80-1605	84" x 60"	
16-H	80-1608	60" x 42"	
16-M	80-1613	30" x 24"	

		W	H
16-S	80-1619	48" x 30"	

SIGN 16-S SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS. SERIES 16 SIGNS SHOULD BE LOCATED TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHOULD BE INSTALLED ON MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHOULD BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL FREEWAYS AND EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMPS, OTHER STATE ROADWAYS AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

CONSTRUCTION TRAFFIC CONTROL PLAN
SERIES 16 SIGNS

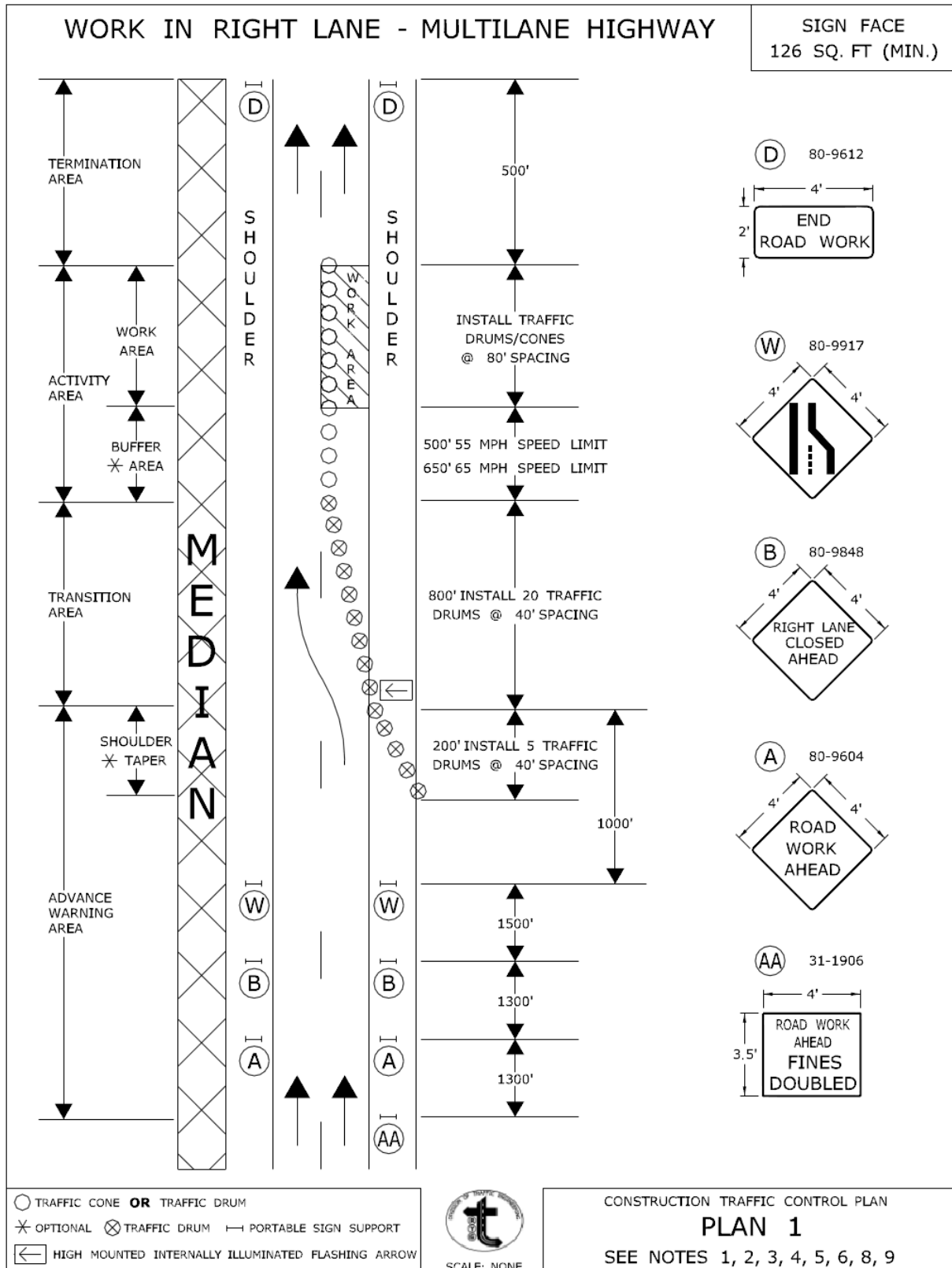
SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
 BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

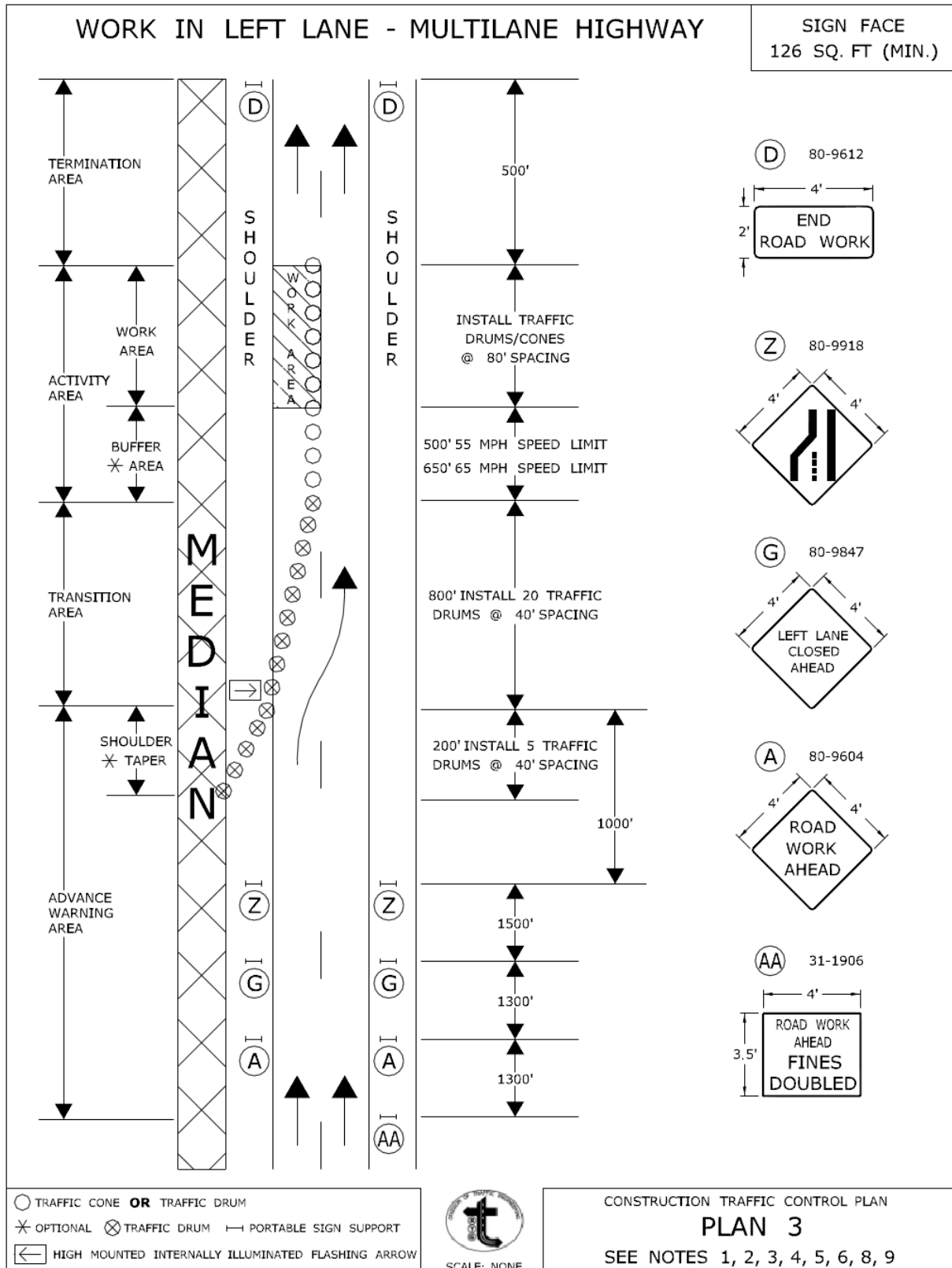
Tracy L. Fogarty
 PRINCIPAL ENGINEER

Tracy L. Fogarty, P.E.
 2013.10.09 16:30:32-0402



APPROVED *Charles S. Harlow*
 Charles S. Harlow
 2012.06.05 15:51:00-0400
 PRINCIPAL ENGINEER

CONNECTICUT DEPARTMENT OF TRANSPORTATION
 BUREAU OF ENGINEERING & CONSTRUCTION

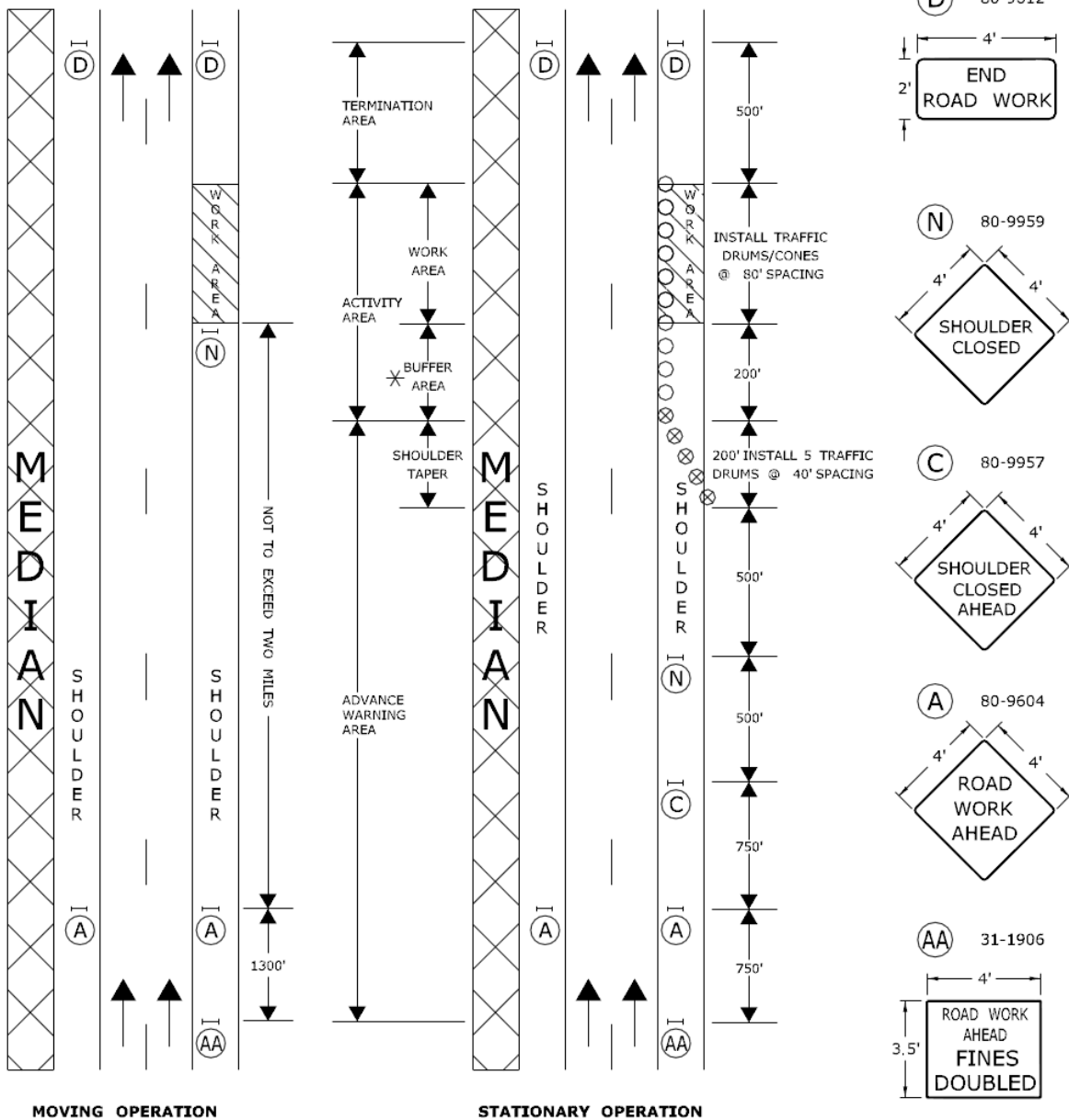


CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
 Charles S. Harlow
 2012.06.05 15:51:46-0400
 PRINCIPAL ENGINEER

WORK IN SHOULDER AREA - MULTILANE HIGHWAY

SIGN FACE
94 SQ. FT (MIN.)



- TRAFFIC CONE OR TRAFFIC DRUM
- * OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

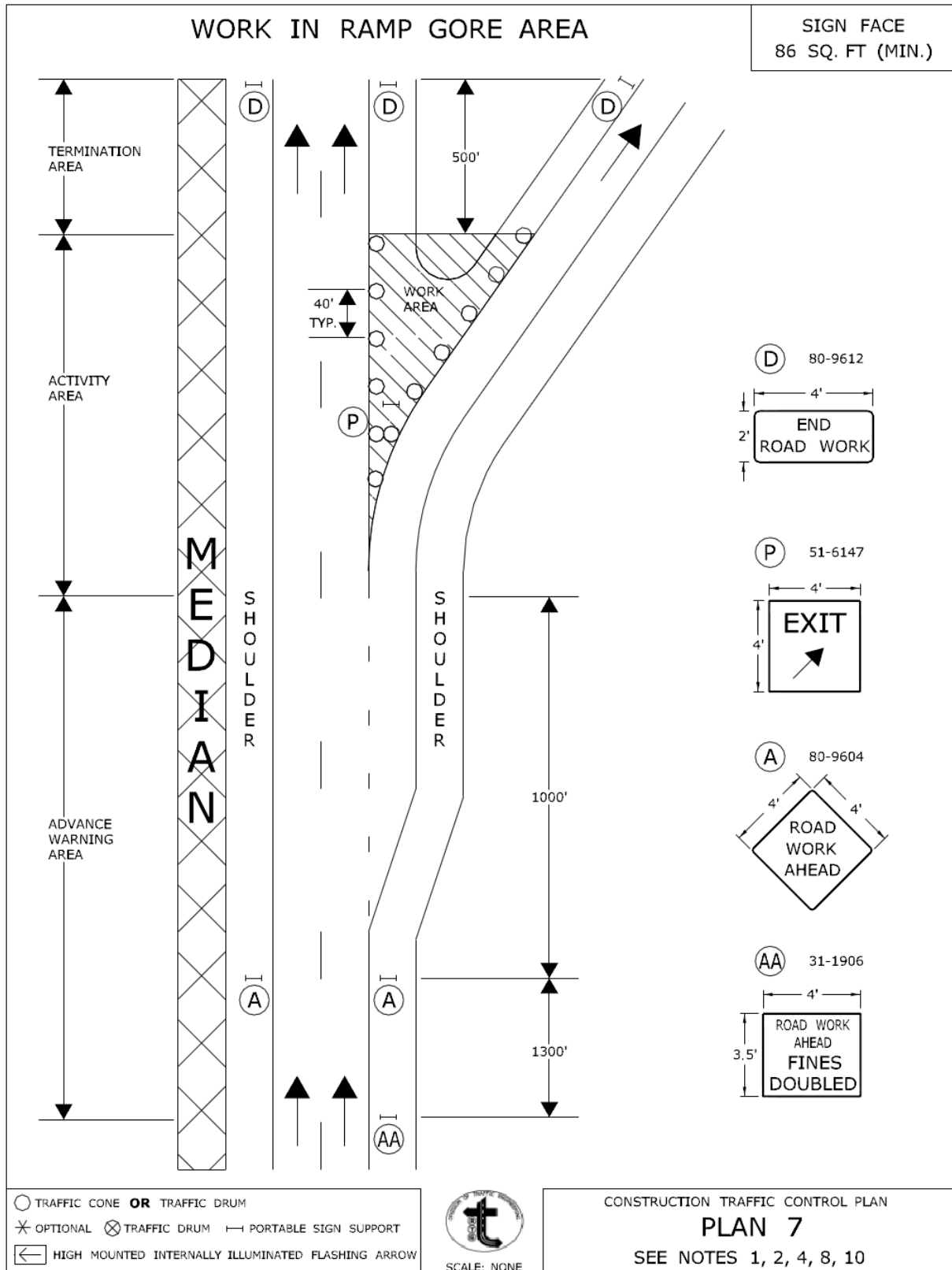


SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 6
SEE NOTES 1, 2, 4, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
2012.06.05 15:52:38-04'00"

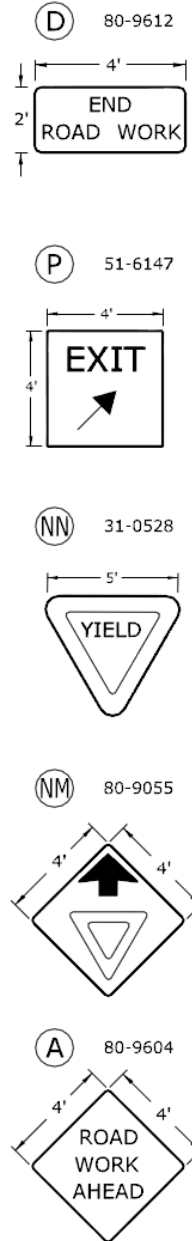
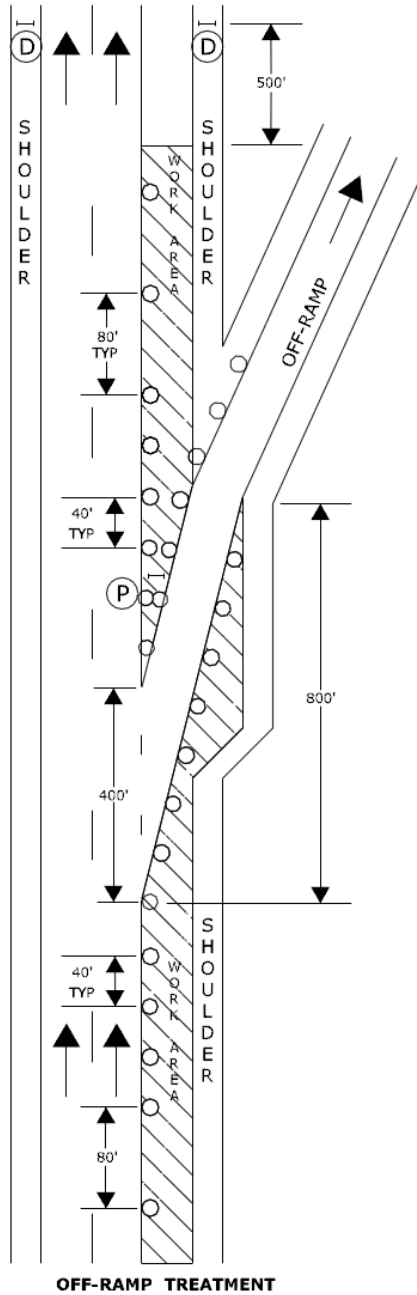
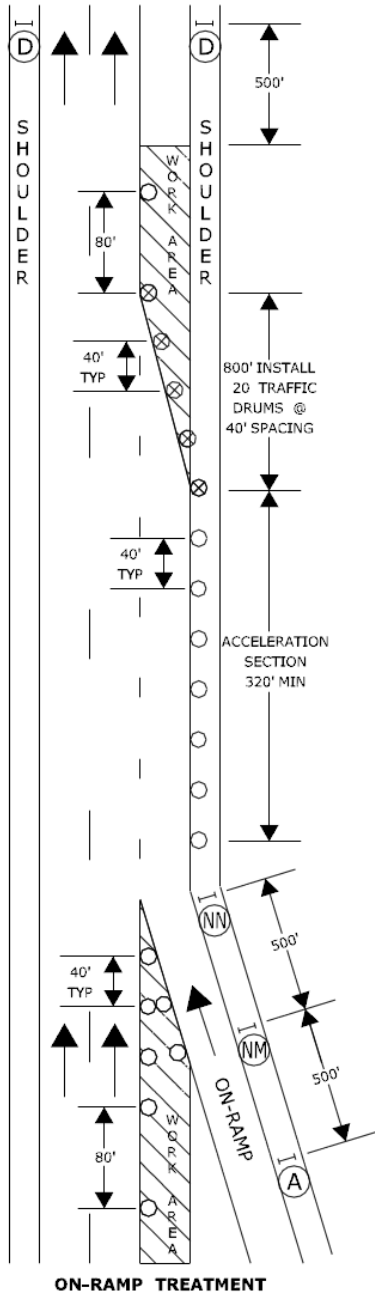


CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:53:03-0400

TYPICAL RAMP TREATMENTS FOR MAINLINE LANE CLOSURE - MULTILANE HIGHWAY

SIGN FACE SQ. FT VARIES



USE TRAFFIC CONTROL PLAN 1 TO CLOSE THE RIGHT LANE

- TRAFFIC CONE OR TRAFFIC DRUM
- ✱ OPTIONAL ✕ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 8

SEE NOTES 1, 2, 3, 4, 5, 6, 8, 9, 10

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

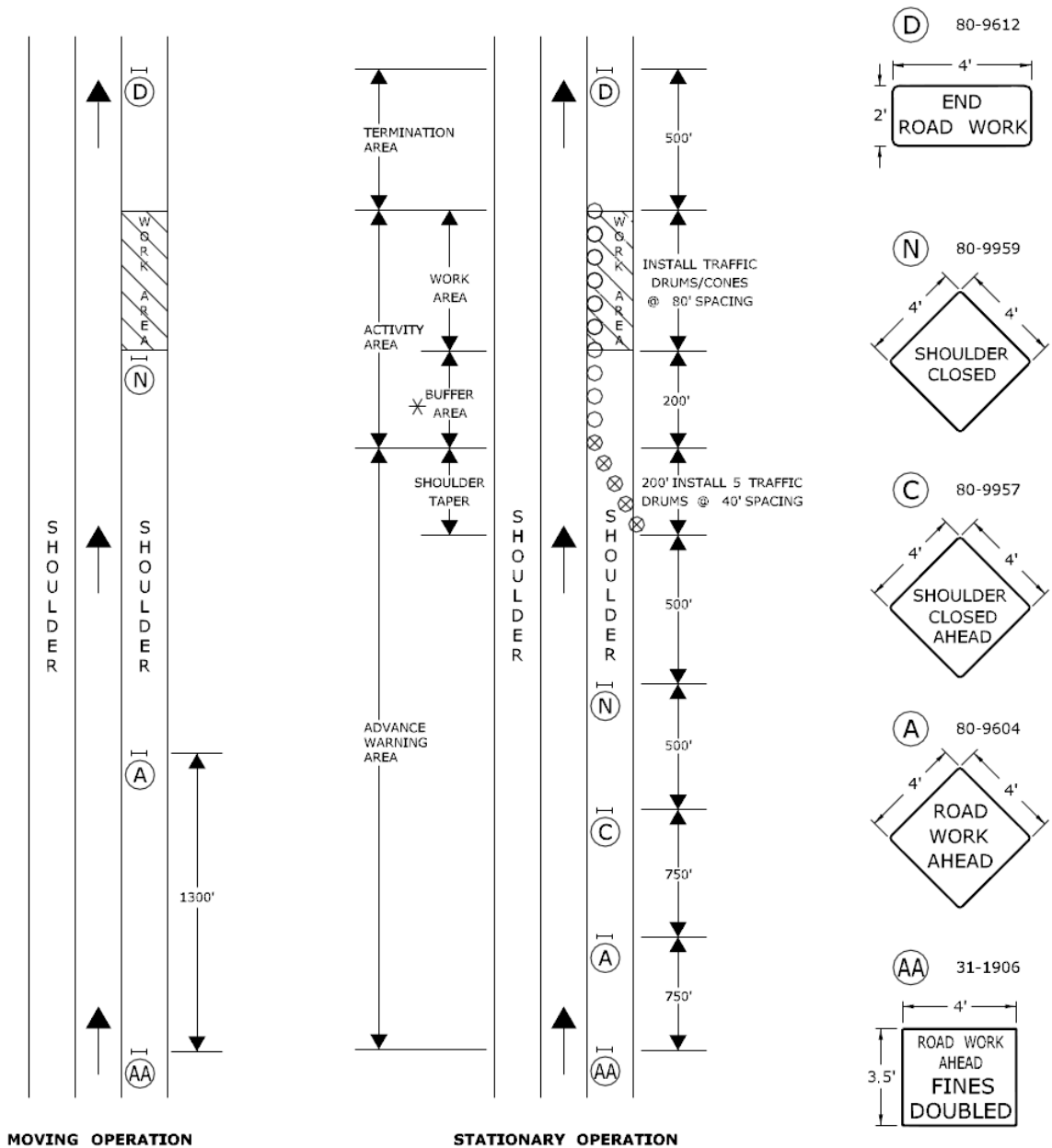
APPROVED

Charles S. Harlow
PRINCIPAL ENGINEER

Charles S. Harlow
2012.06.05 15:53:31-0400

WORK IN SHOULDER AREA - TURNING ROADWAYS / RAMP

SIGN FACE
70 SQ. FT (MIN.)



- TRAFFIC CONE **OR** TRAFFIC DRUM
- ✱ OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 9
SEE NOTES 1, 2, 4, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:53:53-0400'

Article 9.71.05 – Basis of Payment *is supplemented by the following:*

The temporary relocation of signs and supports, and the furnishing, installation and removal of any temporary supports shall be paid for under the item “Maintenance and Protection of Traffic”.

The cost of furnishing, installing, and removing the material for the 4H:1V traversable slope shall be paid for under the item “Maintenance and Protection of Traffic”.

ITEM #1130010A – ARROW BOARD

Replace the entire Section 11.30 with the following:

11.30.01—Description: Work under this item shall include furnishing and maintaining a trailer-mounted or truck-mounted Arrow Boards at the locations indicated on the plans or as directed by the Engineer.

11.30.02—Materials: A Materials Certificate for the Arrow Board shall be submitted to the Engineer. The Arrow Board shall meet the requirements of Type C Arrow Board in MUTCD Chapter 6F, and the following:

1. Physical Characteristics of the Arrow Board:

- a. Arrow Board Display Dimensions - width 8 feet, height 4 feet
- b. Height above Roadway - Minimum 7 feet from the roadway to the bottom of the display, except on truck-mounted Arrow Boards, which shall be as high as practical
- c. Power Source - Battery or solar power, including backup
- d. Secure Controller – Arrow Boards shall be equipped with a lockable cabinet for controller storage

2. Visual Characteristics of the Arrow Board:

- a. Matrix - Minimum of 15 illuminated elements
- b. Display Modes - flashing arrow, flashing double arrow, flashing caution, and flashing alternating diamond caution
- c. Color - Non-reflective black background with yellow or amber elements
- d. Flash Rate - 25 to 40 flashes per minute
- e. Dimming - Arrow Board shall be equipped with a photocell for automatic sign dimming, with at least 50% from full brilliance, based on lighting conditions
- f. Legibility - Arrow Board brightness must provide for legibility within 1 mile

11.30.03—Construction Methods: The Contractor shall furnish, place, operate, and relocate the Arrow Board as required on the plans or as directed by the Engineer, in accordance with Chapter 6F of the MUTCD.

The Contractor shall maintain the Arrow Board in accordance with the ATSSA "Quality Standards for Temporary Traffic Control Devices and Features." Any Arrow Board that does not meet these guidelines shall be removed and replaced.

When the Arrow Board is no longer required, it shall be removed from the Site.

11.30.04—Method of Measurement: This work will be measured for payment by the number of calendar days that the Arrow Board is in place and in operation. When an Arrow Board is in operation for less than a day, such a period of time shall be considered to be a full day regardless of actual time in operation.

11.30.05—Basis of Payment: This work will be paid for at the Contract unit price per day for "Arrow Board", which shall include furnishing, placing, operating, maintaining, relocating,

removing the Arrow Board and its appurtenances, and all material, labor, tools and equipment incidental thereto.

Pay Item
Arrow Board

Pay Unit
day

ITEM #1208931A – SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)

Section 12.08 is supplemented and amended as follows:

12.08.01—Description:

Add the following:

This item shall also include field testing of metal sign base posts as directed by the Engineer.

12.08.03—Construction Methods:

Delete the last sentence and add the following:

Metal sign base posts shall be whole and uncut. Sign base post embedment and reveal lengths shall be as shown on the plans. The Contractor shall drive the metal sign base posts by hand tools, by mechanical means or by auguring holes. If an obstruction is encountered while driving or placing the metal sign base post, the Contractor shall notify the Engineer who will determine whether the obstruction shall be removed, the sign base post or posts relocated, or the base post installation in ledge detail shall apply. Backfill shall be thoroughly tamped after the posts have been set level and plumb.

Field Testing of Metal Sign Posts: When the sign installations are complete, the Contractor shall notify the Engineer the Project is ready for field testing. Based on the number of posts in the Project, the Engineer will select random sign base posts which shall be removed by the Contractor for inspection and measurement by the Engineer. After such inspection is completed at each base post location, the Contractor shall restore or replace such portions of the work to the condition required by the Contract. Refer to the table in 12.08.05 for the number of posts to be field tested.

12.08.04—Method of Measurement:

Add the following:

The work required to expose and measure sign base post length and embedment depth using field testing methods, and restoration of such work, will not be measured for payment and shall be included in the general cost of the work.

12.08.05—Basis of Payment:

Replace the entire Article with the following:

This work will be paid for at the Contract unit price per square foot for “Sign Face - Sheet Aluminum” of the type specified complete in place, adjusted by multiplying by the applicable Pay Factor listed in the table below. The price for this work shall include the completed sign, metal sign post(s), span-mounted sign brackets and mast arm-mounted brackets, mounting hardware, including reinforcing plates, field testing, restoration and replacement of defective base post(s), and all materials, equipment, and work incidental thereto.

Pay Factor Scale: Work shall be considered defective whenever the base post length or base post embedment depth is less than the specified length by more than 2 inches. If the number of defects results in rejection, the Contractor shall remove and replace all metal sign base posts on the Project, at no cost to the Department.

Number of Posts to be Tested and Pay Factors (Based on Number of Defects)

Number of Posts in Project =>	51-100	101-250	251-1000	>1000
Sample Size=>	5 Posts	10 Posts	40 Posts	60 Posts
0 Defects	1.0	1.0	1.025	1.025
1 Defect	0.9	0.95	0.975	0.983
2 Defects	Rejection	0.9	0.95	0.967
3 Defects	Rejection	Rejection	0.925	0.95
4 Defects	Rejection	Rejection	0.9	0.933
5 Defects	Rejection	Rejection	Rejection	0.917
6 Defects	Rejection	Rejection	Rejection	0.9
7 or more Defects	Rejection	Rejection	Rejection	Rejection

Note: Projects with 50 or fewer posts will not include field testing

ITEM #1806226A – PRE-WARNING VEHICLE

Description: Work under this item shall include furnishing, deploying and maintaining a Truck-Mounted Impact Attenuator equipped with a changeable message sign (CMS) for use as a Pre-Warning Vehicle (PWV) in a rolling road block operation on limited access highways. Impact attenuators shall only be truck-mounted. The message on the sign shall warn motorists of slow or stopped traffic conditions.

Materials: The Truck-Mounted Impact Attenuator shall meet the requirements of Article 18.06.02, except replace all instances of “flashing arrow,” “arrow sign,” and “arrow” with “CMS”. The CMS shall meet the requirements of Article 11.31.02, with the following amendments:

1. Physical Characteristics of the CMS

- a) Mounting – The CMS shall be truck mounted only
- b) Sign Display Dimensions – Width of 6 feet, height of 4 feet

2. Visual Characteristics of the CMS Display

- a) Sign Type – CMS shall have a LED display only
- b) Color – CMS shall have black background with orange, yellow, or amber legend
- c) Characters – Letter height shall be 13 inches; Single stroke
- d) Visibility– CMS brightness must provide for visibility at 1/2 mile
- e) Message – The message shall read as follows, or shall be as directed by the Engineer:

Frame 1: SLOWED TRAFFIC AHEAD

Frame 2: BE PREPARED TO STOP

Or

Frame 1: STOPPED TRAFFIC AHEAD

Frame 2: BE PREPARED TO STOP

Construction Methods: The PWV shall be initially positioned in the right shoulder ½ mile prior to the rolling road block operation.

If a traffic queue reaches the PWV’s initial location, the Contractor shall slowly reverse the PWV along the shoulder to position itself prior to the new back of queue.

The Contractor shall meet the requirements of Article 18.06.03.

Method of Measurement: This work will be measured for payment by the actual number of hours that the Pre-Warning Vehicle is used in a rolling road block operation.

Basis of Payment: This work will be paid for at the Contract unit price per hour for “Pre-Warning Vehicle,” which shall include the furnishing and use of the pre-warning vehicle and a driver, attenuator reflector, flashing lights, changeable message sign, and all equipment, materials, tools, labor, disposal of damaged Truck-Mounted Impact Attenuator components and work incidental thereto.

Pay Item
Pre-warning Vehicle

Pay Unit
hr

PERMITS AND/OR REQUIRED PROVISIONS:

The following Permits and/or and Required Provisions follow this page are hereby made part of this Contract.

- **PERMITS AND/OR PERMIT APPLICATIONS**

CT DOT Flood Management General Certification
(Bridge No. 06795)

Approved on February 26, 2019

CT DEEP Inland Wetland General
(Bridge No. 06795)
(Bridge No. 06796)
(Bridge No. 06797)

Approved on June 11 2020
Approved on June 11 2020
Approved on June 11 2020

USACE Pre-Construction Notification Application (PCN)
(Bridge No. 06795)
(Bridge No. 06796)
(Bridge No. 06797)

Approved on May 29, 2020
Approved on May 29, 2020
Approved on May 29, 2020

CT DEEP Programmatic General Permit Water Quality Certification (WQC)
(Bridge No. 06795)
(Bridge No. 06796)
(Bridge No. 06797)

Approved on September 20, 2019
Approved on October 07, 2019
Approved on December 19, 2019

- **Construction Contracts - Required Contract Provisions (FHWA Funded Contracts)**

To be provided by Sponsoring Agency		
PS#	Core CT Contract #	PO#

**MEMORANDUM OF AGREEMENT
BETWEEN THE
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND
THE DEPARTMENT OF TRANSPORTATION**

This Memorandum of Agreement (MOA) is entered into by the Department of Energy and Environmental Protection (DEEP) and the Department of Transportation (DOT) for the purpose of undertaking a project of mutual interest pursuant to Section CGS 22a-41 in anticipation of a DEEP License being issued for Project 103-266.

1. **Duration:** The period of this MOA shall begin upon execution and shall expire when all conditions have been met but in any case no later than three years from the transfer of funds from DOT to DEEP.
2. **Title:** This project is entitled: *“Fisheries Mitigation – Br. No. 06795, I-395 over Hammer Brook, Norwich; State Project 103-266”*.
3. **Total Project Costs** for the period of this MOA shall not exceed **\$235,000**.
4. **Project Directors:** The following individuals are designated to serve as Project Directors (or Project Managers or Principal Investigators):

For the DOT

Andrew H. Davis
Transportation Supervising Planner
Office of Environmental Planning
Department of Transportation
2800 Berlin Turnpike
Newington, CT 06131
Email: andrew.h.davis@ct.gov
Phone: (860)594-2157

For the DEEP

Brian D. Murphy
Senior Fisheries Habitat Biologist
DEEP – Bureau of Natural Resources
Fisheries Division
209 Hebron Road
Marlborough, CT 06447
Email: brian.murphy@ct.gov
Phone: (860) 424-4142

5. **Business Contacts:** The following individuals are designated to serve as contacts for business matters:

For the DOT:

Kimberly C. Lesay
Transportation Assistant Planning Director

Department of Transportation
2800 Berlin Turnpike
PO Box 317546
Newington, CT 06131
email: Kimberly.Lesay@ct.gov
Phone: 860-594-2931

For the DEEP:

Deidre Persson
Fiscal/Administrative Assistant

DEEP FSS – Financial Management Division
79 Elm Street
Hartford, CT 06106-5127
email: deidre.persson@ct.gov
Phone: (860) 424-3977
Fax: (860) 424-4122

6. **General Supervision:** Primary responsibility for general supervision of all activities and compliance with all applicable laws and standards and the terms of this MOA rests with the DEEP.
7. **Description:** This MOA will cover work that will be conducted by DEEP for a fisheries project within the Meshomasic State Forest in East Hampton (hereinafter called project). A substandard culvert that conveys Mott Hill Brook under Del Reeves Road, located on DEEP State Forest Property has scoured at its outlet

resulting in perched conditions. This condition forms a barrier and blocks upstream fish passage for the native brook trout populations. The main project goal is to restore upstream fish passage and instream habitats for the wild brook trout population and provide stream connectivity to over 1.68 miles of upstream habitats.

Project objectives are: (1) remove an existing barrier to fish passage and replace it with a box culvert,(2) restore and stabilize instream and streambank habitats at and below the road crossing , and (3) monitoring of brook trout population response through two pre and two post project annual fish surveys.

The restoration project will be conducted by DEEP. DEEP will obtain all required state/federal permits for the project.

The selected restoration project has been chosen as off-site mitigation for DOT Project 103-266 which involves the repair of culvert #06795 with a smooth concrete bottom at Hammer Brook, Norwich. The project has been flagged as requiring mitigation due to the fact that the existing culvert provides fish passage but the proposed smooth concrete bottom repair of the culvert will prevent the passage of fish through the repaired culvert. The Meshomasic State Forest project has been discussed with DEEP Land and Water Reuse Division (LWRD) and LWRD staff are in agreement with the suitability of this project as adequate mitigation for Project 103-266. (See Appendix A)

8. **Project Location:** DOT Project 103-266 is located in Norwich; Bridge #06795 carries I-395 over Hammer Brook. The off-site mitigation project is located on State property within the boundary of Meshomasic State Forest in East Hampton.

9. **Deliverables:**

A. By the DOT-

1) DOT will secure funding to support the mitigation project (See Appendix B).

2) A transfer of funds from DOT to DEEP to reimburse DEEP costs for the restoration project will take place following the receipt of invoices for said work. Initial project design and engineering work is expected to occur in 2018 and the amount to be expended will be approximately \$38,726 which will be made immediately available to DEEP for design funds in Accordance with Appendix C and is not to exceed \$38,726. The remainder of the funding for construction, \$193,629, will be made available to DEEP once Project 103-266 construction funds are obligated, which is approximately scheduled for 8/14/2019. DEEP shall invoice the DOT for costs not to exceed \$235,000 and in accordance with the cost estimate in Appendix C. Costs above this amount may be considered for reimbursement but are subject to eligibility restrictions and available funds.

B. By the DEEP-

1) Construction machinery, equipment, and personnel to complete the box culvert work on Mott Hill Brook.

2) Provide summary report to DOT following schedule in Paragraph 11 below.

3) Upon completion of the work, DEEP will invoice for actual expenses incurred.

10. **Budget:** A total of up to \$235,000 will be provided by the DOT pursuant to the terms of the MOA. The project estimate given to DOT by DEEP for the cost of the work is \$232,355 (Refer to Appendix C for cost estimate).

11. **Schedule of Reports:**

A. **Project Completion Report:** Upon completion of the project, DEEP will provide a summary report of the completed activities to DOT once the post project annual fish survey is complete. Such summaries should be submitted to the DOT no later than three months following project completion of the final post project annual fish survey.

12. **Schedule of Activities:** Upon DOT's formal authorization to DEEP for construction activities to commence the project activities will be scheduled and completed by DEEP. Timing of the project is to be determined by DEEP but shall be completed as expeditiously as practical. Initial project design and engineering work is expected to occur in 2018 and the amount to be expended will be approximately \$38,726 which will be made immediately available to DEEP for design funds in Accordance with Appendix C and is not to exceed \$38,726. The remainder of the funding for construction, \$193,629, will be made available to DEEP once Project 103-266 construction funds are obligated, which is approximately scheduled for 8/14/2019. This obligation date is subject to change based on project 103-266 progression. If the obligation date is to change then DOT will notify DEEP of the date change. Invoicing and reimbursement for actual expenses will occur after work is completed but no later than December 31, 2021.

13. **Cancellation:** Either party may propose to terminate this MOA. The party proposing termination must notify the other party of the MOA explaining the reasons for termination and afford at least ninety (90) days to consult and seek alternatives to termination. Should such consultation fail, the MOA will be terminated. In the event that the DOT is the proponent of the cancellation after the transfer of the funds has been completed, or should DOT project 103-266 not proceed, the completed mitigation work will be transferrable to a future DOT project requiring off-site mitigation. In the event DEEP is the proponent of the cancellation then the requirement for off-site mitigation for Project 103-266 shall still be deemed satisfied unless otherwise agreed in writing.

14. **Extensions/Amendments:** This MOA may be modified by the mutual agreement in writing of the DOT and the DEEP. Revisions may include but not be limited to:

- a. timing of the restoration work,
- b. any other agreement revisions determined material by either agency.

15. **Use of Funds:** The DEEP agrees to limit expenses and efforts to the quoted scope and cost estimate solely for the purpose of the project work at Mott Hill Brook, Meshomasic State Forest. The DEEP agrees to submit all invoices pursuant to this MOA prior to December 31, 2021.

16. **CFDA Number is NA.** (Include if federal funding is used) 100% State Funding

17. **Approved by:**

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

DEPARTMENT OF TRANSPORTATION

APPROVED

APPROVED

Date: May 31, 2018

Date: May 17, 2018

By: Susan Whole
Authorized Signature

By: Kimberly Lesauy
Authorized Signature

Chartfield Distributions For Sponsor Agency use only.

Amount	Dept	Fund	SID	Program	Project	Activity	Bud Ref	Agency CF 1	Agency CF 2	Account
					DEP_NONPROJECT					

From: Murphy, Brian
Sent: Tuesday, June 27, 2017 8:46 AM
To: Gilmore, Robert
Subject: RE: Mitigation for Project 103-266 Hammer Brook, Norwich

APPENDIX A : LWRD APPROVAL

From: Gilmore, Robert
Sent: Tuesday, June 27, 2017 8:29 AM
To: Murphy, Brian
Cc: Davis, Andrew H
Subject: RE: Mitigation for Project 103-266 Hammer Brook, Norwich

Brian – I support this mitigation proposal. It's a good project.

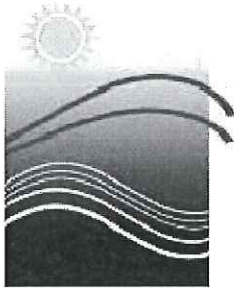
From: Murphy, Brian
Sent: Monday, June 26, 2017 10:20 AM
To: Gilmore, Robert <Robert.Gilmore@ct.gov>
Cc: Gephard, Steve <Steve.Gephard@ct.gov>
Subject: Mitigation for Project 103-266 Hammer Brook, Norwich

Hi Bob,

RE: Hammer Brook, Norwich (RTE 395):

The DOT is using a concrete lining to rehabilitate this culvert. For various property and flooding issues, we cannot modify the culvert to maintain existing fish passage. Since we will lose fish passage at this site due to the lining, I have asked for fish resource mitigation. There is a perched culvert on Del Reeves Road, Mott Hill Brook in Meshomasic State Forest, East Hampton that blocks fish passage for a native brook trout population that I would like to propose as suitable mitigation. In the past, I tried unsuccessfully to obtain an Eastern Brook Trout Joint Venture grant for this project, see attached grant proposal for details. In essence, I want to replace the perched, undersized culvert with a timber bridge that will provide fish passage, restore the channel and increase the openness ratio. Andy Davis appears to be on board with this project as mitigation however he would like a regulatory opinion as to the suitability of this project as mitigation since it would be tied to permit approval. Can you take a look at the original concept proposal and let me know your initial thoughts. We can bring it up at the monthly meeting at DOT if necessary. Thanks.

Brian D. Murphy, Senior Fisheries Habitat Biologist
Fisheries Division
Habitat Conservation and Enhancement Program
Connecticut Department of Energy and Environmental Protection
Eastern District Headquarters
209 Hebron Road
Marlborough, CT 06447
P: 860.295-9523 | F: 860.295.8175 | brian.murphy@ct.gov



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

www.ct.gov/deep

*Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.*

Attachment B

CTDOT Project 103-266 KCL
Fisheries Mitigation for Rehabilitation of Bridge 06795
Interstate 395 over Hammer Brook, Norwich

Bridge Number 06795 carries I-395 over Hammer Brook in the Town of Norwich. The existing structure is a 96" x 66" ACCMP which currently displays signs of corrosion, section loss, and perforations, and requires rehabilitation. The structure is currently rated a 4. The structure lies adjacent the confluence with Norwichtown Brook and lies within the Yantic River subregional basin. As part of project coordination, bridge 06795 and surrounding tributaries were surveyed by CTDEEP Fisheries Division and were found to provide for fish passage in the existing condition except for during extreme low flows. These waterways were found to support native fish populations, including native brook trout, which are listed as a Species of Greatest Conservation Need in Connecticut. A full structure replacement was investigated but was dismissed as it resulted in additional project cost, construction duration and would require at least a partial closure of I-395 during construction. The existing structure is characterized by hydraulic inadequacies; therefore, slip-lining was dismissed as well. The rehabilitation of the structure will consist of repairing the bottom portion of the culvert with concrete. The concrete will be smooth as to not exacerbate flooding conditions. Private property upstream currently experiences flooding.

Coordination with CTDEEP regarding permitting needs for the project were ongoing throughout 2016 and various rehabilitation strategies for the structure as well as mitigation strategies were explored, including taking different action within the structure, paired with berms to protect adjacent properties from the increased flooding. However, the berms were found to also increase flooding as well as result in additional property and regulated resource impacts for the physical berm itself. Typically for projects of this type, measures can be taken within or around the pipe (baffles, blocks, weirs) to slow velocities associated with the rehabilitation efforts, however the hydraulic conditions on site prevent these measures from being able to be implemented without creating additional adverse flooding conditions.

Hydraulic analysis conducted for the proposed project rehabilitation reveal the smooth culvert bottom will increase water velocities and will also raise the bottom elevation of the structure, rendering the structure impassable for fish. The loss of passage at bridge 06795 will prevent fish from being able to reach 1.2 miles of stream habitat currently existing upstream of the structure. CTDEEP's Fisheries Division therefore requested mitigation to offset this loss of available habitat.

Since mitigation is not feasible on site, CTDEEP and the Department investigated other mitigation options. Over the summer of 2017, CTDEEP Fisheries Division investigated various sites to find a location that would provide additional fish passage for the same species that are impacted due to the rehabilitation at structure 06795. CTDEEP identified the replacement of a substandard 30" concrete culvert which conveys Del Reeves Road over Mott Hill Brook in East Hampton as acceptable mitigation. The culvert is located within the Meshomasic State Forest property owned by CTDEEP. The culvert is currently undersized and results in roadway overtopping and erosion. A large scour pool has formed downstream of the culvert which has resulted in a perched outlet condition, which prevents fish passage for native brook trout present in the brook. Mott Hill Brook is a tributary to Cold Brook and is located within the Connecticut River Basin. The proposed structure at this location would be a pre-fabricated timber clear span bridge on concrete abutments and would restore fish passage. This mitigation project will provide connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both up and downstream of the structure. Design, permitting and construction oversight will be the responsibility of CTDEEP.

The Department will not be held to long term commitments and involvement is limited to the funding as outlined in an Memorandum of Agreement between the two agencies. The MOA calls for the Department to secure funding in the amount of \$235,000 which is to be transferred to DEEP as a reimbursement following receipt of invoices for the proposed project. This off-Site mitigation arrangement allows the State to maintain its infrastructure and adequately and efficiently mitigate for unavoidable impacts to natural resources.

Attachment C

Project Title:	Del Reeves Culvert Replacement	Date:	9/1/2017
Bridge # :	N/A	Estimated by:	JSB
Project Number:	TBD	Checked by:	JSB
Project Location:	Meshomasic State Forest, East Hampton, CT	Base year:	2017
		Construction year:	2018
		Inflation (%):	3.5
Preliminary Estimated Construction Phase Cost			

Item No.	Item Name/Description	Units	Quantity	Units Price	Line Item Value
1	Earth Excavation	CY	30	15	450
2	Structure Excavation - Earth	CY	10	30	300
3	Sedimentation Control System	LF	100	4	400
4	Removal of Existing Pipe Culvert & Wingwalls	SF	110	70	7700
5	Disposal of Debris	CF	792	20	15840
6	Replace Culvert (Precast Box Culvert (5' Rise x 5' Span)	SF	110	240	26400
7	Culvert Footings	LF	44	150	6600
8	Metal Beam Rail (Type R-B 350)	LF	92	35	3220
9	R-B 350 Bridge Attachment - Vertical Shape	EA	4	2300	9200
10	R-B End Anchorage - Type II	EA	4	1300	5200
11	Furnishing and Placing Top Soil	SY	187	6	1122
12	Formation of Subgrade (Culvert Base)	SY	35	5	175
13	Subbase, Processed Aggregate Base (3/4" Stone)	CY	5.5	35	193
14	Filter fabric/Geotextile Fence	SF	150	3	450
15	Pervious Structure Backfill	CY	60	80	4800
16	Membrane Water Proofing (Cold Liquid Elastomer)	SY	20	60	1200
17	Sweeping For Dust Control	HR	20	40	800
18	Turf Establishment	SY	20	1	24
19	Temporary Precast Concrete Barrier	LF	30	25	750
20	Traffic Control (Traffic Drums)	EA	10	50	500
21	Construction Signs	SF	100	15	1500
22	Crane Rental (Including Delivery & Pickup)	LS	1	10000	10000
				SUBTOTAL (INDEFINITE WORK)	96824
	Estimated Based on % of Subtotal contract Cost	%			
23	Cofferdam and Dewatering (Sand Bags & Water Pumps)		10		9682
24	Handling Water (By Pass Conduits (2 - 30" HDPE Pipes))		5		4841
25	Right of Way (ROW)		0		0
26	Utility Relocation		0		0
27	MINOR ITEMS		10		9682
				TOTAL (INDEFINITE WORK)	121029
	Estimated Based on % of total contract Cost	%			
	Clearing & Grubbing		2		2421
	Maintenance & Protection of Traffic		4		4841
	Construction Staking		2		2421
	Mobilization & Project Closeout		6.5		7867
	CONTRACT WORK				\$138,579
	CONTINGENCY		25		34645
	INCIDENTAL COST (Inspection, Materials Testing, Construction Phase design)		10		13858
	CONTRACT WORK, INCLUDING CONTINGENCY, IN BASE YEAR				\$187,081
	CONTRACT WORK, INCLUDING CONTINGENCY AND INFLATION				\$193,629
	ESTIMATED PROJECT CONSTRUCTION PHASE COST				\$ 193,629

Project Title:	<u>Del Reeves Culvert Replacement</u>	Date:	<u>9/1/2017</u>
Bridge # :	N/A	Estimated by:	<u>JSB</u>
Project Number:	TBD	Checked by:	<u>JSB</u>
Project Location:	Meshomasic State Forest, East Hampton, CT		
Preliminary Estimated Design & Construction Phase Cost			

Item No.	Cost Classification	Notes	Budget
1	Construction Phase Cost	See Estimated Project construction Phase cost	193629
2	Planning & Design Cost		38726
	a.Design & Permitting	Estimated at 20 % of Item 1	38726
	b.Bidding	Estimated at 0 % of Item 1	0
	c. Contract Administration	Estimated at 0 % of Item 1	0
	d.Construction/Project Inspection	Estimated at 0 % of Item 1	0
ESTIMATED TOTAL PROJECT COST			\$ 232,355

Project No.: 103-266
Description: The Rehabilitation of Bridge No. 06795
Interstate 395 over Hammer Brook
Town: Norwich
Date: January 25, 2019

m e m o r a n d u m

Andrew J. Cardinali,
P.E.
2019.01.28
13:05:48-06'00"

to: Mr. Michael E. Masayda
Trans. Principal Engineer
Hydraulics and Drainage
Bureau of Engineering and Highway Operations

from: Andrew J. Cardinali
Transportation Supervising Engineer
Bridge CLE Design
Bureau of Engineering and Highway Oper.

Please review this request for Flood Management General Certification and indicate your concurrence below.

Certification (to be completed by designer)

I have read the Flood Management General Certification and the descriptions for the approved DOT minor activities. This project qualifies for the Flood Management General Certification under:

- Minor Safety Improvements and Streetscape Projects
- Roadway Repaving, Maintenance & Underground Utilities
- Minor Stormwater Drainage Improvements
- Removal of Sediment or Debris from a Floodplain
- Wetland Restoration Creation or Enhancement
- Scour Repairs at Structures; *(Must acquire DEEP Fisheries Concurrence to be eligible)*
- Guide Rail Installation
- Deck and Superstructure Replacements
- Minor Bridge Repairs and Access
- Fisheries Enhancements
- Surveying and Testing
- Bicycle / Pedestrian, Multi Use Trails and Enhancement Projects

The following required documentation is attached in support of this certification:

- Project description
- Location plan
- Description of Floodplain involvement and how project qualifies for general certification
- 8-1/2" by 11" excerpt copy of the FEMA Flood Insurance Rate Map (FIRM) and Floodway Boundary Map (if applicable)
- Design plans, (dated 1/10/2019) with FEMA floodplain boundaries plotted, cross sections and profiles, as necessary, that clearly depict the floodplain involvement
- FEMA 100-year flood elevation plotted on elevation view (for structures)

Print Name: Aaron J. Foster, P.E.

Title: Project Manager

Signature 

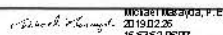
Date: 1/28/19

Concurrence (to be completed by Hydraulics and Drainage)

Based on the documentation submitted, I hereby concur that the project qualifies for Flood Management General Certification.

If there are any changes to the proposed activities within the floodplain or floodway, the project must be re-submitted for review and approval.

Signature


Theodore Nezames, P.E.
2019.01.28
16:53:48-06'00"

Date 2-26-19

**INTERDEPARTMENTAL
MESSAGE**

STATE OF CONNECTICUT

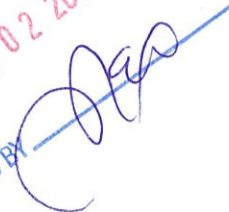
To	NAME, TITLE Central Permit Processing Unit, 1 st Floor	DATE July 02, 2019
	AGENCY, ADDRESS Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT. 06106	
From	NAME, TITLE Kimberly C. Lesay, Transportation Assistant Planning Director	TELEPHONE 860-594-2931
	AGENCY, ADDRESS Department of Transportation, 2800 Berlin Turnpike, Newington, CT. 06131-7546	

Subject: **State Project No. 103-266**
Rehabilitation of Bridge No. 06795
Interstate 395 over Hammer Brook
City of Norwich, CT

Attached are one original and three hard copies of the request for the Connecticut Department of Energy and Environmental Protection Programmatic General Permit Addendum to Army Corps of Engineers General Permit associated with the above referenced project.

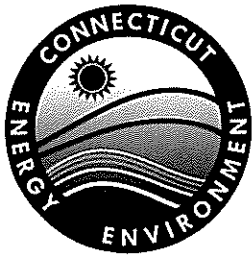
Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at (860) 594-2157.

Attachments

CT Dept of Energy & Environmental Protection
Central Permit Processing Unit
JUL 02 2019
RECEIVED BY 

Naomi C. Hodges /nch

bcc: Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin
Kimberly C. Lesay
Andrew H. Davis – Chris W. Samorajczyk – Alexander T. Finch
District 2 Construction – Robert Obey – Eileen Ego
Donald P. Wurst – Aaron J. Foster (CME)



Connecticut Department of Energy & Environmental Protection

CPPU USE ONLY	
App #:	_____
Doc #:	_____
Check #:	_____

Permit Application Transmittal Form

Please complete this transmittal form in accordance with the instructions in order to ensure the proper handling of your application(s) and the associated fee(s). Print legibly or type.

Part I: Applicant Information:

- **If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, applicant's name shall be stated exactly as it is registered with the Secretary of State.*
- *If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

Applicant: Connecticut Department of Transportation	
Mailing Address: 2800 Berlin Turnpike	
City/Town: Newington	State: CT Zip Code: 06131-7546
Business Phone: 860-594-2000	ext.:
Contact Person: Kimberly C. Lesay	Phone: 860-594-2931 ext.
E-Mail: kimberly.lesay@ct.gov	
Applicant (check one): <input type="checkbox"/> individual <input type="checkbox"/> *business entity <input type="checkbox"/> federal agency <input checked="" type="checkbox"/> state agency <input type="checkbox"/> municipality <input type="checkbox"/> tribal	
*If a business entity, list type (e.g., corporation, limited partnership, etc.):	
<input type="checkbox"/> Check if any co-applicants. If so, attach additional sheet(s) with the required information as supplied above.	
Please provide the following information to be used for <i>billing purposes only</i> , if different:	
Company/Individual Name:	
Mailing Address:	
City/Town:	State: Zip Code:
Contact Person:	Phone: ext.

Part II: Project Information

Brief Description of Project: <i>(Example: Development of a 50 slip marina on Long Island Sound)</i>					
Rehab of Bridge No. 06795 with a 4 inch thick cast-in-place concrete invert lining, construction of headwalls, wingwalls, and cutoff walls at the inlet and outlet, and placement of a pre-formed riprap scour hole at the outlet.					
Location (City/Town): Norwich					
Other Project Related Permits (<i>not</i> included with this form):					
Permit Description	Issuing Authority	Submittal Date	Issuance Date	Denial Date	Permit #
Section 404 PCN	USACOE	Concurrently			
FM-General IWGP	CTDOT CTDEEP	01/29/2019 TBD	2/26/2019 TBD		FM-201200688C

Part III: Individual Permit Application and Fee Information

New, Mod. or Renew	Individual Permit Applications	Initial Fees	No. of Permits Applied For	Total Initial Fees	Original + Required Copies
	AIR EMISSIONS				
	New Source Review <input type="checkbox"/> Revision <input type="checkbox"/> minor mod	\$940.00			1 + 0
	Title V Operating Permits <input type="checkbox"/> Revision <input type="checkbox"/> minor mod <input type="checkbox"/> non-minor mod	none			1 + 0
	Title IV	none			1 + 0
	Clean Air Interstate Rule (CAIR)	none			1 + 0
	WATER DISCHARGES				
	To Groundwater	\$1300.00			1 + 1
	To Sanitary Sewer (POTW)	\$1300.00			1 + 1
	To Surface Water (NPDES)	\$1300.00			1 + 1
	WATER PLANNING AND MANAGEMENT				
	Dam Safety	none			1 + 2
	Domestic Sewage Treatment Works (For municipal and private sewage treatment facilities discharging to surface waters)	\$1300.00/ Mod = \$940			1 + 1
	Water Diversion (consumptive) and Registrations	★			1 + 5
	LAND AND WATER RESOURCES				
	Flood Management Certification	none			1 + 1
	Flood Management Certification Exemption	none			1 + 1
	Inland Wetlands and Watercourses (State Agencies Only)	none			1 + 5
	Inland 401 Water Quality Certification	none			1 + 5
	FERC- Hydropower Projects- 401 Water Quality Certification	none			
	Water Diversion (non-consumptive)	★			1 + 5
	Certificate of Permission	\$375.00			1 + 2
	Coastal 401 Water Quality Certification	none			1 + 2
	Structures and Dredging/and Fill/Tidal Wetlands	\$660.00			1 + 2
	WASTE MANAGEMENT				
	Aerial Pesticide Application	★			1 + 2
	Aquatic Pesticide Application	\$200.00			1 + 0
	CGS Section 22a-454 Waste Facilities	★			1 + 1
	Disruption of a Solid Waste Disposal Area	\$0			1 + 1
	Hazardous Waste Treatment, Storage and Disposal Facilities	★			1 + 1
	Marine Terminal License	\$100.00			1 + 0
	Stewardship	\$4000.00			1 + 1
	Solid Waste Facilities	★			1 + 1
	Waste Transportation	★			1 + 0
		Subtotal ➡	0	0	
GENERAL PERMITS and AUTHORIZATIONS		Subtotals Page 3 & 4 ➡	1	0	
Enter subtotals from Part IV, pages 3 - 6 of this form		Subtotals Page 5 ➡	0	0	
		Subtotals Page 6 ➡	0	0	
		TOTAL ➡	1	0	
<input checked="" type="checkbox"/> Indicate whether municipal discount or state waiver applies.		➡	100%		
Less Applicable Discount					
AMOUNT REMITTED ➡					
Check # ➡		Check or money order should be made payable to: "Department of Energy and Environmental Protection"			

★ See fee schedule on individual application.

**Part IV: General Permit Registrations and Requests for Other Authorizations
Application and Fee Information**

✓	General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fees	Original + Required Copies
AIR EMISSIONS					
<input type="checkbox"/>	Limit Potential to Emit from Major Stationary Sources of Air Pollution	\$2760.00			1 + 0
<input type="checkbox"/>	Diagnostic and Therapeutic X-Ray Devices (Medical X-Ray) Registration	\$190.00/Xray device			1 + 0
<input type="checkbox"/>	Radioactive Materials and Industrial Device Registration (Ionizing Radiation)	\$200.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/>	License Revocation Request	\$0			★★
<input type="checkbox"/>	Other, (please specify):				
WATER DISCHARGES					
Categorical Industry User to a POTW					
<input type="checkbox"/>	Discharges ≥ 10,000 gpd	\$6250.00			1 + 0
<input type="checkbox"/>	Discharges < 10,000 gpd	\$3125.00			
Comprehensive Discharges to Surface Water and Groundwater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
<input type="checkbox"/>	Domestic Sewage	\$625.00			1 + 0
<input type="checkbox"/>	Food Service Establishment Wastewater	No Registration			
Groundwater Remediation Wastewater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
Miscellaneous Discharges of Sewer Compatible Wastewater					
<input type="checkbox"/>	Registration Only	\$500.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1000.00			
<input type="checkbox"/>	Nitrogen Discharges	No Registration			
<input type="checkbox"/>	Point Source Discharges from Application of Pesticides	\$200.00			1 + 0
<input type="checkbox"/>	Stormwater Associated with Commercial Activities	\$300.00			1 + 0
Stormwater Associated with Industrial Activities					
<input type="checkbox"/>	No Exposure Certification	\$250.00			1 + 0
<input type="checkbox"/>	<50 employees—see general permit for additional requirements	\$500.00			
<input type="checkbox"/>	>50 employees—see general permit for additional requirements	\$1000.00			
<input type="checkbox"/>	Stormwater & Dewatering Wastewaters-Construction Activities	★			1 + 0
<input type="checkbox"/>	Stormwater from Small Municipal Separate Storm Sewer Systems (MS4)	\$625.00			1 + 0
<input type="checkbox"/>	Stormwater from DOT Separate Storm Sewer Systems (DOT MS4)	\$0			1 + 0
<input type="checkbox"/>	Subsurface Sewage Disposal Systems Serving Existing Facilities	★★			1 + 0
<input type="checkbox"/>	Swimming Pool Wastewater - Public Pools and Contractors	\$500.00			1 + 0
Vehicle Maintenance Wastewater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to POTW	\$1500.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to Surface Water	\$1500.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to Groundwater	\$1500.00			1 + 0
<input type="checkbox"/>	Other, (please specify):				
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal ➔	0	0	

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.

(Contact numbers are provided in the instructions)

Part IV: General Permit Registrations and Requests for Other Authorizations (continued)

<input checked="" type="checkbox"/> General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fee	Original + Required Copies
AQUIFER PROTECTION PROGRAM				
<input type="checkbox"/> Registration for Regulated Activities	\$625.00			1 + 0
<input type="checkbox"/> Permit Application to Add a Regulated Activity	\$1250.00			1 + 0
<input type="checkbox"/> Exemption Application from Registration	\$1250.00			1 + 0
WATER PLANNING AND MANAGEMENT				
<input type="checkbox"/> Dam Safety Repair and Alteration: Non Filing	No Registration			
<input type="checkbox"/> Dam Safety Repair and Alteration: Filing – No PE	\$100.00			1 + 0
<input type="checkbox"/> Dam Safety Repair and Alteration: Filing – PE	\$200.00			1 + 0
<input type="checkbox"/> Dam Safety Repair and Alteration: Approval of Filing	\$250.00			1 + 0
<input type="checkbox"/> Diversion of Remediation Groundwater	No Registration			
<input type="checkbox"/> Diversion of Water for Consumptive Use: Reauthorization Categories	\$2500.00			1 + 0
<input type="checkbox"/> Diversion of Water for Consumptive Use: Authorization Required	\$2500.00			1 + 4
<input type="checkbox"/> Diversion of Water for Consumptive Use: Filing Only	\$1500.00			1 + 1
<input type="checkbox"/> Water Resource Construction Activities	★			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/> Notice of High Hazard Dam or a Significant Hazard Dam	\$0			1 + 0
<input type="checkbox"/> Other, (please specify):				
LAND AND WATER RESOURCES				
Minor Coastal Structures				
<input type="checkbox"/> 4/40 Docks/Access Stairs	\$700.00			1 + 1
<input type="checkbox"/> Beach Grading	No Registration			
<input type="checkbox"/> Buoys or Markers	No Registration			
<input type="checkbox"/> Experimental Activities/Scientific Monitoring Devices	No Registration			
<input type="checkbox"/> Harbor Moorings	No Registration			
<input type="checkbox"/> Non-harbor Moorings	\$250.00			1 + 1
<input type="checkbox"/> Osprey Platforms and Perch Poles	No Registration			
<input type="checkbox"/> Pump-out Facilities	No Registration			
<input type="checkbox"/> Swim Floats	No Registration			
Coastal Maintenance				
<input type="checkbox"/> Backflow Prevention Structure	No Registration			
<input type="checkbox"/> Beach Grading/Raking	No Registration			
<input type="checkbox"/> Catch Basin Cleaning	No Registration			
<input type="checkbox"/> Coastal Remedial Activities Required by Order	\$700.00			1 + 1
<input type="checkbox"/> Coastal Restoration	No Registration			
<input type="checkbox"/> DEEP Boat Launch Infrastructures	No Registration			
<input type="checkbox"/> DOT Infrastructures	No Registration			
<input type="checkbox"/> Marina and Mooring Field Reconfiguration	\$700.00			1 + 1
<input type="checkbox"/> Minor Seawall Repair	No Registration			
<input type="checkbox"/> Placement of Cultch	No Registration			
<input type="checkbox"/> Reconstruction of Legally Existing Structure/Obstruction/Encroachment	\$300.00			1 + 1
<input type="checkbox"/> Removal of Derelict Structures	No Registration			
<input type="checkbox"/> Residential Flood Hazard Mitigation	\$100.00			1 + 1
<input type="checkbox"/> Temporary Access of Construction Vehicles/Equipment	No Registration			
<input checked="" type="checkbox"/> Programmatic General Permit	★	1	0	1 + 1
<input type="checkbox"/> Emergency/Temporary Authorization				
<input type="checkbox"/> Other, (please specify):				
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal ➡	1	0

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.
(Contact numbers are provided in the instructions)

Part IV: General Permit Registrations and Requests for Other Authorizations (continued)

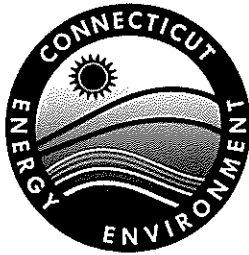
<input checked="" type="checkbox"/> General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fee	Original + Required Copies
WASTE MANAGEMENT				
<input type="checkbox"/> Addition of Grass Clippings at Registered Leaf Composting Facilities	\$500.00			1 + 0
<input type="checkbox"/> Beneficial Use Determination	★			1 + 0
<input type="checkbox"/> Collection and Storage of Post Consumer Paint	\$0			1 + 0
<input type="checkbox"/> Connecticut Solid Waste Demonstration Project	\$1000.00			1 + 0
Construct and Operate a Commercial Facility for the Management of Recyclable Materials and Certain Solid Wastes (Commercial GP)				
<input type="checkbox"/> Asbestos Containing Materials	\$1,250.00/\$ 625			1 + 0
<input type="checkbox"/> Ash Residue	\$1,250.00/\$ 625			1 + 0
<input type="checkbox"/> Clean Wood: Tier III	\$500.00/\$250			1 + 0
<input type="checkbox"/> Clean Wood: Tier II	\$250.00/\$125			1 + 0
<input type="checkbox"/> Construction and Demolition Waste: Tier III	\$1,250.00/\$625			1 + 0
<input type="checkbox"/> Construction and Demolition Waste: Tier II	\$500.00/\$250			1 + 0
<input type="checkbox"/> Non-RCRA Hazardous Waste/Compatible Solid Wastes	\$1,250.00/\$625			1 + 0
<input type="checkbox"/> Recyclables	\$500.00/\$250			1 + 0
<input type="checkbox"/> Universal Wastes/Compatible Solid Wastes	\$1,250.00/\$625			1 + 0
Contaminated Soil and/or Staging Management (Staging/Transfer)				
<input type="checkbox"/> New Registrations	\$250.00			1 + 0
<input type="checkbox"/> New Approval of Registrations	\$1500.00			1 + 0
<input type="checkbox"/> Renewal of Registrations	\$250.00			1 + 0
<input type="checkbox"/> Renewal of Approval of Registrations	\$750.00			1 + 0
<input type="checkbox"/> Disassembling Used Electronics	\$2000.00			1 + 0
<input type="checkbox"/> Leaf Composting Facility	\$0			1 + 1
<input type="checkbox"/> Municipal Transfer Station	\$800.00			1 + 1
<input type="checkbox"/> One Day Collection of Certain Wastes and Household Hazardous Waste	\$1000.00			1 + 0
<input type="checkbox"/> Sheet Leaf Composting Notification	\$0			★★
Special Waste Authorization				
<input type="checkbox"/> Landfill or RRF Disposal	\$660.00			
<input type="checkbox"/> Asbestos Disposal	\$300.00			1 + 0
<input type="checkbox"/> homeowner	\$0			
<input type="checkbox"/> Storage and Processing of Asphalt Roofing Shingle Waste	\$2500.00			1 + 0
<input type="checkbox"/> Storage and Processing of Scrap Tires for Beneficial Use	\$1250.00			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/> Other, (please specify):				
REMEDIATION				
<input type="checkbox"/> In Situ Groundwater Remediation: Enhance Aerobic Biodegradation	★			1 + 2
<input type="checkbox"/> In Situ Groundwater Remediation: Chemical Oxidation	\$500.00			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★			★★
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal ➡	0	0

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.
(Contact numbers are provided in the instructions)

Affirmative Action, Equal Employment Opportunity and Americans with Disabilities

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act (ADA). Please contact us at (860) 418-5910 or deep.accommodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint.



Connecticut Department of
 Energy & Environmental Protection
 Bureau of Water Protection & Land Reuse
 Inland Water Resources Division

**Connecticut Addendum
 Army Corps of Engineers
 General Permit State of Connecticut
 (CT GP)**

Print or type unless otherwise noted.

Part I: Application Description

DEEP/CPPU USE ONLY	
App #:	_____
Doc #:	_____
Check #:	_____
Program: Programmatic General Permit	
NAE #:	_____
DEEP #:	_____
Determinations:	<input type="checkbox"/> Eligible Category 2 <input type="checkbox"/> Eligible Category 1 <input type="checkbox"/> Individual Permit

Town where site is located: Norwich, CT

Brief Description of Project: Rehab of Bridge No. 06795 with a 4 inch thick cast-in-place concrete invert lining, construction of headwalls, wingwalls, and cutoff walls at the inlet and outlet, and placement of a pre-formed riprap scour hole at the outlet.

Part II: Fee Information

There is no fee required at this time. The Department of Energy and Environmental Protection (DEEP) may require an application fee to be submitted with this addendum at a later date.

Part III: Applicant Information

- *If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, registrant's name shall be stated **exactly** as it is registered with the Secretary of State. This information can be accessed at CONCORD.*
- If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

1. Applicant Name: **Connecticut Department of Transportation**

Mailing Address: **2800 Berlin Turnpike**

City/Town: **Newington**

State: **CT**

Zip Code: **06110**

Business Phone: **860-594-2931**

ext.

Fax:

Contact Person: **Kimberly Lesay**

Title: **Transportation Asst. Planning Director**

*E-Mail: **Kimberly.Lesay@ct.gov**

*By providing this e-mail address you are agreeing to receive official correspondence from the department, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.

Part III: Applicant Information (continued)

a) Registrant Type (check one): individual *business entity federal agency
 state agency municipality tribal
*If a business entity:
i) check type: corporation limited liability company limited partnership
 limited liability partnership statutory trust Other: _____
ii) provide Secretary of the State business ID #: _____ This information can be accessed at CONCORD
iii) Check here if you are **NOT** registered with the SOTS.
 Check here if any co-applicants. If so, attach additional sheet(s) with the required information as requested above.

b) Applicant's interest in property at which the proposed activity is to be located:
 site owner option holder lessee developer
 easement holder operator other (specify): _____
 Check here if there are co-applicants. If so, label and attach additional sheet(s) to this sheet with the required information.

2. List primary contact for departmental correspondence and inquiries, if different than the applicant.
Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext. Fax:
Contact Person: Title:
E-Mail:

*By providing this e-mail address you are agreeing to receive official correspondence from the department, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.

3. Property Owner, if different than the applicant:
Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext. Fax:
Contact Person: Title:
E-Mail:

Part III: Applicant Information (continued)

4. List any engineer(s) or other consultant(s) employed or retained to assist in preparing the application or in designing or constructing the activity.

Name: **CME Associates, Inc.**

Mailing Address: **101 East River River Drive**

City/Town: **East Hartford**

State: **CT**

Zip Code: **06108**

Business Phone: **860-290-4100**

ext. **1148**

Fax:

Contact Person: **Naomi Hodges**

Title: **Environmental Scientist**

E-Mail: **nhodges@cmeengineering.com**

Service Provided: **Liaison Engineering Services, Environmental Services**

Check here if additional sheets are necessary, and label and attach them to this sheet.

Part IV: Site/Project Information

1. SITE NAME AND LOCATION

Is the name of the site the same as the name of the applicant? Yes No

Name of Site : **Bridge No. 06795**

Street Address or Description of Location: **Interstate 395 over Hammer Brook**

City/Town: **Norwich**

State: **CT**

Zip Code: **06360**

Latitude and longitude of the exact location of the proposed activity in degrees, minutes, and seconds or in decimal degrees: Latitude: **41°33'22.73"N** Longitude: **72° 6'16.35" W**

Method of determination (check one):

GPS USGS Map Other (please specify): **Google Earth**

If a USGS Map was used, provide the quadrangle name:

2. **COASTAL BOUNDARY:** Is the activity which is the subject of this application located within the coastal boundary as delineated on DEEP approved coastal boundary maps? Yes No

If yes, and this application is for a new authorization or a modification of an existing authorization where the physical footprint of the subject activity is modified, you must submit a [Coastal Consistency Review Form](#) (DEP-APP-004) with this completed application.

Information on the coastal boundary is available at the local town hall or on the "Coastal Boundary Map" available at DEEP Maps and Publications (860-424-3555).

3. **ENDANGERED OR THREATENED SPECIES:** Is the project site located within an area identified as a habitat for endangered, threatened or special concern species as identified on the "State and Federal Listed Species and Natural Communities Map"? Yes No Date of Map: **Dec 2018**

If yes, complete and submit a [Request for NDDDB State Listed Species Review Form](#) (DEP-APP-007) to the address specified on the form. **Please note NDDDB review generally takes 4 to 6 weeks and may require additional documentation from the applicant.**

The CT NDDDB response **must** be submitted with this completed application.

For more information visit the DEEP website at www.ct.gov/dep/nddbrequests or call the NDDDB at 860-424-3011.

4. List any engineer(s), or other consultant(s) employed or retained to assist in preparing the application and designing or constructing the activity.

Name: Louis Berger

Mailing Address: 2500 Westchester Avenue

City/Town: Purchase

State: NY

Zip Code: 10577

Business Phone: (914) 967 – 5800

Ext.

Contact Person: Robert Lin

Title: Project Manager

E-mail: rlin@louisberger.com

Service Provided: Design Permit Plans

Part IV: Project Information (continued)

4. **AQUIFER PROTECTION AREAS:** Is the site located within a town required to establish Aquifer Protection Areas, as defined in section 22a-354a through 354bb of the General Statutes (CGS)?

Yes No To view the applicable list of towns and maps visit the DEEP website at www.ct.gov/deep/aquiferprotection

If yes, is the site within an area identified on a Level A map? Yes No

If yes, is the site within an area identified on a Level B map? Yes No

If your site is on a Level A map, check the DEEP website, [Business and Industry Information](#) to determine if your activity is required to be registered under the Aquifer Protection Area Program.

If your site is on a Level B map, no action is required at this time, however you may be required to register under the Aquifer Protection Area Program in the future when the area is delineated as Level A.

5. **CONSERVATION OR PRESERVATION RESTRICTION:** Is the property subject to a conservation or preservation restriction? Yes No

If Yes, proof of written notice of this registration to the holder of such restriction or a letter from the holder of such restriction verifying that this registration is in compliance with the terms of the restriction, must be submitted with this completed form.

6. **Total area** (in acres) within property boundaries: **0.9 ac**

7. **Project Category:** (please check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Industrial Site Development | <input type="checkbox"/> Condo/Apartment Complex |
| <input type="checkbox"/> Commercial Site Development | <input type="checkbox"/> Stream Restoration/Enhancement |
| <input type="checkbox"/> Pond/Lake Dredging | <input type="checkbox"/> Multiple Lot Residential Development |
| <input type="checkbox"/> Fish/Wildlife Management (Government Agency) | <input type="checkbox"/> Public Water Supply |
| <input type="checkbox"/> Golf Course Development | <input type="checkbox"/> Mine/Quarry |
| <input type="checkbox"/> Individual Residential | <input checked="" type="checkbox"/> Other (Describe below): |

Rehabilitation of State Bridge/Culvert

Part V: Environmental Information

1. Wetland Impact

- a. Direct Impact

(Fill includes permanent & temporary): **3500 sf** **0.08 acres**

- b. Secondary/Indirect Impact: **0 sf** **0 acres**

- c. **Total Impact:** **3500 sf** **0.08 acres**

2. Waters/Waterways/Watercourses Impact

- a. Direct Impact

(Fill includes permanent & temporary): **255 lf** **1800 sf**

- b. Secondary/Indirect Impact: **0 lf** **0 sf**

- c. **Total Impact:** **255 lf** **1800 sf**

Part V: Environmental Information (continued)

3. Do the following special wetland types occur on site?				
Special Wetland	Yes	No	Total Area of Resource (SF)	Area of Resource Impacted (SF)
Vernal Pool	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Fen	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Bog	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Cedar Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Spruce Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Calcareous Seepage Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
4. Channel Relocation/Restoration/Stabilization				
Does the project include alterations to a perennial watercourse(s)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
If Yes, indicate all design features included in your project from the list below:				
Design Features	Yes	No		
Avoidance of barriers to fish movement	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Formation of pools and riffles	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Provisions for areas of sheltered flow (e.g., boulders, low check dams)	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Preservation of stream bank vegetation and establishment of new vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Use of clean natural bed materials of a suitable size	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Indicate Design Flow for bank-full flow:	30 cfs			
Indicate Frequency Recurrence (year):	2			
Indicate Design Velocity for bank-full flow:	4 fps			
Indicate Frequency Recurrence (year):	2			
5. Floodplains				
Is there a FEMA mapped floodplain for floodway on the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Are any excavations or permanent fill/structures proposed within the floodplain?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Are any excavations or permanent fill/structures proposed within the floodway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Are any temporary stockpiles of fill or materials proposed within the floodplain?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Are any increases in the 100 year water surface elevation proposed? If Yes, indicate maximum increase in feet: 0.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Are any flooding increases proposed that would extend off the subject property? If Yes, attach an explanation to this sheet.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
If applicable, include with this form, hydraulic calculations including tabulated summary of results that demonstrate no adverse impacts of any fill in a floodplain and which are in accordance with the guidance document entitled, "Hydraulic Analysis Guidance Document" www.ct.gov/dep/lib/dep/Permits_and_Licenses/Land_Use_Permits/Inland_Water_Permits/iwrdrhydraulicguidance.pdf				

Part VI: Hydraulic and Drainage Structures (You are required to complete a separate sheet for each structure)

Sheet ____ of ____

- Identify the type of structure: (Check one below that applies)
 - Culvert Detention/Retention Basin Infiltration Basin/Structure Drainage Outfall Drainage Swale Bridge Dam
 - Dike Weir Outlet Control Structure Pipe/Conduit/Aqueduct Other:
- How is the structure labeled on the site plans and in reports? **Bridge No. 06795**
- Where is the structure located on the site plans? **STA 51+00**
- For bridge/culvert structures, what is the **openness ratio?** **0.05** meters
(The openness ratio is the X-sectional area of structure opening/ length of the structure parallel to the stream.)
(www.nae.usace.army.mil/reg/Openness_Ratio_OR_Spreadsheet.pdf)
- What is the size of the contributing watershed to the structure? **467** Acres **0.73** Square Miles
- Is the structure located within a **FEMA flood zone?** No Yes If yes, indicate the type of zone: Floodway Flood Plain
- Provide the following information as appropriate for the structure identified above.**

Water Surface Elevation (feet) (Immediately upstream of structure)																	
		Storm Event Frequency			Storm Event Frequency			Storm Event Frequency			Storm Event Frequency						
		2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	Change (+/-)
Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)
96.02	96.13	0.11	98.01	97.98	-0.03	99.72	99.71	-0.01	100.56	100.15	-0.41	101.67	101.76	+0.09			
Aerial Extent of Inundation (square feet) (Maximum)																	
		Storm Event Frequency			Storm Event Frequency			Storm Event Frequency			Storm Event Frequency						
		2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	Change (+/-)
Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)
1400	1500	+100	24500	24500	0	63000	63000	0	89600	83000	-6600	118600	122900	+4300			
Duration of Inundation (hours)																	
		Storm Event Frequency			Storm Event Frequency			Storm Event Frequency			Storm Event Frequency						
		2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	Change (+/-)
Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)
Discharge Velocity (feet/second)																	
		Storm Event Frequency			Storm Event Frequency			Storm Event Frequency			Storm Event Frequency						
		2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	Change (+/-)
Flow Volume (cubic feet/second)																	
		Storm Event Frequency			Storm Event Frequency			Storm Event Frequency			Storm Event Frequency						
		2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	2-yr	10-yr	25-yr	50-yr	100-yr	Change (+/-)

Part VII: Supporting Documents

Please check the documents submitted as verification that *all* applicable attachments have been submitted with this application form. When submitting any supporting documents, please label the documents as indicated in this part and be sure to include the applicant's name.

Environmental Documentation	Report	Show on Plans
	√ If Included with this application	
Description of the proposed activities and the purpose.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of the functions and values of all wetlands and waters on-site or affected off-site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of direct and secondary impacts to the functions and values of wetlands and waters affected.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of mitigation/restoration and or creation of wetlands to replace the functions and values of impacted wetlands/watercourses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Design details for reconstruction/modification of existing stream crossings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Biological field survey of the project area and any other information to identify the presence of endangered, threatened, or special concern species, including copies of any correspondence to and from the NDDDB (including a completed CT NDDDB Review Request Form, if applicable).	<input type="checkbox"/>	<input type="checkbox"/>
Culvert invert elevations for roadway crossings set at least 12 inches below the elevation of the natural stream bed for fish and aquatic passage?	<input type="checkbox"/>	<input type="checkbox"/>
Federal wetland delineation of the site shown on plans.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
State wetland delineation of the site shown on plans.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are there amphibian breeding pool(s) present on the project site or adjacent to the project site? If yes, project development plans incorporate recommendations presented in " <i>Best Development Practices, Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY</i> "	<input type="checkbox"/>	<input type="checkbox"/>
Report documenting vegetation, soils, and hydrology of wetlands on site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Incorporation of a permanently protected buffer zone adjacent to wetlands and waters.	<input type="checkbox"/>	<input type="checkbox"/>
Site plans drawn at a scale of 1":100' or larger showing the pre- and post- construction aerial extent of inundation of wetlands and waters for the 2-yr, 10-yr, 25-yr, 50-yr and 100-yr storm frequency events.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Part VI: Supporting Documents

Engineering Documentation	Report	Show on Plans
<i>All plans and calculations must be signed and sealed by a professional engineer (PE) licensed in the state of Connecticut</i>	√ If Included with this application	
Summary of all water handling proposed at the site, including plans and computations, as needed to show that temporary water handling will not cause erosion or flooding.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Erosion and Sediment control measures designed in accordance with the <i>2002 Connecticut Guidelines for Soil Erosion and Sediment Control</i> , including calculations as required for engineered measures. (www.ct.gov/dep/cwp/view.asp?a=2720&q=325660&depNav_GID1654)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Design details and calculations for each hydraulic and drainage structure demonstrating consistency with the standards contained within the Connecticut DOT Drainage Manual and 2004 Connecticut Storm Water Quality Manual.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FEMA floodway/floodplain boundaries within the project site plotted on the site plans and a copy of the FEMA map showing the site location.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hydrologic calculations including pre- and post- drainage area maps and a tabulated summary of results that demonstrate no adverse increase in runoff rates or velocities as a result of the proposed activity at appropriate downstream points.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Part VII: Application Certification


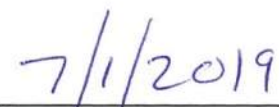
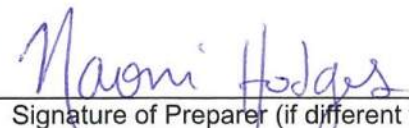
The applicant *and* the individual(s) responsible for actually preparing the application must sign this part. An application will be considered incomplete unless all required signatures are provided. This includes consultants, professional engineers, surveyors, soil scientists, etc. If the applicant is the preparer, please mark N/A in the spaces provided for the preparer. By their signature, they certify that, to the best of their knowledge and belief, the information contained in this application, including all attachments, is true, accurate and complete.

The certification of this application package shall be signed as follows: 1) For an individual(s) or sole proprietorship: by the individual(s) or proprietor, respectively; 2) For a corporation: by a principal executive officer of at least the level of vice president, or his agent; 3) For a limited liability company (LLC): by a manager, if management of the LLC is vested in a manager(s) in accordance with the company's "Articles of Organization", or by a member of the LLC if no authority is vested in a manager(s); 4) For a partnership: by a general partner; 5) For a municipal, state, or federal agency or department: by either a principal executive officer, a ranking elected official, or by other representatives of such registrant authorized by law.

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief.

I understand that a false statement in the submitted information may be punishable as a criminal offense, in accordance with section 22a-6 of the General Statutes, pursuant to section 53a-157b of the General Statutes, and in accordance with any other applicable statute.

I certify that this application is on complete and accurate forms as prescribed by the commissioner without alteration of the text."

	
Signature of Applicant	Date
Thomas J. Maziarz	Bureau Chief, Policy and Planning
Name of Applicant (print or type)	Title (if applicable)
	06/28/2019
Signature of Preparer (if different than above)	Date
Naomi Hodges	Environmental Scientist
Name of Preparer (print or type)	Title (if applicable)
<input type="checkbox"/> Check here if additional signatures are required. If so, please reproduce this sheet and attach signed copies to this sheet. You must include signatures of any person preparing any report or parts thereof required in this application (i.e., professional engineers, surveyors, soil scientists, consultants, etc.)	

Note: Please submit **three** copies of this completed Addendum Form, a completed Army Corps Application Form (ENG Form 4345), and **all** Supporting Documents (including full scale plans, 1" = 40') to:

CENTRAL PERMIT PROCESSING UNIT
 DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
 79 ELM STREET
 HARTFORD, CT 06106-5127

Please do **not** mail or directly deliver this completed application and supporting documents to the DEEP's Inland Water Resources Division.

Attachments

Attachment A: Executive Summary

Attachment B: Location Maps

Attachment C: Environmental Permit Plans

Attachment D: Environmental Report, NRCS Soil Map, and Datasheets

Attachment E: FEMA FIRMette and Inundation Maps

Attachment F: Hydraulic and Drainage Report (Submitted on CD)

Attachment G: Project Area Photos

Attachment H: CTDEEP Fisheries Approval and Memorandum of Agreement (MOA)

Attachment I: Interagency Regulatory Coordination Meeting Notes

Attachment J: US Army Corps of Engineers Application

Attachment A: Executive Summary

Existing Conditions:

Bridge No. 06795 is approximately 7.91 feet wide by 5.58 feet high asphalt-coated corrugated metal pipe (ACCOMP) arch culvert that conveys Hammer Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Hammer Brook under Project No. 327-01. The total structure length of the bridge is 213 feet and the culvert is located under approximately 10 feet of fill. There are no existing headwalls or wingwalls. Bridge No. 06795 is situated north of the I-395 southbound Exit 14 off ramp. This structure is situated below six lanes of traffic. There are two northbound lanes, and one on-ramp lane, as well as two southbound lanes, and one off ramp. The existing culvert is rated to be structurally deficient due to the presence of corrosion, section loss, and distortion to the pipe. The existing barrel of the steel pipe arch culvert exhibits loss of asphalt coating and heavy laminar rust at and below the springline. The existing ACCMP structure results in approximately 2.5 feet of backwater at the approach cross-section and is hydraulically inadequate.

Hammer Brook has a drainage area of 0.73 square miles. The watercourse lies within the Yantic River Regional Basin No. 3900 and in the Thames River Major Basin No. 3. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map number 09011C0211G (Panel 211 of 554), New London County, Connecticut (effective date July 18, 2011), the area of the crossing is not within a mapped FEMA floodplain. Upstream of Hammer Brook, the area is located in a 500-year floodplain, within Flood Zone X. Downstream of the crossing, Hammer Brook flows into Norwichtown Brook, approximately 20 feet downstream of the bridge outlet. This area is mapped as FEMA Flood Zone A, a Special Hazard Area. The project utilizes the 50-year design storm as it is considered a small structure according to the Drainage Manual. This proposed culvert rehabilitation is part of State Project No. 103-266 and is to be repaired and relined in conjunction with Bridge Nos. 06796 and 06797, also located along I-395.

Proposed Project:

The project proposes to cast-in-place 4 inch thick reinforced concrete lining along the full length of the culvert invert. The inlet and outlet of the pipe will be cut back approximately 8 feet to the full pipe section. Concrete headwalls, cutoff walls, and flared wingwalls will be constructed at both ends of the culvert to reduce scour and improve the flow of the brook. The proposed length of the structure from headwall to headwall is 197 feet. The proposed headwalls will be approximately 12 feet in length by 12 feet in height. The flared wingwalls will be approximately 6 feet in length and 12 feet in height. The proposed cutoff wall will be approximately 10 feet in length and 4 feet in height. A preformed riprap scour hole will be placed at the culvert outlet to prevent scour as well as raise the streambed to the new invert elevation. Salvaged natural streambed material will be regraded at the inlet to raise the streambed to the new invert elevation. At the inlet of the culvert, rounded corners of the headwall will be constructed to facilitate flow through the culvert as well as maintain the existing headwater elevation. Asphaltic coating will be applied along the remaining portion of the pipe, not lined by concrete, to minimize corrosion and increase durability. In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed on the upstream and downstream sides of the culvert. The downstream access road included a temporary staging area. The proposed roadway width, alignment and profile will match all existing conditions. The proposed lining reduces the hydraulic opening by approximately 9%. The model results for the 50-year storm event show that the reduction in the hydraulic opening with proposed improvements at the inlet results in decreased water surface elevations upstream of the crossing. Immediately upstream of the crossing is a private hotel and a developed parking lot. Currently, the right overbank spillway floods to the developed

hotel parking lot. The proposed conditions will continue to flood the nearby hotel parking lot; however, the proposed structure will result in an 11% decrease in flow over the spillway when compared to existing conditions. The proposed water surface elevations are not expected to adversely impact existing structures on properties adjacent to the project site. The culvert inlet will provide adequate freeboard of approximately 9.8 feet to the I-395 roadway. Subsequent to construction, temporarily impacted areas will be revegetated, as appropriate. Native plants are proposed to be placed at the competition of the project. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The project is scheduled to be constructed in the spring of 2020. It is anticipated to be completed in one construction season.

The proposed culvert could not incorporate any on-site fisheries mitigation, due to potential backwater conditions and flooding on to private property. As a result, offsite mitigation has been coordinated between CTDEEP Inland Fisheries Division and CTDOT to offset adverse fisheries impacts as a result of the invert lining of Bridge No. 06795. The selected offsite mitigation is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed work involves the replacement of the existing perched, undersized culvert with a timber bridge on Del Reeves Road. The mitigation project proposes to conserve the native brook trout population and provide natural channel bottom for the fish within the watershed. The proposed mitigation is further outlined in the attached Memorandum of Agreement (MOA) between CTDOT and DEEP Fisheries.

The proposed project results in 1,900 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads, the placement of the preformed riprap scour hole at the outlet and associated channel grading, as well as the construction at the inlet and outlet of the culvert. In order to place the material into the regulated areas, heavy machinery and equipment will be required. The project results in 1,400 square feet (0.03 acres) of permanent watercourse impacts. This number accounts for the lining of the culvert, the construction of the headwalls, wingwalls, cutoff walls at the inlet and outlet, and placement of riprap at the outlet and associated channel grading. Though this is described as a permanent impact, the watercourse will remain. The project will not result in permanent conversion of watercourse to upland. Temporary impacts include the area necessary for the water handling and tree clearing. Temporary impact to the wetlands is 1,600 square feet (0.04 acres) and to the watercourse is 400 square feet (0.01 acres). The total wetland and watercourse impact is 5,300 square feet (0.12 acres).

Additional permits being sought include an ACOE Section 404 Pre-Construction Notification under General Permit No. 19 Stream, River & Brook Crossings, and CTDEEP General Permit for Water Resources Construction Activities. A CTDOT Flood Management General Certification has been issued for this project.

Attachment B: Project Location Maps

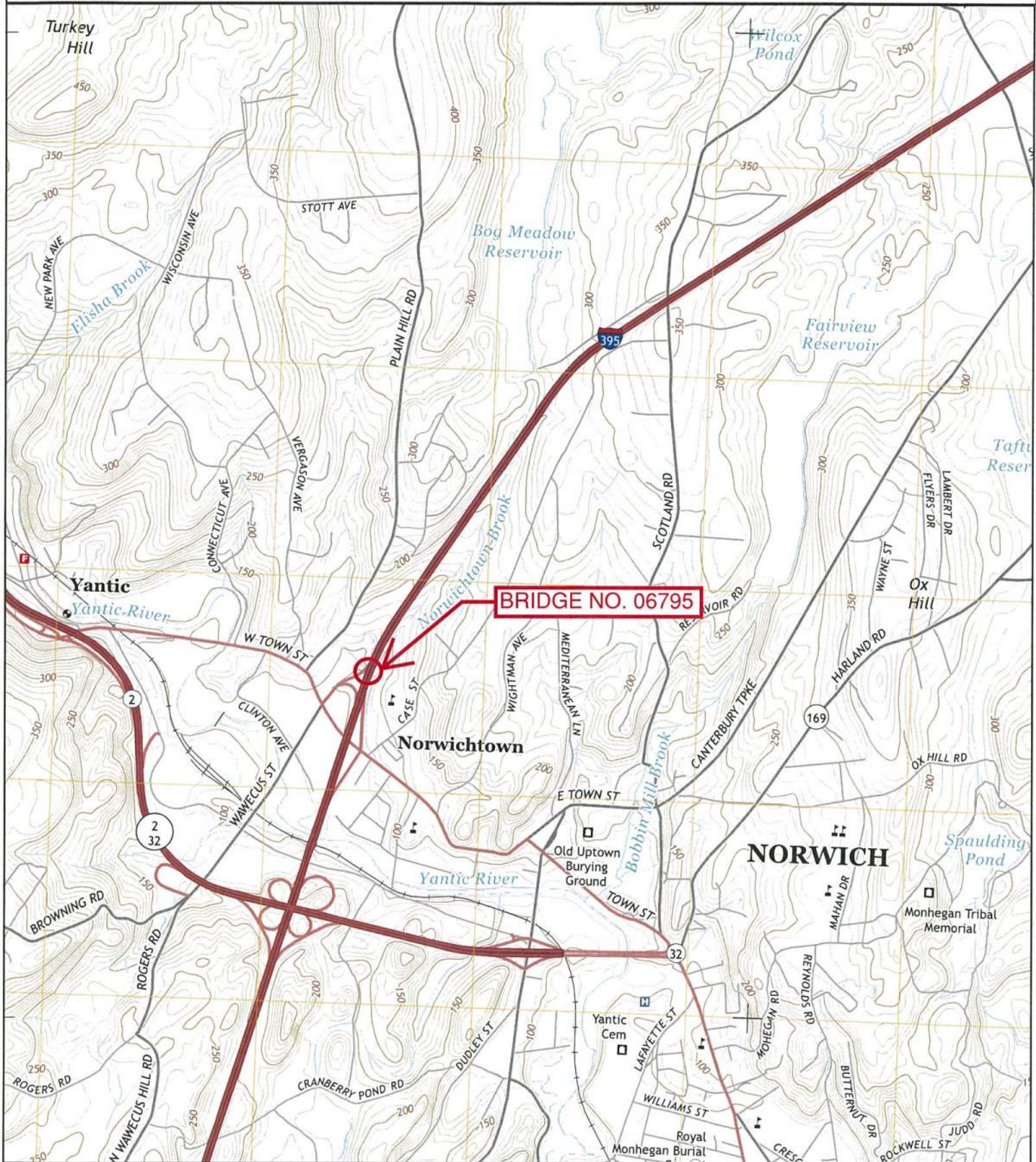


Engineers
Designers
Consultants
Planners
Scientists
105 East Main Street, 11th Floor, East Hartford, CT 06108
T 860 230 4100 • www.cmeengineering.com

USGS QUADRANGLE MAP

BRIDGE NO. 06795 IN NORWICH, CT

INTERSTATE 395 OVER HAMMER BROOK



BRIDGE NO. 06795



USGS MAP #72
NORWICH,
CONNECTICUT



Created: 2019




1 INCH = 2,000 FEET



DETAILED AERIAL MAP BRIDGE NO. 06795 IN NORWICH, CT INTERSTATE 395 OVER HAMMER BROOK



© CTDESP, USGS, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENTP, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

	CTECO AERIAL MAP NORWICH, CONNECTICUT	 Created: 2019	1 INCH = 500 FEET 
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Attachment C: Environmental Permit Plans



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

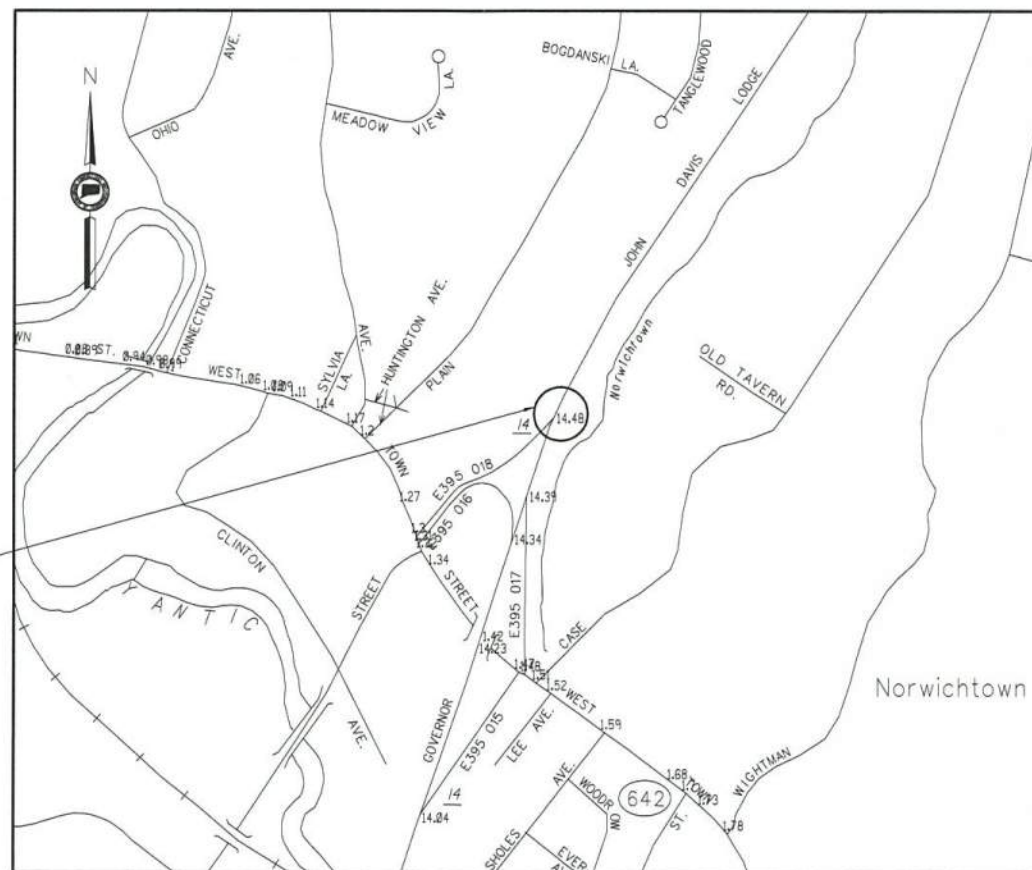
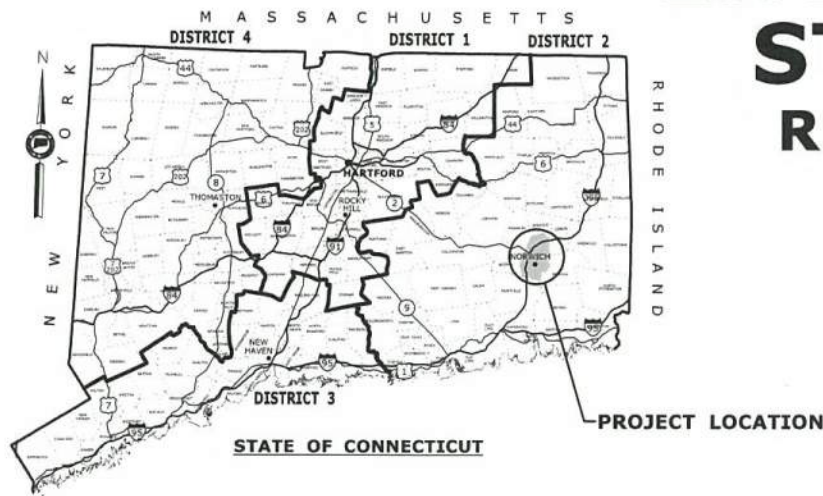
STATE PROJECT NO. 103-266

REHABILITATION OF BRIDGE No. 06795

I-395 OVER HAMMER BROOK,

(SITE No. 1)

IN THE CITY OF NORWICH



BRIDGE NO. 06795
I-395 OVER
HAMMER BROOK

LOCATION PLAN

SCALE: 1" = 500'

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06795 TITLE SHEET
PMT-02	BR. NO. 06795 GENERAL SITE PLAN
PMT-03	BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06795 CROSS-SECTIONS
PMT-05	BR. NO. 06795 100-YEAR FLOOD IMPACT PLAN
PMT-06	BR. NO. 06795 ELEV. & SECTION PLAN
PMT-07	BR. NO. 06795 STAGING AND WATER HANDLING PLAN
PMT-08	BR. NO. 06795 PERMIT PLANTING PLAN

LOUIS BERGER US, Inc
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577



Digitally signed
by Robert Lin
Date: 2019.06.27
10:40:10-04'00'

ENVIRONMENTAL PERMIT PLANS

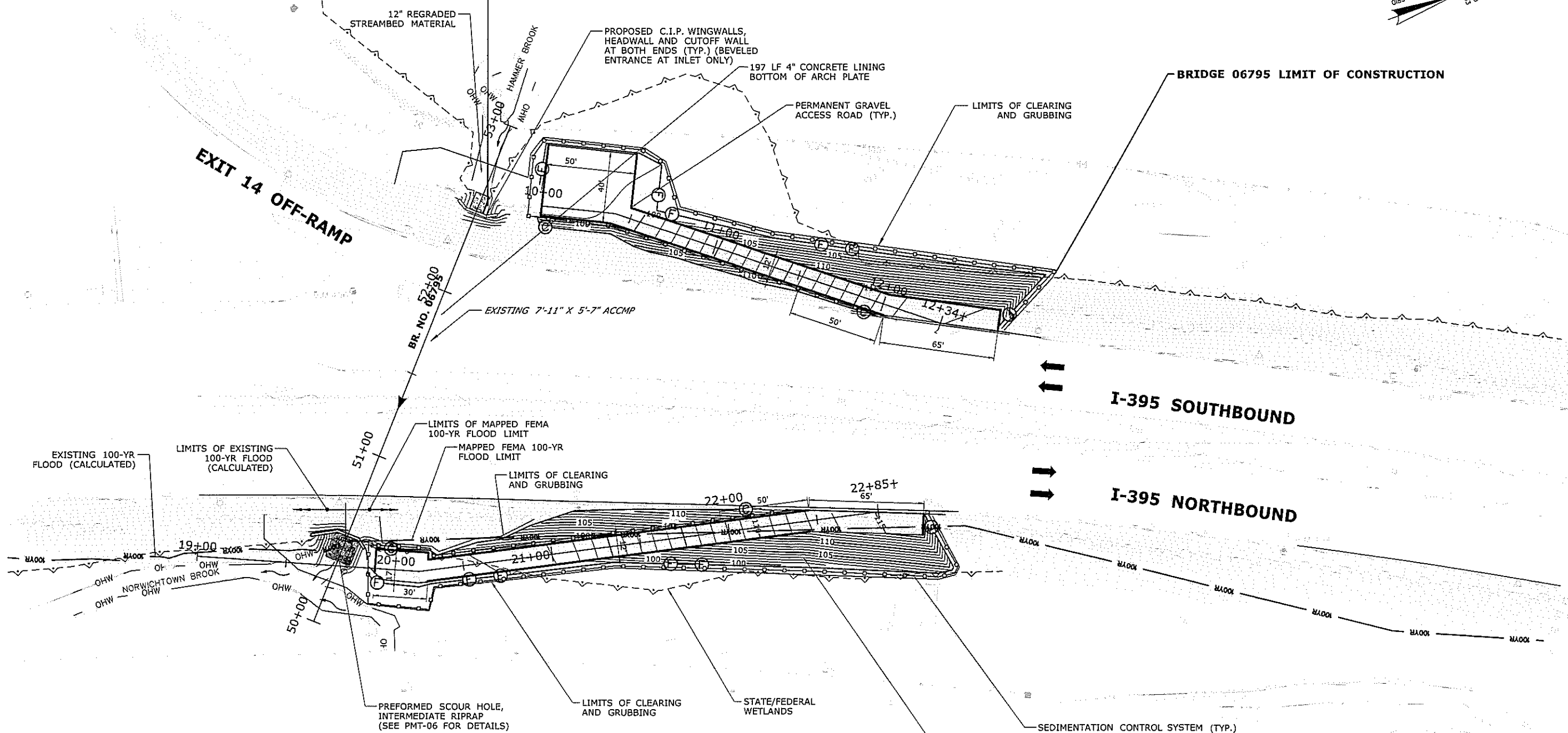
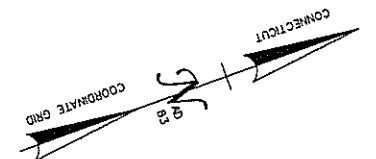
PLAN DATE 6/25/2019

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	CHECKED BY: -					<p>LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>
Plotted Date: 6/25/2019	SCALE AS NOTED	Filename: ...\\HW_MSH_0103_0266_06795_TSH.dgn			DRAWING TITLE: BR. NO. 06795 TITLE SHEET	SHEET NO.

GENERAL NOTES:

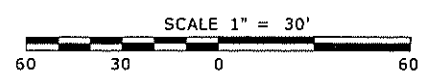
1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

BEGIN STATE PROJECT NO. 103-266
 BRIDGE 06795 LIMIT OF CONSTRUCTION
 STA. 10+00



LEGEND:

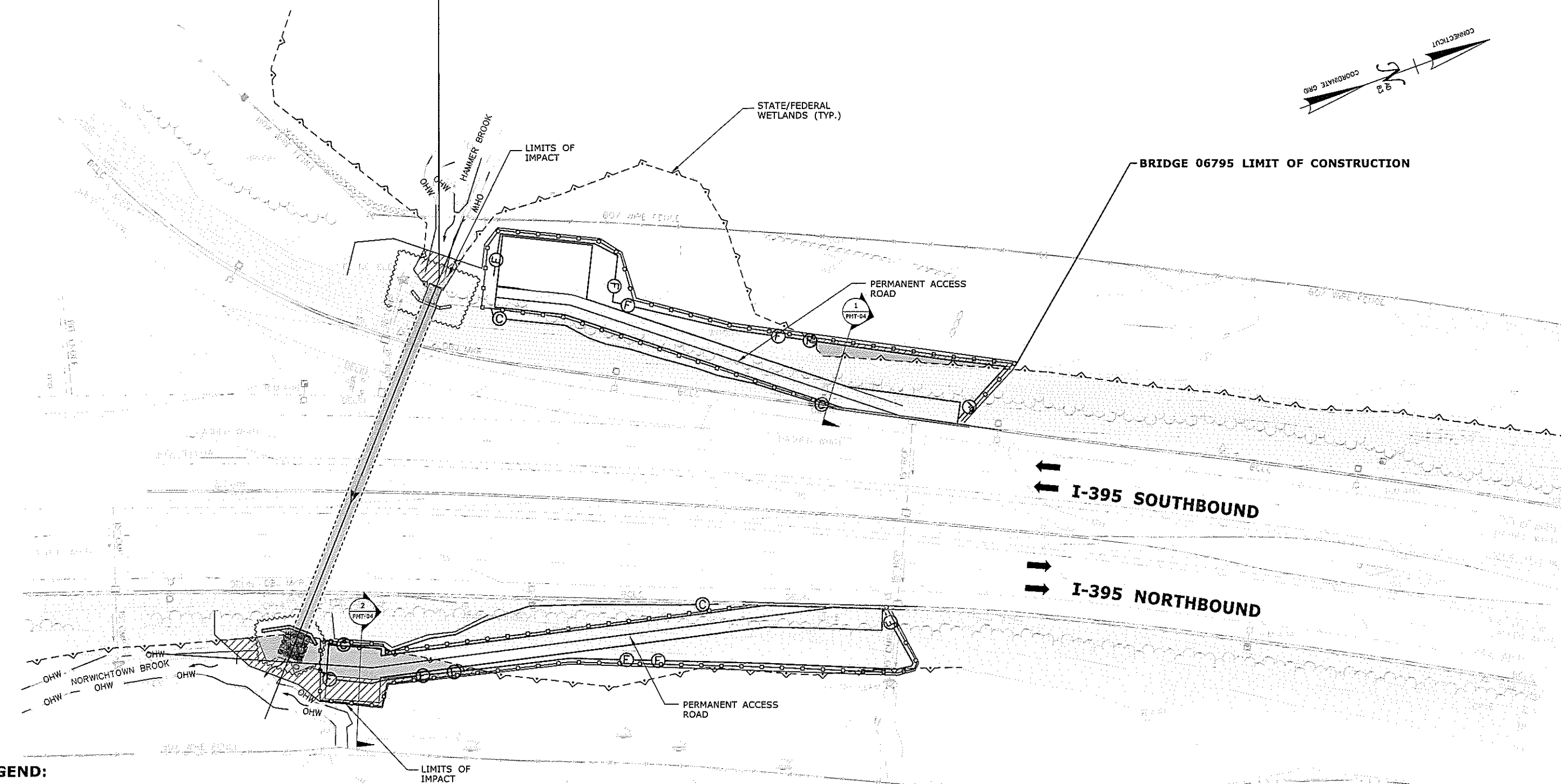
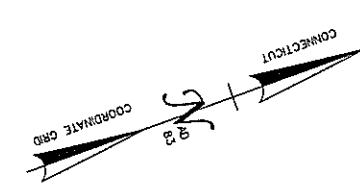
- 100YR - MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW - ORDINARY HIGH WATER
- - - - STATE/FEDERAL WETLANDS
- o - o - SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/25/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-02 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/25/2019							

BRIDGE 06795 LIMIT OF CONSTRUCTION



LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- PERMANENT IMPACT
- MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

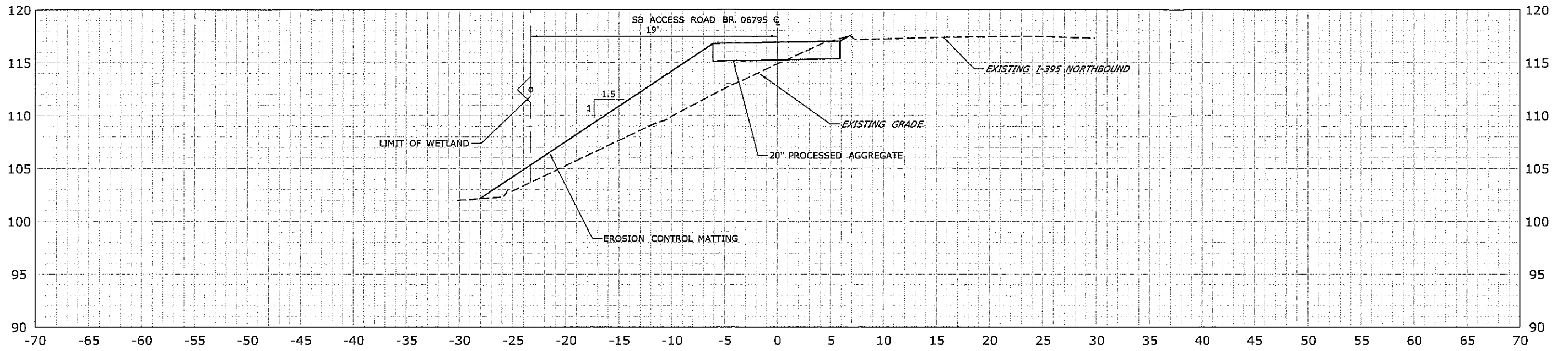
NOTES:

1. CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE.
2. ALL DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

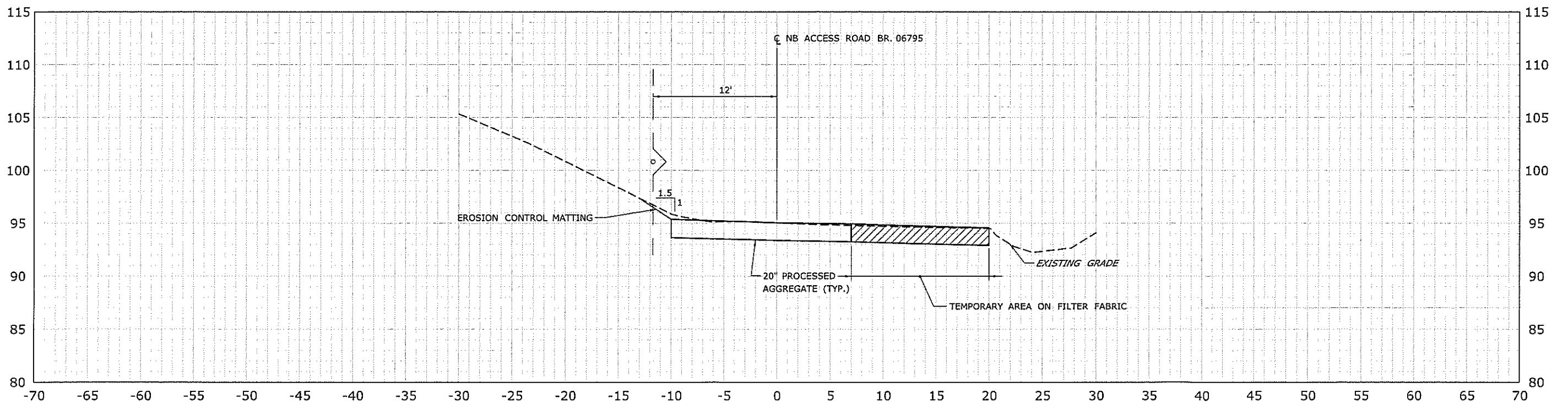
WETLAND IMPACT TABLE				
	WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS	1	1900 S.F. (0.04 AC.)	1400 S.F. (0.03 AC.)	3300 S.F. (0.08 AC.)
TEMPORARY IMPACTS	1	1600 S.F. (0.04 AC.)	400 S.F. (0.01 AC.)	2000 S.F. (0.05 AC.)
TOTAL IMPACTS		3500 S.F. (0.08 AC.)	1800 S.F. (0.04 AC.)	5300 S.F. (0.12 AC.)

SCALE 1" = 30'
 ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/25/2019

<p>REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/25/2019</p>	<p>DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p>Filename: ...LHW MSH_0103-0266_Br 06795 WIP PLN-01.DGN.dgn</p>	<p>SIGNATURE/BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH DRAWING TITLE: BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN</p>	<p>PROJECT NO. 103-266 DRAWING NO. PMT-03 SHEET NO.</p>
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1 ACCESS ROAD SECTION
PMT-03



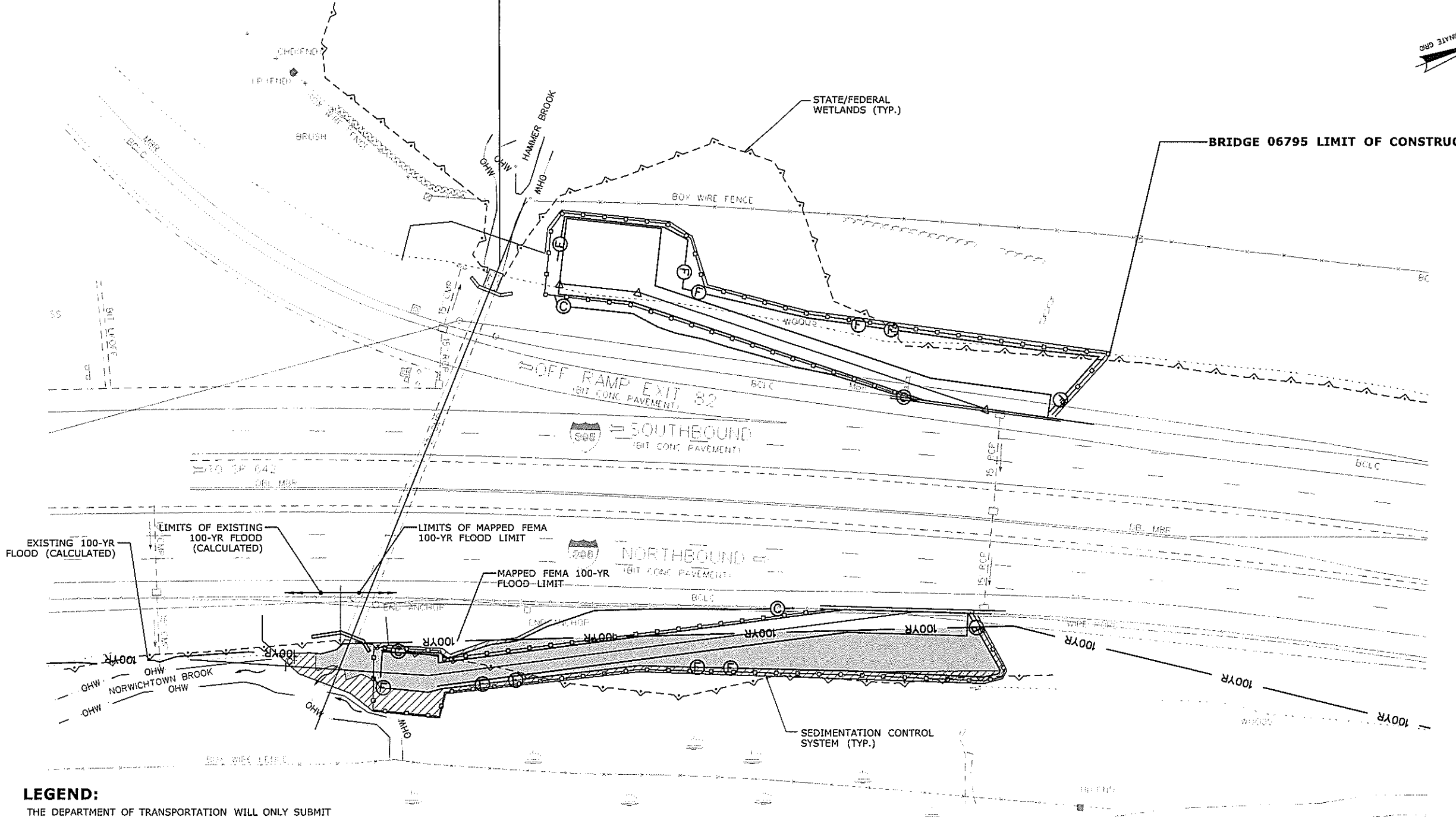
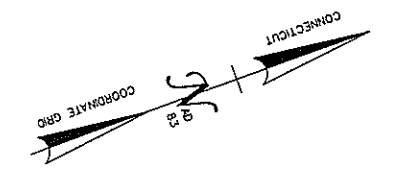
2 ACCESS ROAD SECTION
PMT-03

ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/25/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT CHECKED BY: MAM SCALE IN FEET 	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06795 CROSS-SECTIONS	PROJECT NO. 103-266 DRAWING NO. PMT-04 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/25/2019	Filename: ...\\HW.MSH 0103-0266 Br 06795 XSEC.PLN-D1.DGN.dgn		

BRIDGE 06795 LIMIT OF CONSTRUCTION



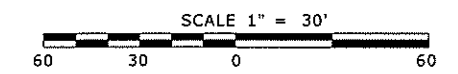
LEGEND:

- THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.
- TEMPORARY IMPACT
- PERMANENT IMPACT
- 100YR MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

NOTE:

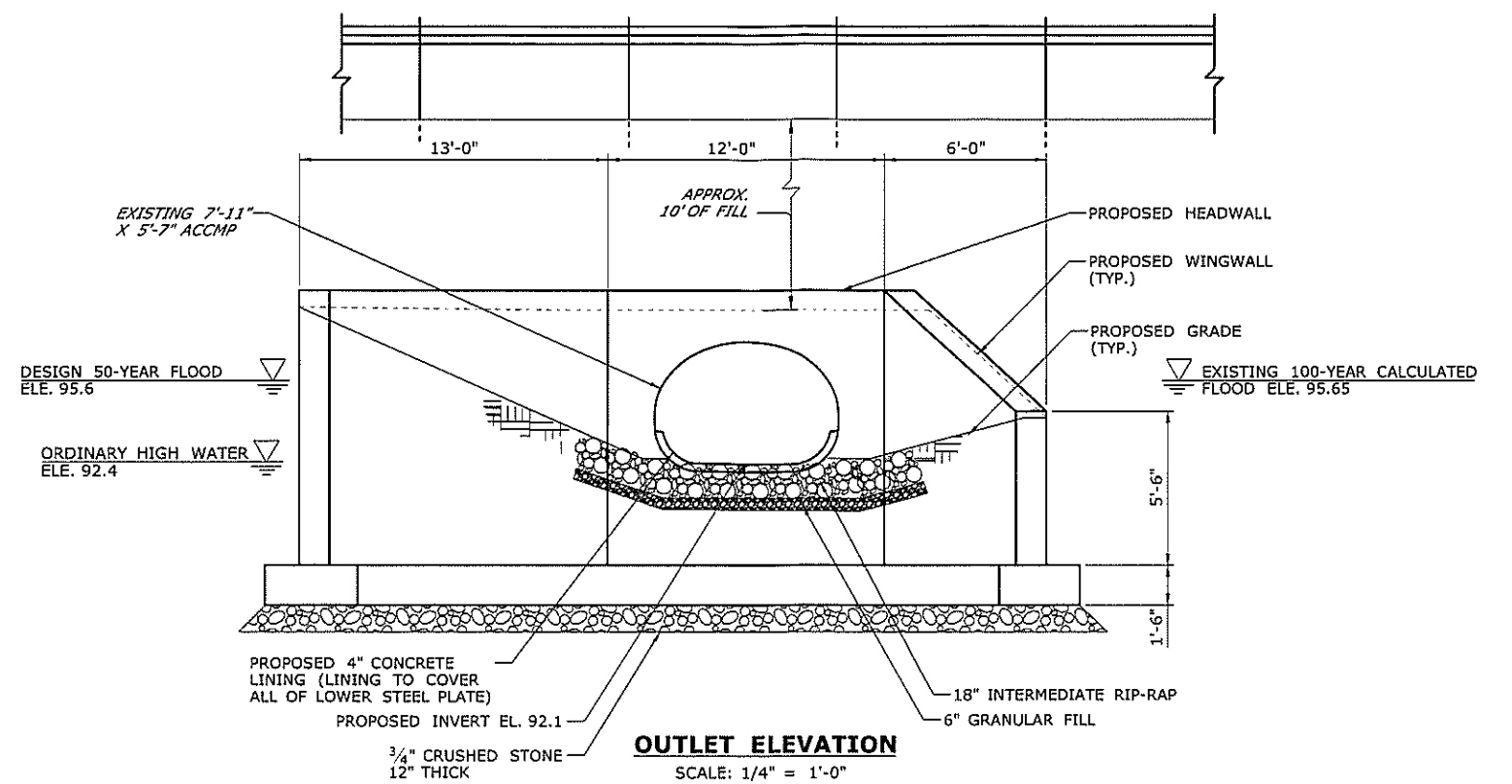
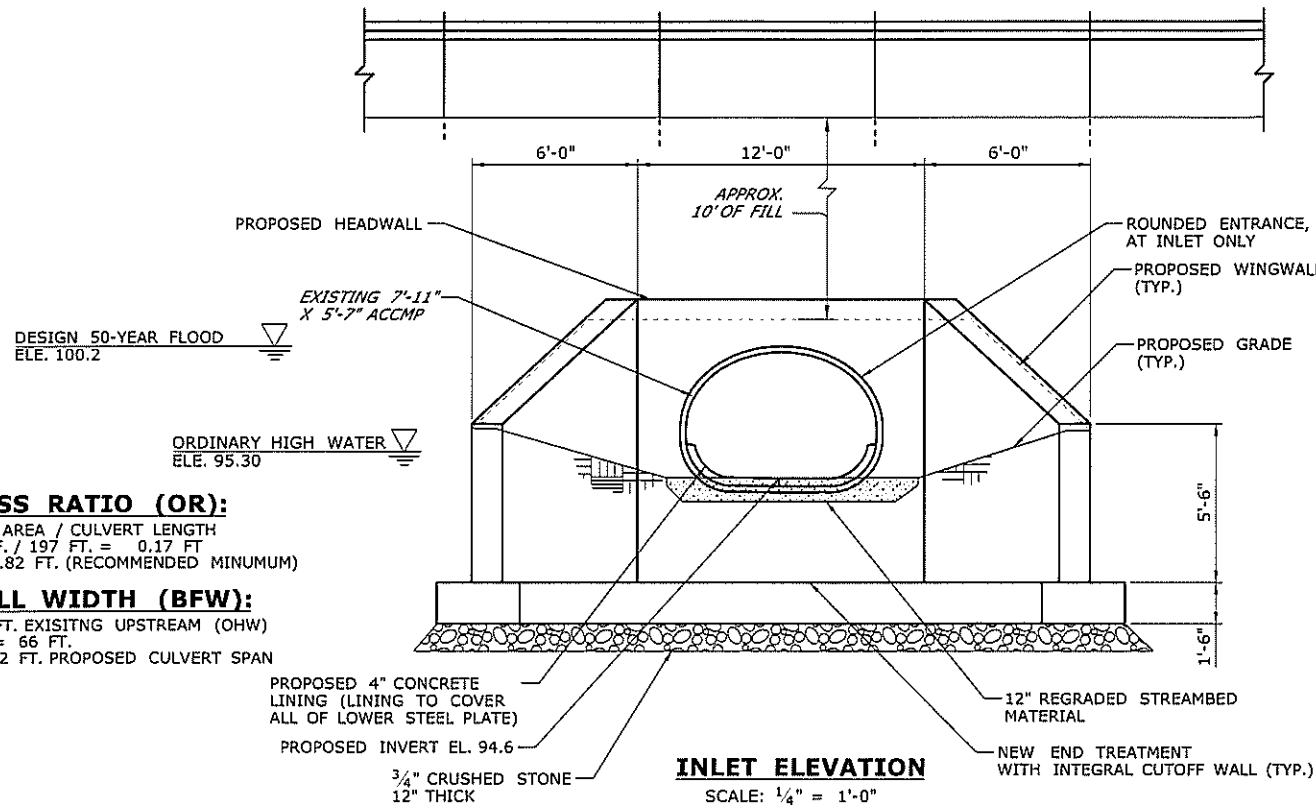
CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

100-YEAR FLOODPLAIN AREA IMPACTS, CUT AND FILL			
AREA IMPACTS		VOLUME IMPACTS	
TEMPORARY IMPACT AREA	PERMANENT IMPACT AREA	EXCAVATION IN FEMA FLOOD PLAIN	FILL IN FEMA FLOODPLAIN
2400 S.F.	6800 S.F.	52 C.Y.	200 C.Y.



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/25/2019

<p>DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>SIGNATURE/BLOCK:</p> <p>LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE:</p> <p>REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN:</p> <p>NORWICH</p> <p>DRAWING TITLE:</p> <p>BR. NO. 06795 100-YEAR FLOOD IMPACT PLAN</p>	<p>PROJECT NO.</p> <p>103-266</p> <p>DRAWING NO.</p> <p>PMT-05</p> <p>SHEET NO.</p>
<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>					
<p>REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/25/2019</p>					

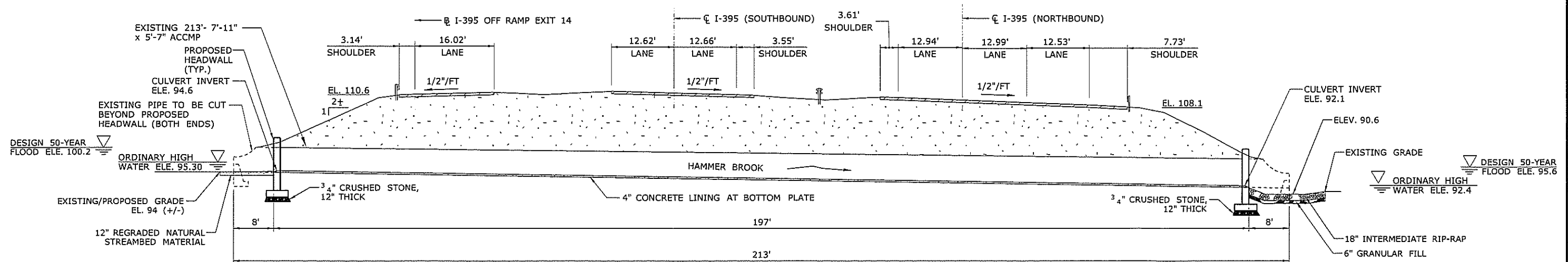


OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 34 S.F. / 197 FT. = 0.17 FT.
 0.17 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

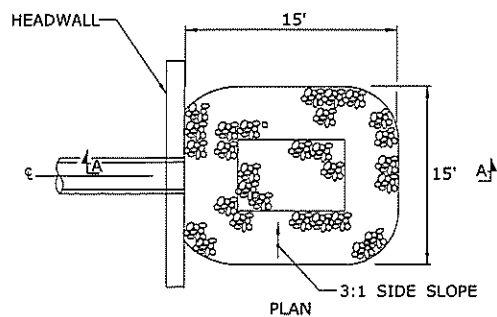
BANKFULL WIDTH (BFW):
 BFW = 55 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 66 FT.
 66 FT. > 7.92 FT. PROPOSED CULVERT SPAN

INLET ELEVATION
 SCALE: 1/4" = 1'-0"

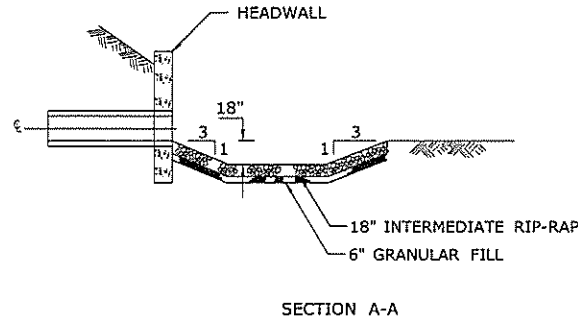
OUTLET ELEVATION
 SCALE: 1/4" = 1'-0"



PROPOSED LONGITUDINAL SECTION
 (LOOKING NORTH)
 SCALE: 1" = 10'



PREFORMED SCOUR HOLE
 N.T.S.



SECTION A-A

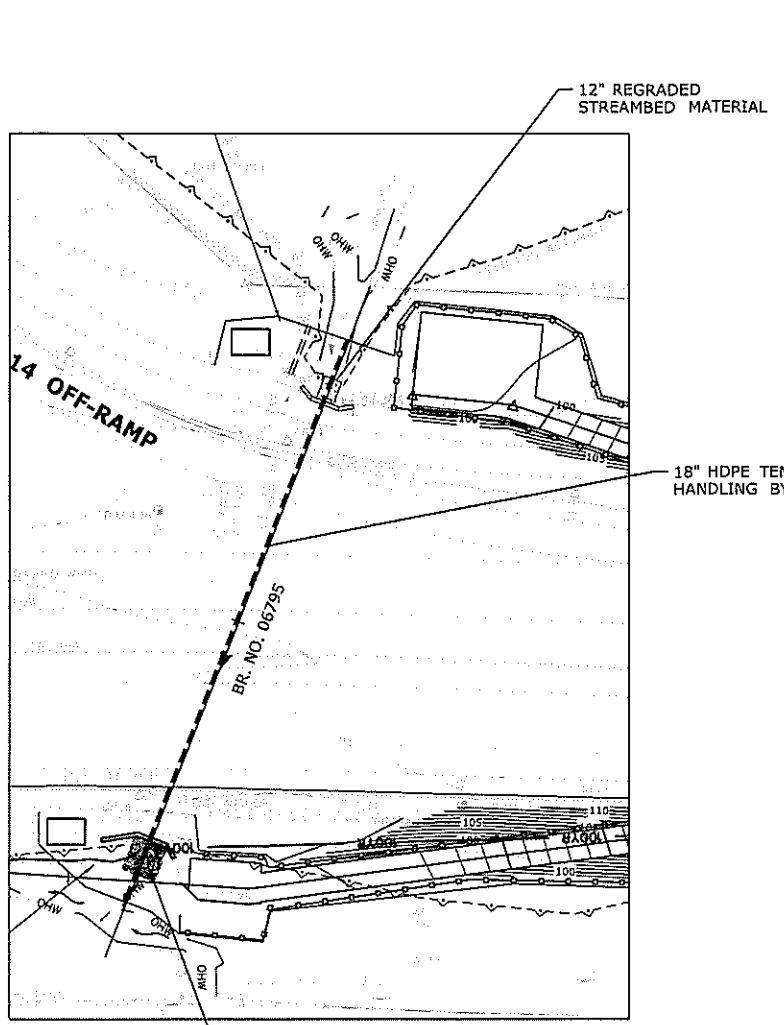
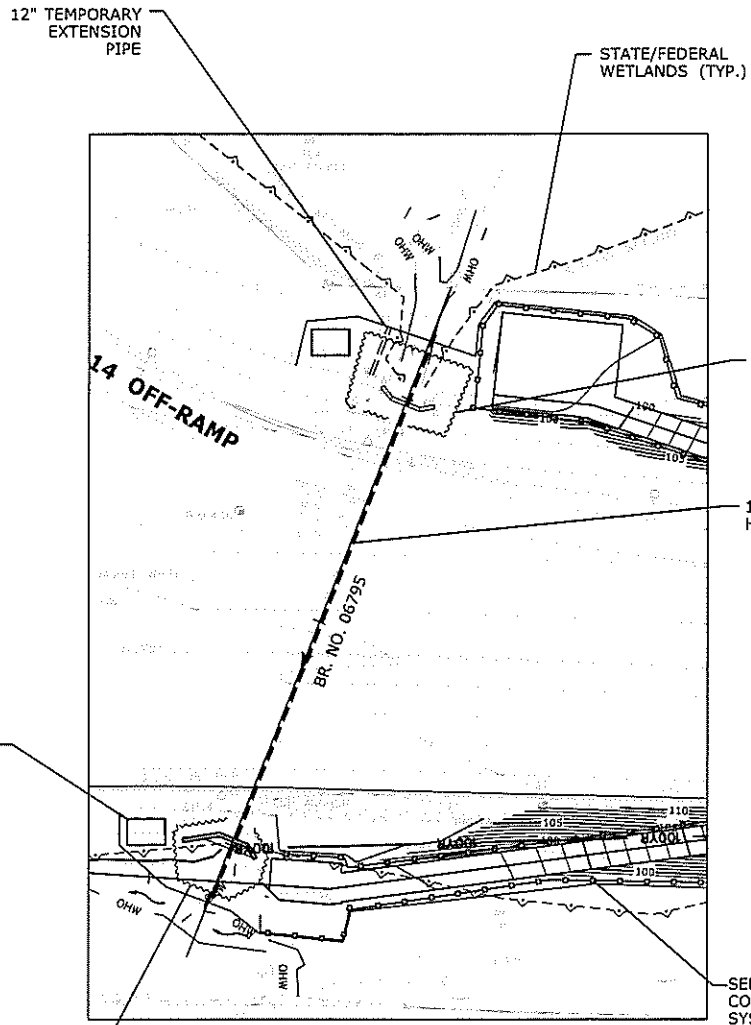
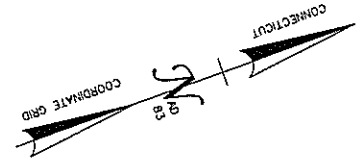
NATIVE STREAMBED MATERIAL NOTES

1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PARTIAL CULVERT REMOVAL AND NEW END TREATMENT INSTALLATION SHALL BE STOCKPILED AND THEN REPLACED AT THE INLET, TO THE DEPTH SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER, AND IN ACCORDANCE WITH THE PERMIT DOCUMENTS.
2. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.

HYDRAULIC DATA 06795	
DRAINAGE AREA	0.73 SQ MILES
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	305 CFS
AVERAGE DAILY FLOW ELEVATION	95.0
UPSTREAM DESIGN SURFACE WATER ELEVATION	100.2
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	95.6

ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/26/2019

DESIGNER/DRAFTER: MM		SIGNATURE/ BLOCK:	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWH: NORWICH	PROJECT NO. 103-266
CHECKED BY: MJM		LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	DRAWING TITLE: BR. NO. 06795 ELEV. & SECTION PLAN	SHEET NO. PMT-06	
SCALE AS NOTED	Filename: ...\\SB_MSH_0103-0266_Br06795_E5_PLAN.dgn				
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/26/2019					



TEMPORARY DEWATERING BASIN (APPROX. LOCATION) (TYP.)

COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL MIN. TOP OF COFFERDAM ELEV. 94.5

STAGE - 1 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS ROADS.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY WATER-HANDLING FACILITIES, INCLUDING TEMPORARY COFFERDAM AND TEMPORARY BYPASS PIPE.
5. WATER HANDLING TO REMAIN THROUGH ALL STAGES.
6. POWER WASH INTERIOR OF PIPE AND FILL VOIDS (SEE NOTES).
7. EXCAVATE AND PUMP DRY. CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, HEADWALL AND HALF OF INVERT LINING.

STAGE - 2 SUGGESTED SEQUENCE

1. RELOCATE TEMPORARY WATER HANDLING BYPASS PIPE.
2. CONSTRUCT OTHER HALF OF INVERT LINER.
3. INSTALL RIP-RAP PREFORMED SCOUR HOLE AT OUTLET.
4. REGRADE EXISTING NATURAL STREAMBED MATERIAL AT THE INLET TO NEW INVERT.
5. REMOVE TEMPORARY WATER HANDLING FACILITIES.
6. INSTALL CONSERVATION SEEDING AND PROPOSED PLANTINGS.
7. REMOVE EROSION AND SEDIMENTATION CONTROL UPON PERMANENT STABILIZATION.

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY BYPASS PIPE AS SHOWN DURING CONSTRUCTION OF THE NEW LINING AND END TREATMENTS.

EQUIPMENT SHALL NOT BE PERMITTED IN THE STREAM WHEN TEMPORARY BYPASS PIPE IS NOT IN PLACE WITHOUT APPROVAL FROM THE ENGINEER.

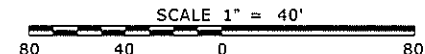
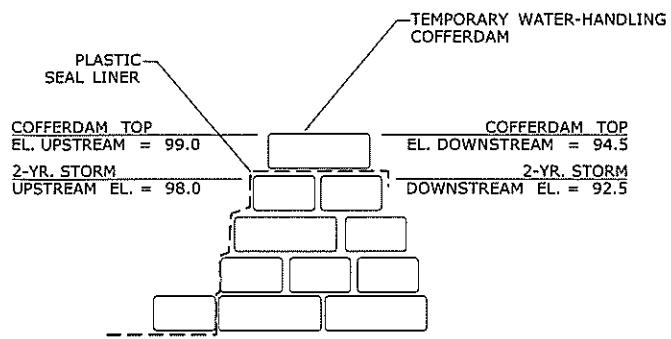
A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREA. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. NO ADDITIONAL REGULATORY IMPACTS WILL BE ALLOWED BEYOND THE AREAS SHOWN. ALL DISTURBED AREAS SHALL BE RESTORED.

WATER FROM POWER WASHING OPERATIONS MUST BE COMPLETELY CONTAINED AND PUMPED INTO A SETTLING BASIN.

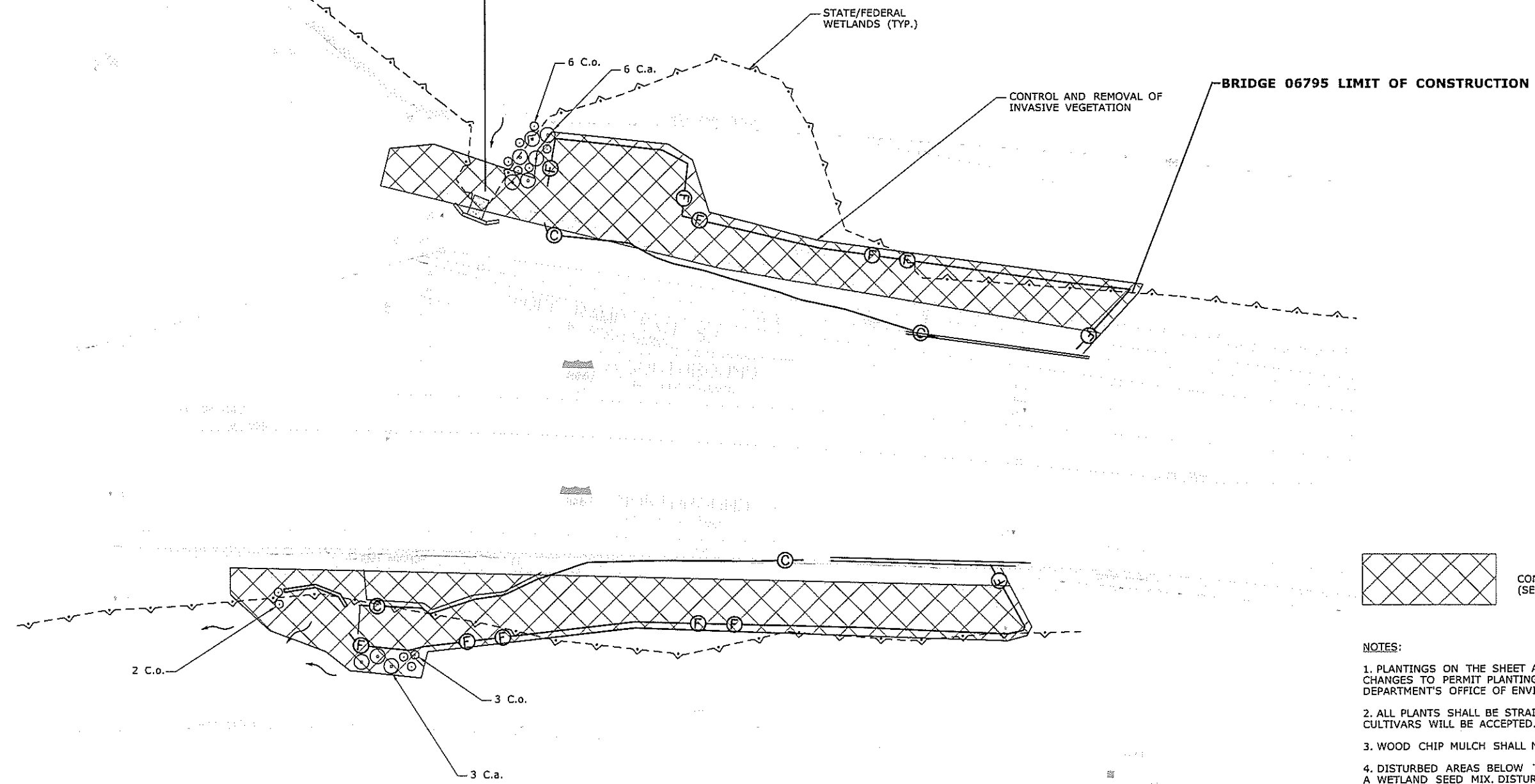
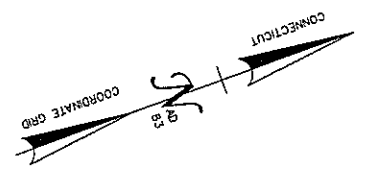
TEMPORARY HYDRAULIC DATA 06795	
AVERAGE DAILY FLOW	1.4 CFS
AVERAGE SPRING FLOW	2.7 CFS
2-YEAR FREQUENCY DISCHARGE	30 CFS
TEMPORARY DESIGN DISCHARGE	30 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	98 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	92.5 FT



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/13/2019

<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>SIGNATURE/BLOCK:</p> <p>LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE:</p> <p>REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN:</p> <p>NORWICH</p> <p>DRAWING TITLE: BR. NO. 06795 STAGING AND WATER HANDLING PLAN</p>	<p>PROJECT NO. 103-266 DRAWING NO. PMT-07 SHEET NO.</p>
<p>REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/13/2019</p>	<p>Filename: ...VHW MSH 0103-0266_Br 06795 WHP_PLN-01.DGN.dgn</p>					

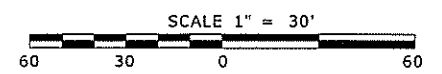
BRIDGE 06795 LIMIT OF CONSTRUCTION



PERMIT PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	COMMENTS	WETLAND INDICATOR
C.a.	Cornus amomum	Silky Dogwood	24"-36" HT.	9	Field Located		FACW
C.o.	Cephalanthus occidentalis	Buttonbush	24" - 36" HT. B.B.	11	Field Located		OBL
		Wood Chip Mulch		0 S.Y.			

- NOTES:**
1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
 2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
 3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
 4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
 5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/13/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-08 SHEET NO.
	CHECKED BY: MJM					
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/13/2019	Filename: ...VHW MSH 0103-0266 Br 06795 INV PLN-01.DGN.dgn					

Attachment D: Environmental Report, NRCS Soil Map, and Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06795 Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06795 in Norwich, Connecticut. Bridge No. 06795 is approximately 7.91 feet wide by 5.58 feet high asphalt-coated corrugated metal pipe (ACCOMP) arched culvert that conveys Hammer Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Hammer Brook. The total structure length of the bridge is 213 feet and it is under approximately 10 feet of fill. The existing culvert is rated to be structurally deficient due to the presence of corrosion, section loss, and distortion to the pipe and requires rehabilitation. The existing barrel of the steel pipe arch culvert exhibits loss of asphalt coating and heavy laminar rust at and below the springline. The project involves constructing cast-in-place reinforced concrete flared wingwalls, cut-off walls, and headwalls at both ends of the culvert with a rounded entrance at the inlet. The culvert will also have concrete lining along the full length of the pipe along the invert. Project No. 103-266 also includes Bridges No. 06796 and 06797. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06796 and 06797 are being processed under separate permits.

Site Information

Hammer Brook has a drainage area of 0.73 square mile. The watercourse lies within the Yantic River Regional Basin No. 3900 and in the Thames River Major Basin No. 3. The watershed is located in the western portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural fields (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map number 09011C0211G (Panel 211 of 554), New London County, Connecticut (effective date July 18, 2011), the area of the crossing is not within a mapped FEMA floodplain. Upstream of Hammer Brook, the area is located in a 500-year floodplain, within Flood Zone X. Downstream of the crossing, Hammer Brook flows into Norwichtown Brook. This area is mapped as FEMA Flood Zone A, a Special Hazard Area.

Study Area

Bridge No. 06795 culvert allows I-395 northbound and southbound to cross Hammer Brook. Land use in the vicinity of the Site includes transportation (roadway), forest, commercial and residential properties. Cover on undeveloped land includes both forest land and scrub-shrub wetlands.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are adjacent to the Hammer Brook watercourse at the inlet and outlet of Bridge No. 06795. Hammer Brook flows west to east. The watercourse of Hammer Brook is riverine (R4SBC) with intermittent, seasonally flooded water in the streambed. The channel width varies with narrower sections in areas with rocky substrate. At the outlet, Hammer Brook acts as a tributary and joins Norwichtown Brook, which runs further south along the

I-395 northbound embankment through a series of culverts south of West Town Street and ultimately discharges into the Yantic River. The confluence between Hammer Brook and Norwichtown Brook is approximately 20 feet downstream of the bridge outlet. The wetlands within the project area contain muck soils, scrub-shrub wetland plant species, and broad-leaved deciduous plants. The wetland in the northern portion of the project area, adjacent to the inlet is a Freshwater Forested/Shrub Wetland (PSS1E). The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

The area adjacent to Hammer Brook upstream of the crossing includes dense brush dominated by Multiflora rose (*Rosa multiflora*). Other species present include Morrow's Honeysuckle (*Lonicera morrowii*), Garlic Mustard (*Alliaria petiolata*), Common Mullein (*Verbascum Thapsus*) and Carex spp. Downstream of the crossing has a tree canopy dominated by Red Maple (*Acer rubrum*) and American Beech (*Fagus grandifolia*). The area adjacent to the roadway includes trees and saplings of Eastern White Pine (*Pinus strobus*), Red Maple, as well as Japanese Barberry (*Berberis thunbergii*), and Asiatic Bittersweet (*Celastrus orbiculatus*).

Soils

Soils found within the project area mapped by the Natural Resource Conservation Service (NRCS) predominantly includes Udorthents-Urban Land complex (Map #306) and Urban Land (Map #307). The surrounding area adjacent to the project area at the inlet is Raypol Silt Loam (Map #12) and adjacent to the project area at the outlet is Rippowam Fine Sandy Loam (Map #102). The adjacent area has wetland soils present, which includes areas of mucky mineral and mucky-fine sandy loam soil.

Functions and Values

The primary wetland functions and values of Hammer Brook and wetlands in the project area are fisheries and wildlife habitat, flood flow alteration, and sediment/nutrient retention. The stream channel functions within the culvert are limited to fish and wildlife passage and flood flow alteration. The field environmental assessment was limited to observations made during wetland delineation. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest.

The proposed project will have limited effects on wetland function and values in the project area. The two critical issues with culvert lining are alteration of flood flows and impacts to fish passage. This project is designed to minimize changes to the existing conditions to the maximum extent practicable; however, the changes proposed will impact the flows and thus impair the fish passage. As a result of the impacts to fish passage, offsite mitigation has been included in this project which will restore fish passage to over 1.68 miles of natural stream habitat to native trout brook populations. The design process for this project also included hydraulic modeling of the proposed culvert lining. The hydraulic modeling analysis found that the 50-year water surface elevation will be 0.4 feet less than the existing water elevation. The proposed culvert rehabilitation involves changing the bottom of the culvert to be smooth lining; given the low gradient of the culvert, a slight increase of the stream flow velocity is anticipated. The project meets the design criteria for the CTDOT Drainage Manual for small structures. The proposed water surface elevations are not expected to adversely impact existing structures. The structure maintains approximately 9.8 feet of freeboard to the I-395 roadway in the modeled conditions for the 50-year discharge. Flood waters will continue to overtop the right overbank spillway and flood the nearby hotel parking lot; however, the proposed project is not expected to adversely impact existing structures as compared to existing conditions. The proposed rehabilitated culvert will result in a 11% decrease in flow over the spillway when

compared to the existing conditions. Inundation maps for the 50-year and 100-year storm have been attached to the applications. The hydraulic analysis showed no discernable difference between the existing and proposed 10-year and 25-year storm; therefore, inundation maps for those storm frequencies have been omitted.

Short-term effects as a result of construction activities are minimized by:

- Erosion and sedimentation control plan.
- Inclusion of a water handling plan.
- Minimizing work area in the watercourse and wetlands.
- Limiting areas of disturbance in uplands.
- Restoration of temporarily disturbed areas.

Regulatory Impacts

To gain access to the structure to perform the work, permanent access roads will be constructed at the upstream and downstream side of Bridge No. 06795. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction.

Construction access and water handling:

The project site will require the construction of permanent construction access roads to allow materials and heavy construction equipment to access the culvert. Access roads will be constructed at the upstream and downstream sides, which will require clearing and grubbing as well as some permanent impacts to wetlands. A sedimentation and erosion control system will be installed along the access roads and employed throughout all phases of construction. To minimize traffic impacts on I-395, the work zone adjacent to I-395 will be contained to the shoulder of both the northbound and southbound lanes. Off-peak temporary shoulder and/or lane closures may be used for equipment or construction personnel to enter and exit the access roads, as required. The lining and construction at the inlet and outlet of Bridge No. 06795 will require the installation of temporary water-handling-cofferdams and temporary dewatering of portions of Hammer Brook within the project area.

The construction is anticipated to take place in two stages. In Stage 1, a temporary water handling bypass pipe will be installed along one side of the entire length of the culvert and temporary water-handling cofferdams will be placed at the inlet and outlet of the structure. Water will be confined to the temporary bypass pipe. During this stage the entire pipe will be power-washed and voids filled. The water from the power-washing operations will be completely contained and pumped to a settling basin. Once the existing pipe is cleaned, half of the culvert invert to be lined with the proposed 4 inches of concrete in the dry. During Stage 1, the temporary water-handling cofferdams will allow for the proposed cut-off wall, wingwalls, and headwalls to be installed in the dry at the inlet and outlet. In Stage 2, the bypass pipe will be relocated to the other side of the culvert so that the remaining portion of the culvert invert may be lined. A preformed riprap scour hole will be placed at the culvert outlet to prevent additional scour. Salvaged natural streambed material will be regraded at the inlet to raise the streambed to the new culvert invert elevation. Once construction is completed the temporary water-handling equipment will be removed restoring flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatered groundwater to a temporary sedimentation basin located in an upland area. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. All temporarily disturbed areas will be restored at the completion of construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set.

The sedimentation and erosion control system shall be removed upon permanent stabilization. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Cast-in-Place Concrete Lining:

The cast-in-place concrete lining will occur within Bridge No. 06795. The project proposes to install a 4 inch thick concrete lining along the bottom invert of the culvert. The lining will result in minor changes in the existing conditions. The greatest concern for this lining is reducing the hydraulic capacity and altering flooding and hydraulic conditions at the culvert. The recommended lining will reduce the hydraulic opening of the crossing. The proposed water surface elevation will decrease by 0.4 feet as compared to existing conditions. As previously stated, the proposed water surface elevations are acceptable under the CTDOT Drainage Manual based on the freeboard of the roadway. Changes of the area flooded in a 50-year event (design storm) are negligible based on the changes to the water surface elevation and upstream topography.

Fish Passage:

The project includes feasible elements designed to minimize project impacts to fisheries while minimizing channel connectivity impacts from the cast-in-place concrete lining. The proposed design culvert will result in increased water velocities in the culvert and a raised elevation exacerbating shallow water depth. The proposed design will impact the existing fisheries in the area and Bridge No. 06795 will be impassable. Native brook trout will not be able to reach the 1.2 miles of stream habitat currently existing upstream of the structure. On-site mitigation alternatives were determined to be not possible due to a lack of a viable/feasible alternative that would not create backwater conditions or flood upstream private properties. Due to impacts to upstream fish passage, CTDEEP Fisheries Division proposed an offsite mitigation site. This offsite mitigation has been coordinated between CTDOT and CTDEEP Fisheries. The selected mitigation site is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed project will conserve the native brook trout population and improve existing conditions. The proposed mitigation location will provide channel connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both up and downstream of the structure. The proposed work involves the replacement of the existing perched, undersized culvert with a timber bridge on Del Reeves Road. This mitigation proposes to conserve the native brook trout population. The proposed mitigation is further outlined in the Memorandum of Agreement (MOA) between CTDOT and DEEP Fisheries attached to the regulatory permit applications.

Fisheries design elements include:

- Placement of a preformed riprap scour hole at the outlet and the placement of salvaged natural streambed material at the inlet which will raise the streambed to the new culvert invert elevation to ensure that the structure does not create a 'drop' barrier to fish movement.
- The restoration of disturbed areas.
- Offsite mitigation to offset the adverse impacts from the culvert lining.

Proposed Impacts:

The proposed project results in 1,900 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads, the placement of the preformed riprap scour hole at the outlet and associated channel grading, as well as the construction at the inlet and outlet of the

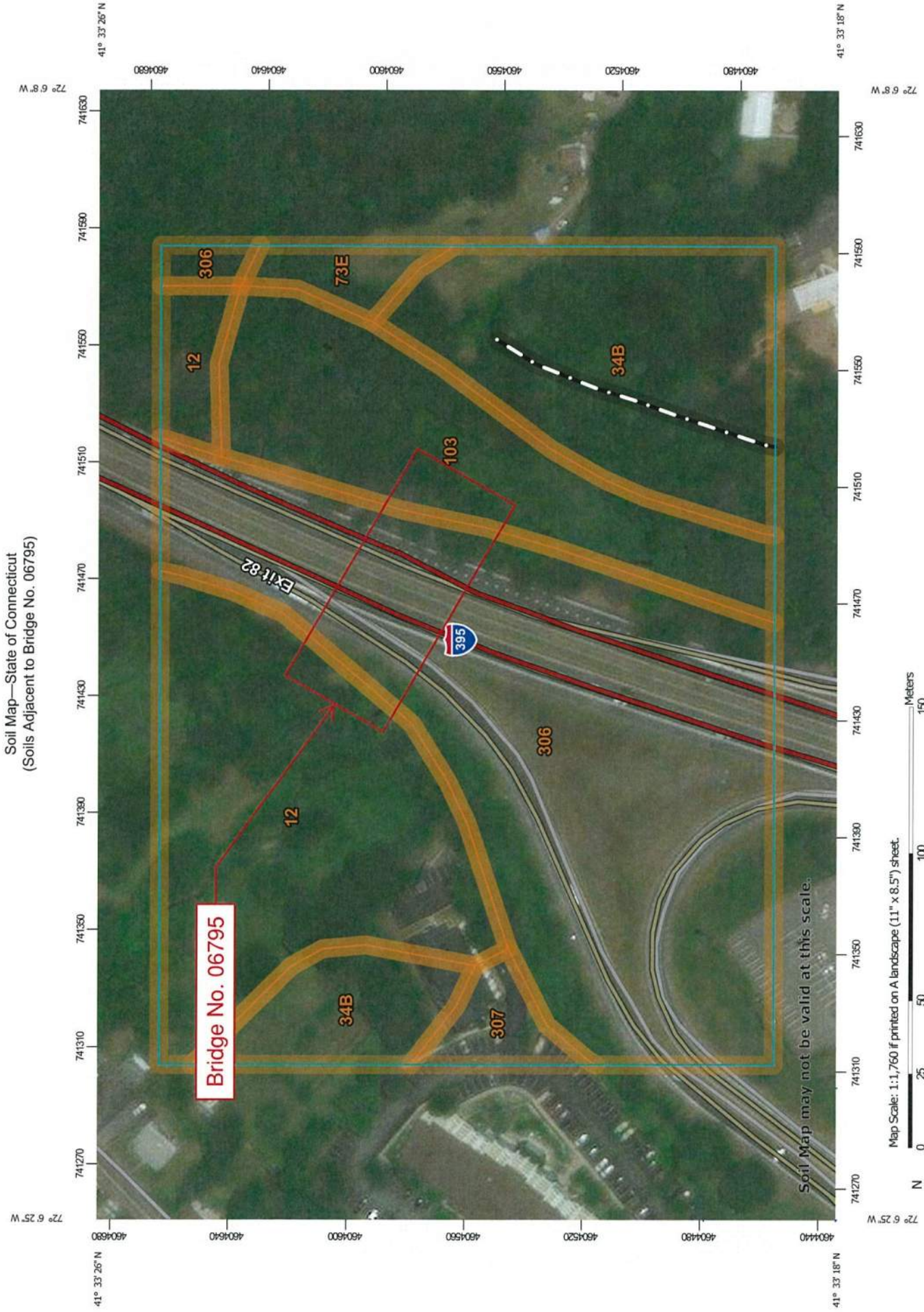
culvert. In order to place the material into the regulated areas, heavy machinery and equipment will be required. The project results in 1,400 square feet (0.03 acres) of permanent watercourse impacts. This number accounts for the lining of the culvert, the construction of the headwalls, wingwalls, cutoff walls at the inlet and outlet, and placement of riprap at the outlet and associated channel grading. Though this is described as a permanent impact, the watercourse will remain. The project will not result in permanent conversion of watercourse to upland. Temporary impacts include the area necessary for the water handling and tree clearing. Temporary impact to the wetlands is 1,600 square feet (0.04 acres) and to the watercourse is 400 square feet (0.01 acres). The total wetland and watercourse impact is 5,300 square feet (0.12 acres). Impacts are described within the table below:

Bridge No. 06795 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	1,600 sqft (0.04 ac)	400 sqft (0.01 ac)	2,000 sqft (0.05 ac)
Permanent	1,900 sqft (0.04 ac)	1,400 sqft (0.03 ac)	3,300 sqft (0.08 ac)
Total	3,500 sqft (0.08 ac)	1,800 sqft (0.04 ac)	5,300 sqft (0.12 ac)

Mitigation, Minimization, and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of proposed impacts. These design elements include, utilizing a water handling system for the flow of Hammer Brook during construction, placing riprap at the outlet of the culvert to prevent scour and to grade the streambed to the new invert elevation, as well as the construction of flared concrete wingwalls at the inlet and outlet, and a rounded entrance at the inlet of the culvert to improve the flow of the brook. Salvaged natural streambed material will be placed at the inlet of the culvert to grade the streambed to the new invert elevation. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers, and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed construction access roads and staging areas. Although the project counts areas within the culvert and at the inlet and outlet as permanent impact, those areas will remain watercourse following the completion of the project. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The proposed project could not incorporate any onsite fisheries mitigation due to potential flooding on to private property. As a result, offsite mitigation has been coordinated to offset adverse fisheries impacts as a result of the invert lining of Bridge No. 06795. The selected offsite mitigation is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed mitigation location will provide channel connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both upstream and downstream of the structure. The proposed work involves the replacement of the existing perched and undersized culvert with a timber bridge on Del Reeves Road. This mitigation proposes to conserve the native brook trout population. The MOA between CTDOT and DEEP Inland Fisheries has been attached to the regulatory permit applications. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
(Soils Adjacent to Bridge No. 06795)



MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Soils		Stony Spot
	Soil Map Unit Polygons		Very Stony Spot
	Soil Map Unit Lines		Wet Spot
	Soil Map Unit Points		Other
	Special Point Features		Special Line Features
	Blowout		
	Borrow Pit	Water Features	
	Clay Spot		Streams and Canals
	Closed Depression	Transportation	
	Gravel Pit		Rails
	Gravelly Spot		Interstate Highways
	Landfill		US Routes
	Lava Flow		Major Roads
	Marsh or swamp		Local Roads
	Mine or Quarry	Background	
	Miscellaneous Water		Aerial Photography
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 18, Dec 6, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 14, 2011—Aug 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12	Raypol silt loam	3.3	22.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	2.9	20.1%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	0.3	1.8%
103	Rippowam fine sandy loam	2.0	14.1%
306	Udorthents-Urban land complex	5.7	39.1%
307	Urban land	0.3	2.0%
Totals for Area of Interest		14.5	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06795 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): concave Slope (%): 4
 Subregion (LRR or MLRA): LRR R Lat: 41.5564 Long: -72.1048 Datum: NAD83
 Soil Map Unit Name: Raypol Silt Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
--	---

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply): <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
--	--

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>30</u> =Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____ =Total Cover		
Herb Stratum (Plot size: <u>50 ft</u>)			
1. <u>Onoclea sensibilis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>
2. <u>Symplocarpus foetidus</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>
3. <u>Cichorium intybus</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>25</u> =Total Cover		
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. <u>Berberis thunbergii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>2</u> =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>10</u>	x 1 = <u>10</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>30</u>	x 3 = <u>90</u>
FACU species <u>7</u>	x 4 = <u>28</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>57</u> (A)	<u>148</u> (B)
Prevalence Index = B/A = <u>2.60</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No _____

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06795 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): slope Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5564 Long: -72.1048 Datum: _____
 Soil Map Unit Name: Raypol Silt Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
--	---

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
---	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Acer rubrum</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>20</u>	<u>=Total Cover</u>	
Sapling/Shrub Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Rosa multiflora</i></u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>
2. <u><i>Lonicera morrowii</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>80</u>	<u>=Total Cover</u>	
Herb Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Alliaria petiolata</i></u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>10</u>	<u>=Total Cover</u>	
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Celastrus orbiculatus</i></u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>10</u>	<u>=Total Cover</u>	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	<u>0</u>	x 1 =	<u>0</u>
FACW species	<u>0</u>	x 2 =	<u>0</u>
FAC species	<u>20</u>	x 3 =	<u>60</u>
FACU species	<u>90</u>	x 4 =	<u>360</u>
UPL species	<u>10</u>	x 5 =	<u>50</u>
Column Totals:	<u>120</u>	(A)	<u>470</u> (B)
Prevalence Index = B/A =		<u>3.92</u>	

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is $\leq 3.0^1$
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 4/6	100					Loamy/Clayey	
2-10	10YR 4/1	98	10YR 4/2	2	C	M	Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Dark Surface (S7)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: _____		
Depth (inches): _____		

Remarks:

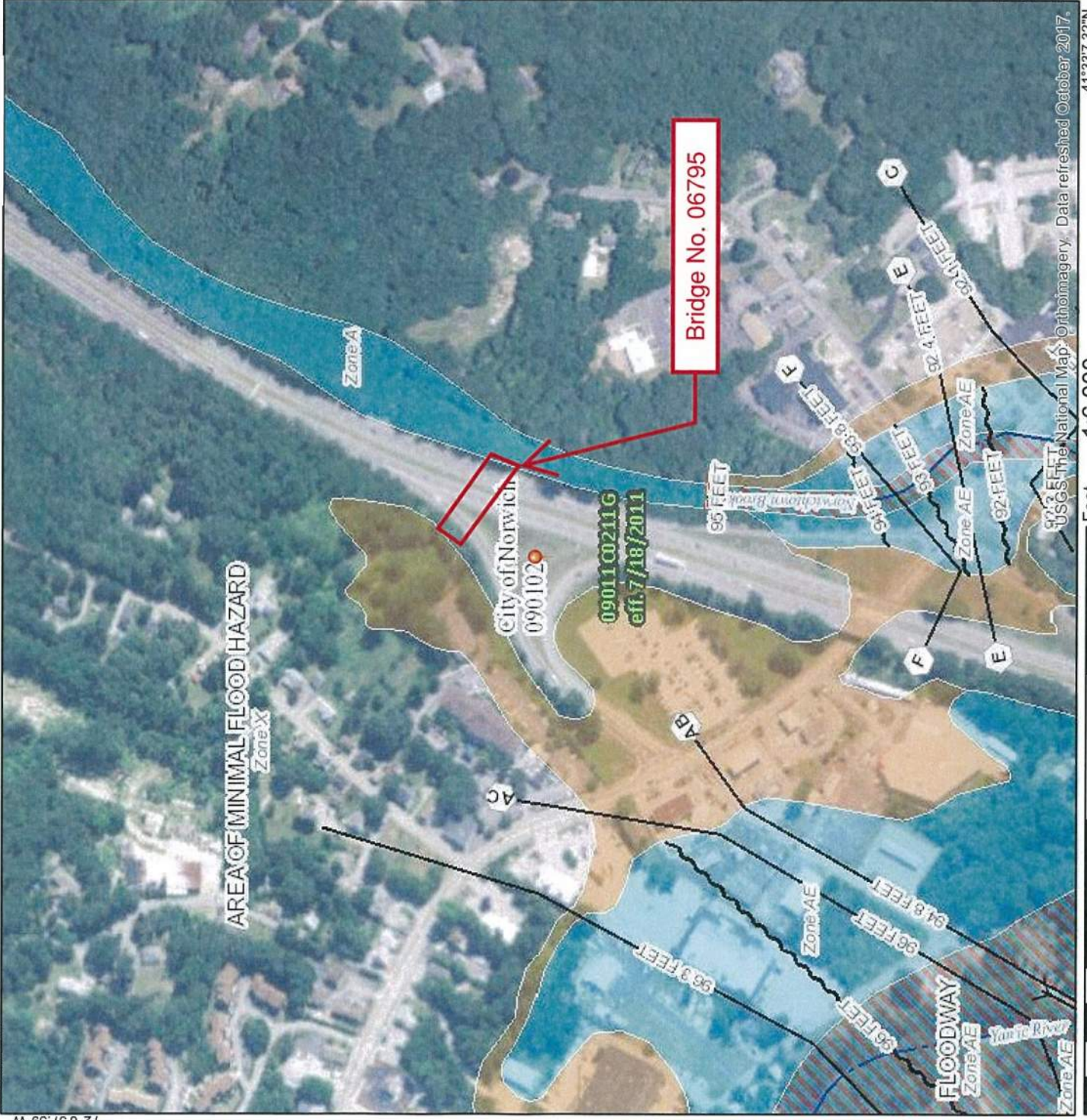
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Attachment E: FEMA FIRMette and Inundation Maps

National Flood Hazard Layer FIRMette



41°33'34.24"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE)
Zone A, V, S199
- With BFE or Depth
Zone AE, AD, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile (Zone X)
- Future Conditions 1% Annual Chance Flood Hazard (Zone X)
- Area with Reduced Flood Risk due to Levee. See Notes. (Zone X)
- Area with Flood Risk due to Levee (Zone D)

OTHER AREAS

- Area of Minimal Flood Hazard (Zone X)
- Effective LOMRs
- Area of Undetermined Flood Hazard (Zone X)

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

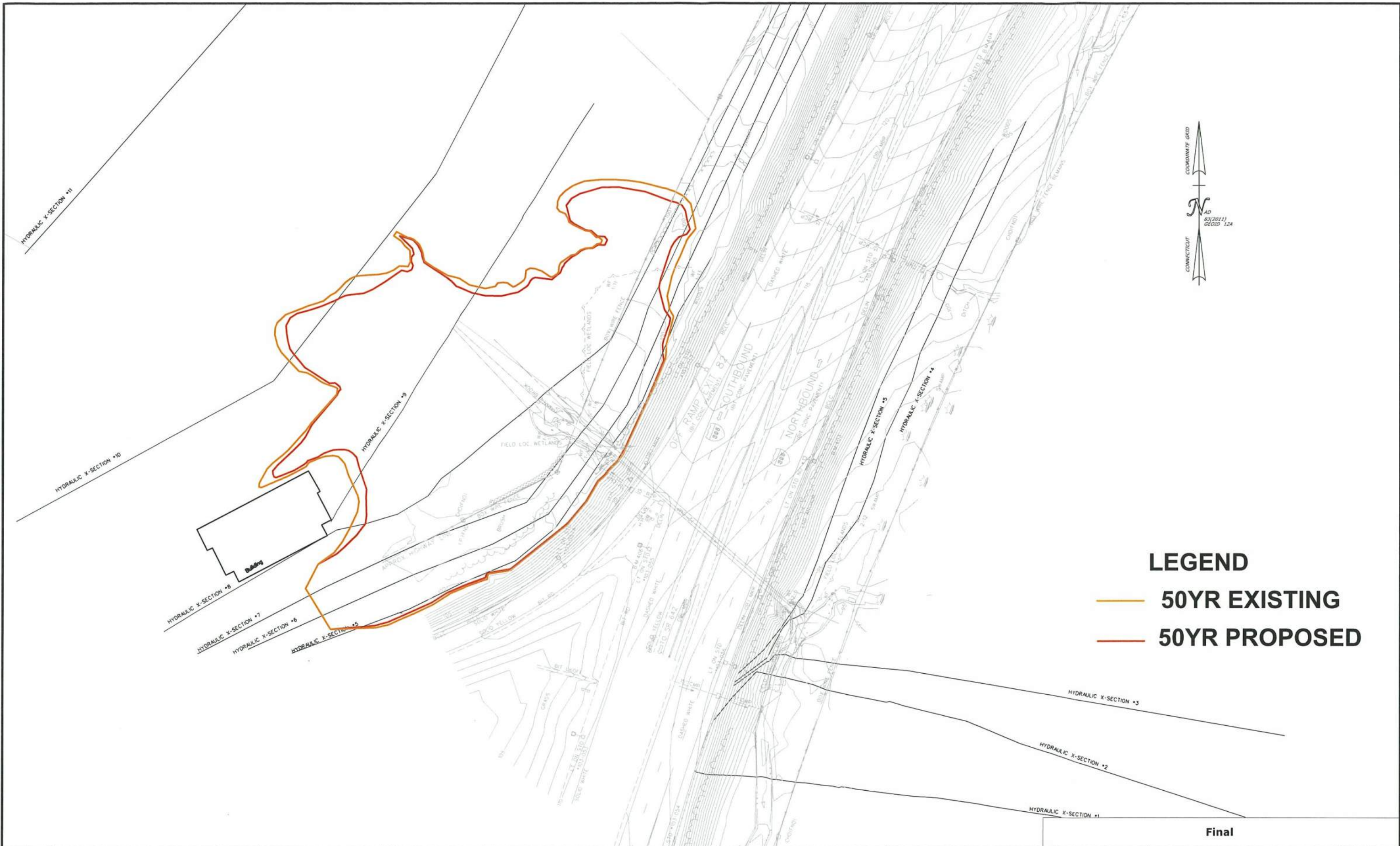
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/12/2018 at 10:07:08 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



LEGEND
 — 50YR EXISTING
 — 50YR PROPOSED

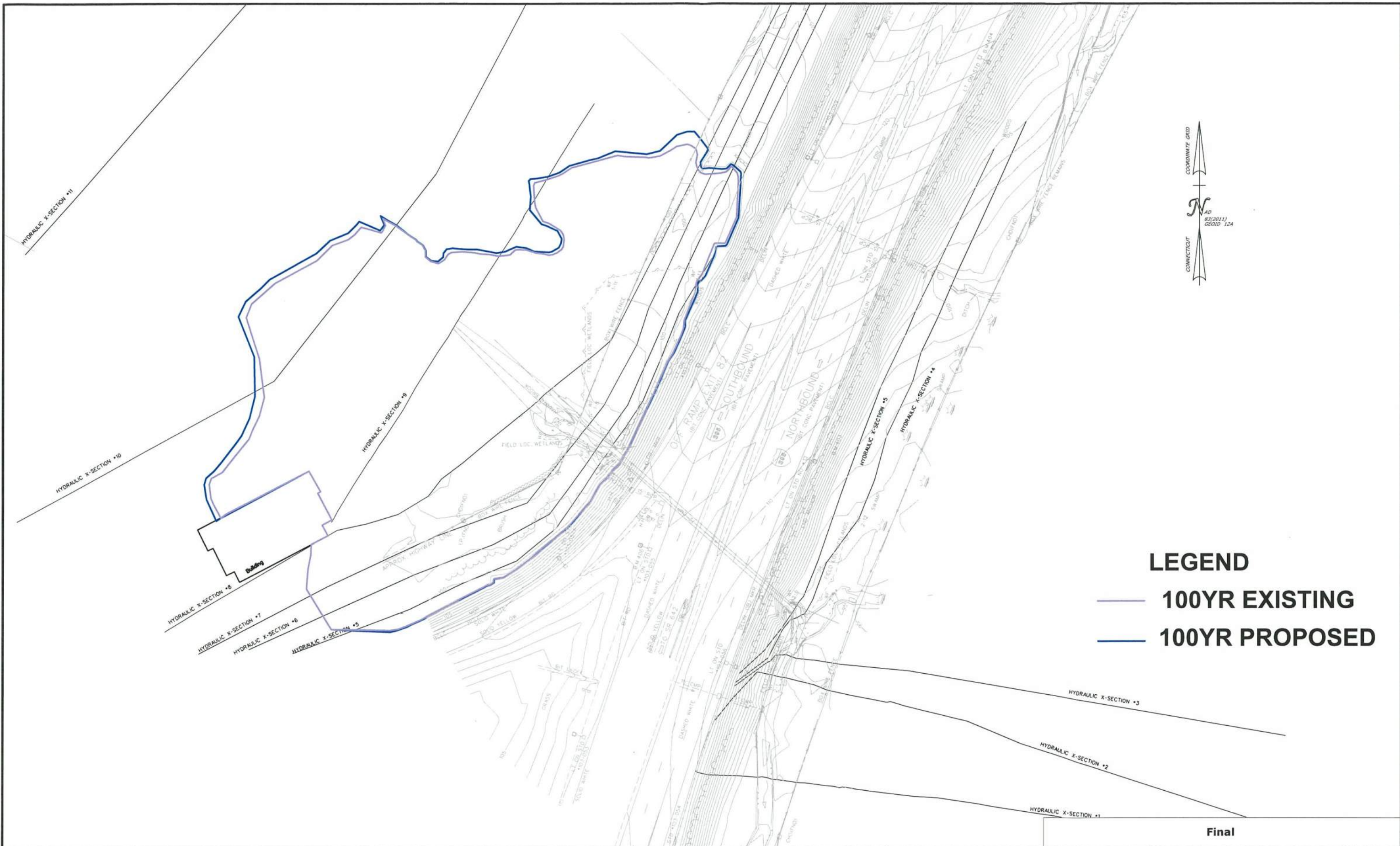
Final

REV. DATE REVISION DESCRIPTION SHEET NO.		Plotted Date: 12/19/2018	DESIGNER/DRAFTER: JMM CHECKED BY:	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: CME ASSOCIATES, INC. 33 Wilbur Cross Way, Mansfield, CT 06268 101 East River Drive, East Hartford, CT 06108 1 Tara Blvd, Nashua, NH 03062 888-291-3227 www.cmeengineering.com	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06795 I-395 over Hammer brook	TOWN: Norwich DRAWING TITLE: INUNDATION MAPPING 50-YR EVENT	PROJECT NO. 103-266 DRAWING NO. IN-50YR SHEET NO. 1
--	--	--------------------------	--	--	--	---	--	---

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

SCALE IN FEET
 0 40 80
 SCALE 1"=40'

Filename: ...106795 Inundation Mapping_SETUP.dgn



LEGEND

- 100YR EXISTING
- 100YR PROPOSED

Final

REV.	DATE	REVISION DESCRIPTION	SHEET NO.
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Plotted Date: 12/19/2018

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

DESIGNER/DRAFTER:
JMM

CHECKED BY:

SCALE IN FEET

0 40 80

SCALE 1" = 40'

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: ...106795 Inundation Mapping_SETUP.dgn

SIGNATURE/BLOCK:

CME ASSOCIATES, INC.
 33 Wilbur Cross Way, Mansfield, CT 06268
 101 East River Drive, East Hartford, CT 06108
 1 Tara Blvd, Nashua, NH 03062
 888-291-3227 | www.cmeengineering.com

PROJECT TITLE:

**REHABILITATION OF
BRIDGE NO. 06795
I-395 over Hammer brook**

TOWN: **Norwich**

DRAWING TITLE:
**INUNDATION MAPPING
100-YR EVENT**

PROJECT NO. **103-266**

DRAWING NO. **IN-100YR**

SHEET NO. **1**

Attachment F: Hydraulic and Drainage Report (Submitted on CD)

Attachment G: Project Area Photos



Aerial Photo of Bridge No. 06795, Google Images



Downstream Face of Culvert, Bridge No. 06795



Upstream Face of the
Culvert, Bridge No. 06795



Roadway near the exit 14
shoulder facing I-395 southbound
over Bridge No. 06795

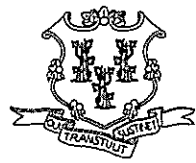


Downstream from Bridge No. 06795, Hammer Brook flowing from the outlet to the braided channel of Norwichtown Brook

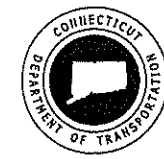


Hammer Brook upstream of Bridge No. 06795

Attachment H: CTDEEP Fisheries Approval and Memorandum of Agreement (MOA)



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

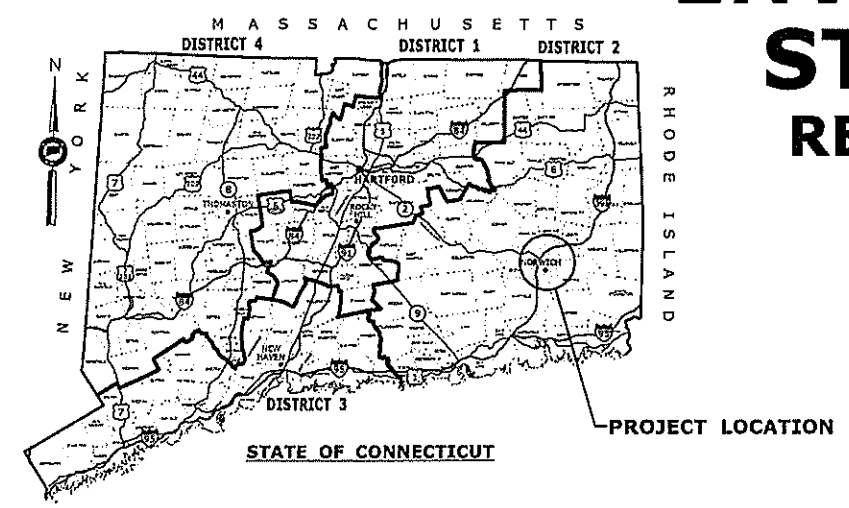
STATE PROJECT NO. 103-266

REHABILITATION OF BRIDGE No. 06795

I-395 OVER HAMMER BROOK,

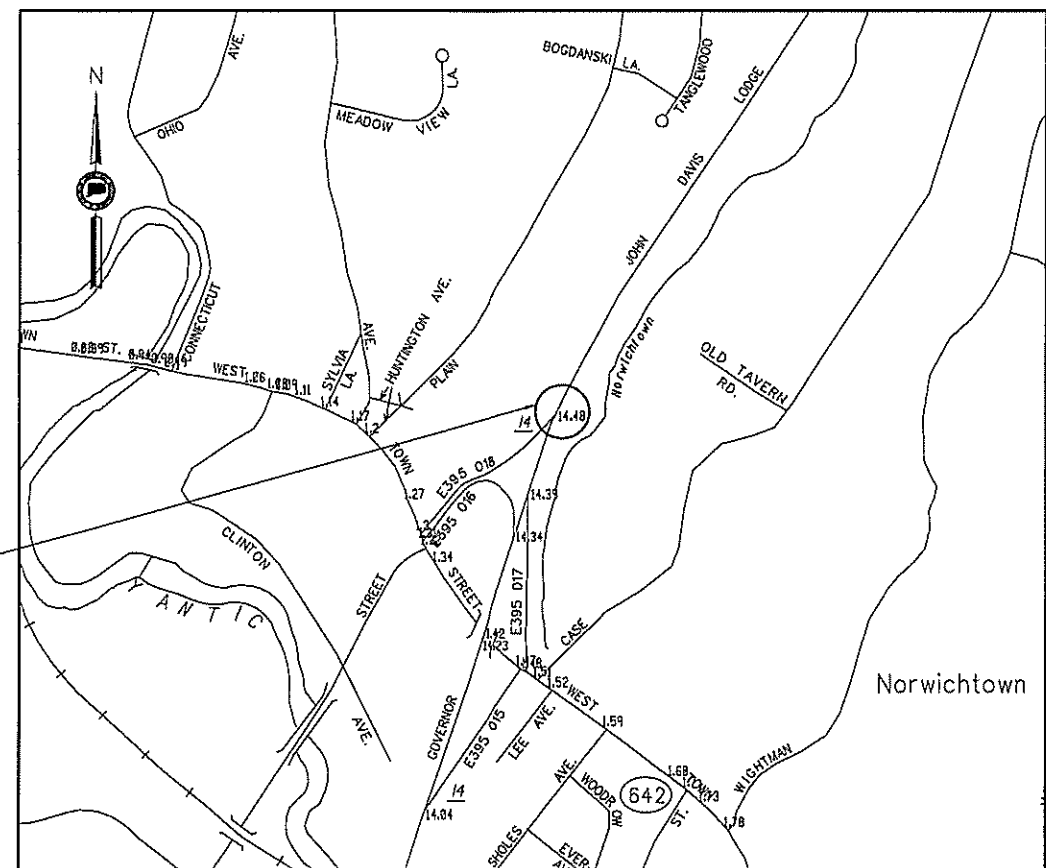
(SITE No. 1)

IN THE CITY OF NORWICH



Brian
Murphy

Digitally signed
by Brian Murphy
Date: 2019.05.30
09:26:28 -04'00'



LOCATION PLAN
SCALE: 1" = 500'

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06795 TITLE SHEET
PMT-02	BR. NO. 06795 GENERAL SITE PLAN
PMT-03	BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06795 CROSS-SECTIONS
PMT-05	BR. NO. 06795 100-YEAR FLOOD IMPACT PLAN
PMT-06	BR. NO. 06795 ELEV. & SECTION PLAN
PMT-07	BR. NO. 06795 STAGING AND WATER HANDLING PLAN
PMT-08	BR. NO. 06795 PERMIT PLANTING PLAN

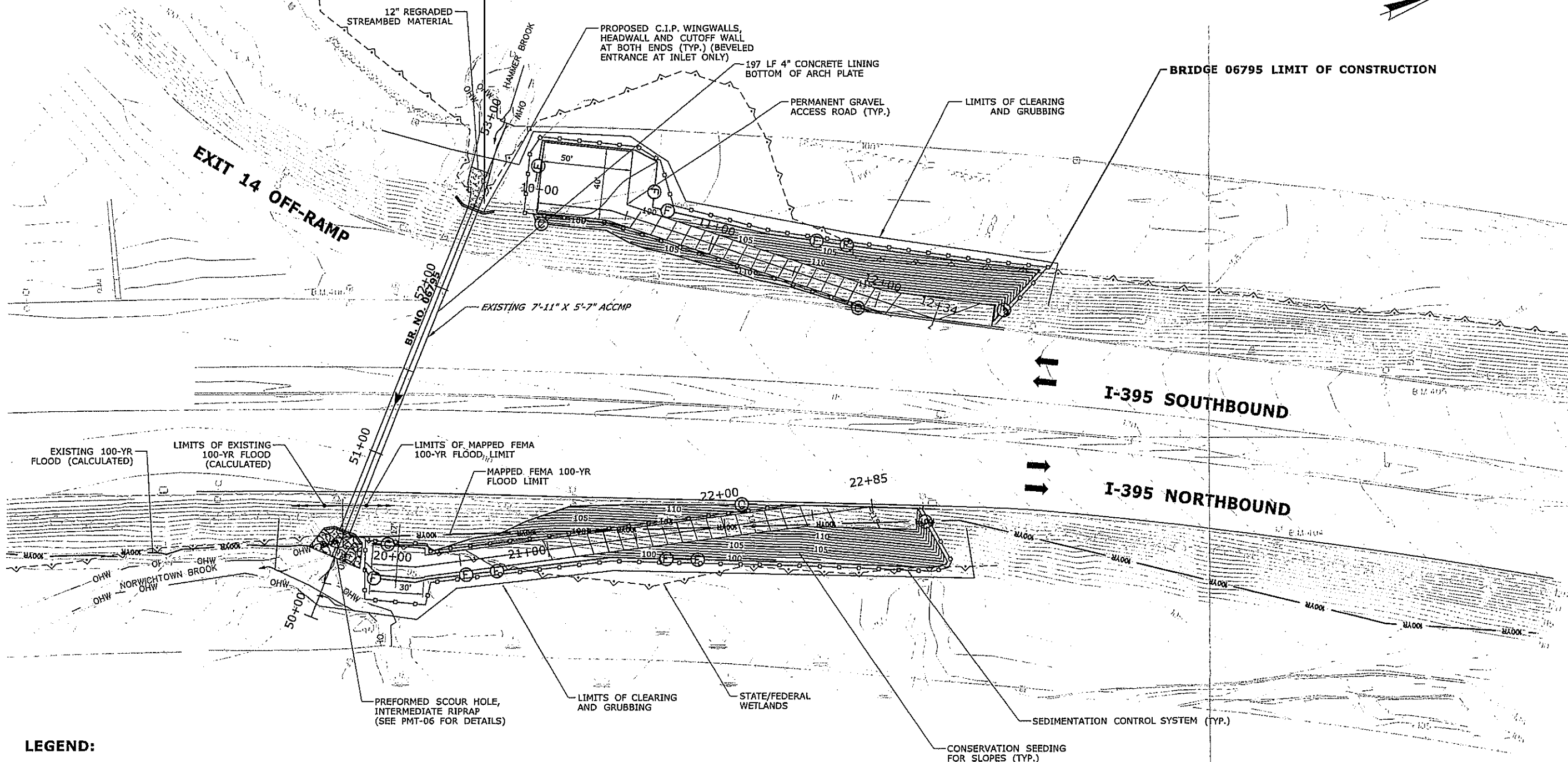
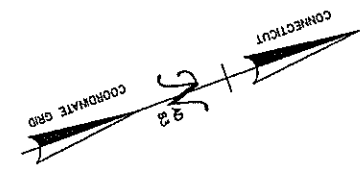
LOUIS BERGER
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Robert Lin
2019.04.10
10:12:20-04'00'

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/9/2019

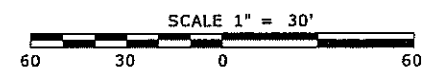
<p>DESIGNER/DRAFTER: JPM CHECKED BY: - SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>LOUIS BERGER 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWNSHIP: NORWICH</p> <p>DRAWING TITLE: BR. NO. 06795 TITLE SHEET</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-01</p> <p>SHEET NO.</p>
<p>REV. DATE REVISION DESCRIPTION SHEET NO. Potted Date: 4/9/2019</p>	<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>				

BEGIN STATE PROJECT NO. 103-266
 BRIDGE 06795 LIMIT OF CONSTRUCTION
 STA. 10+00



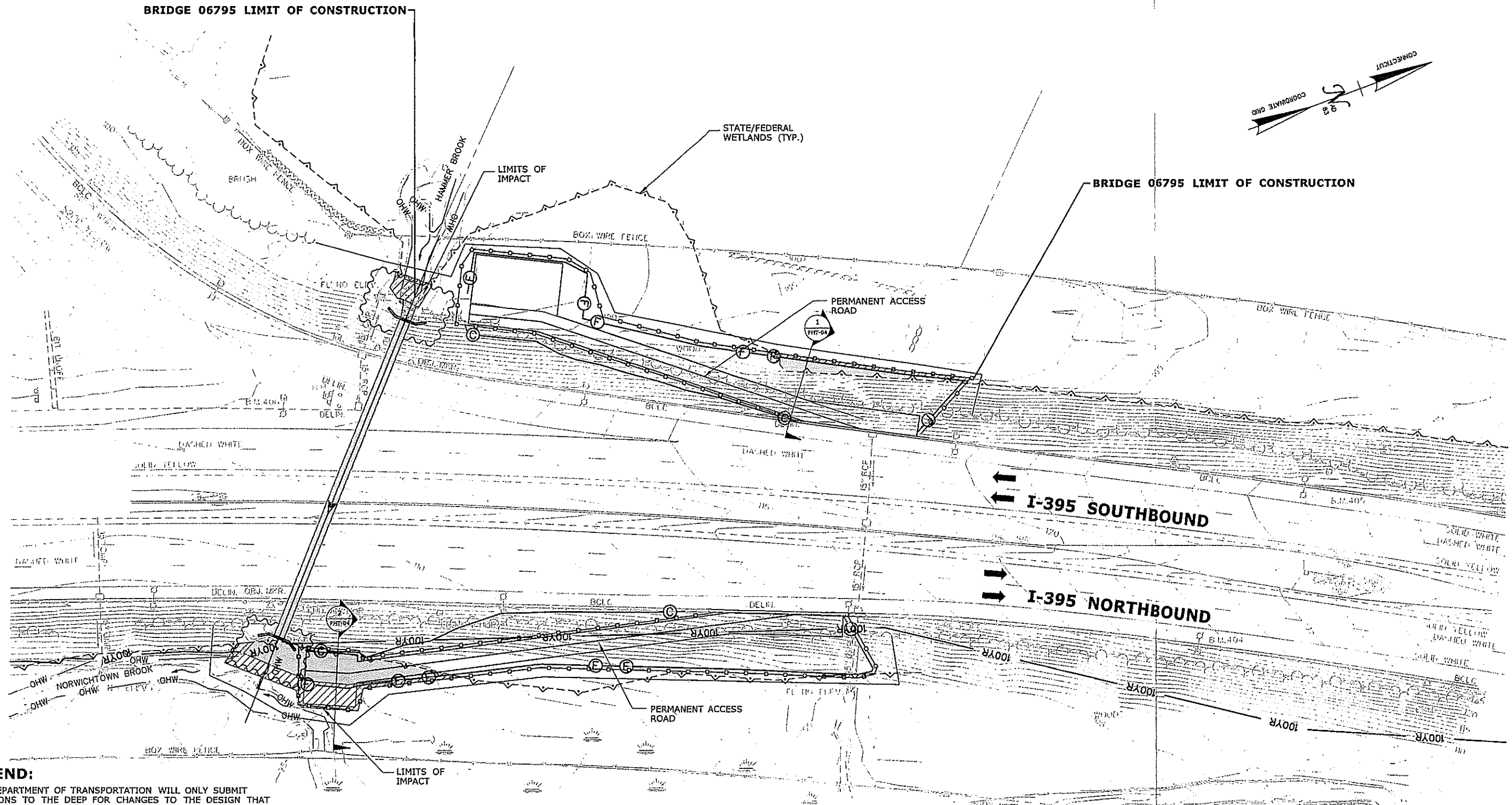
LEGEND:

- 100YR - MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW - ORDINARY HIGH WATER
- - - - STATE/FEDERAL WETLANDS
- o - o - SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 4/9/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: MAM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: Louis Berger	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWNSHIP: NORWICH	PROJECT NO. 103-266
CHECKED BY: MJM	SCALE AS NOTED	2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK		DRAWING TITLE: BR. NO. 06795 GENERAL SITE PLAN	DRAWING NO. PMT-02		
REV. DATE REVISION DESCRIPTION SHEET NO.	Plotted Date: 4/9/2019	Filename: ...UHW_MSH_0103-0266.Br 06795_RDP_PLN-01.DGN.dgn			SHEET NO.		



LEGEND:

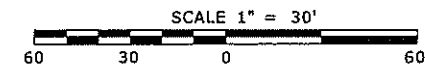
THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- PERMANENT IMPACT
- MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

NOTES:

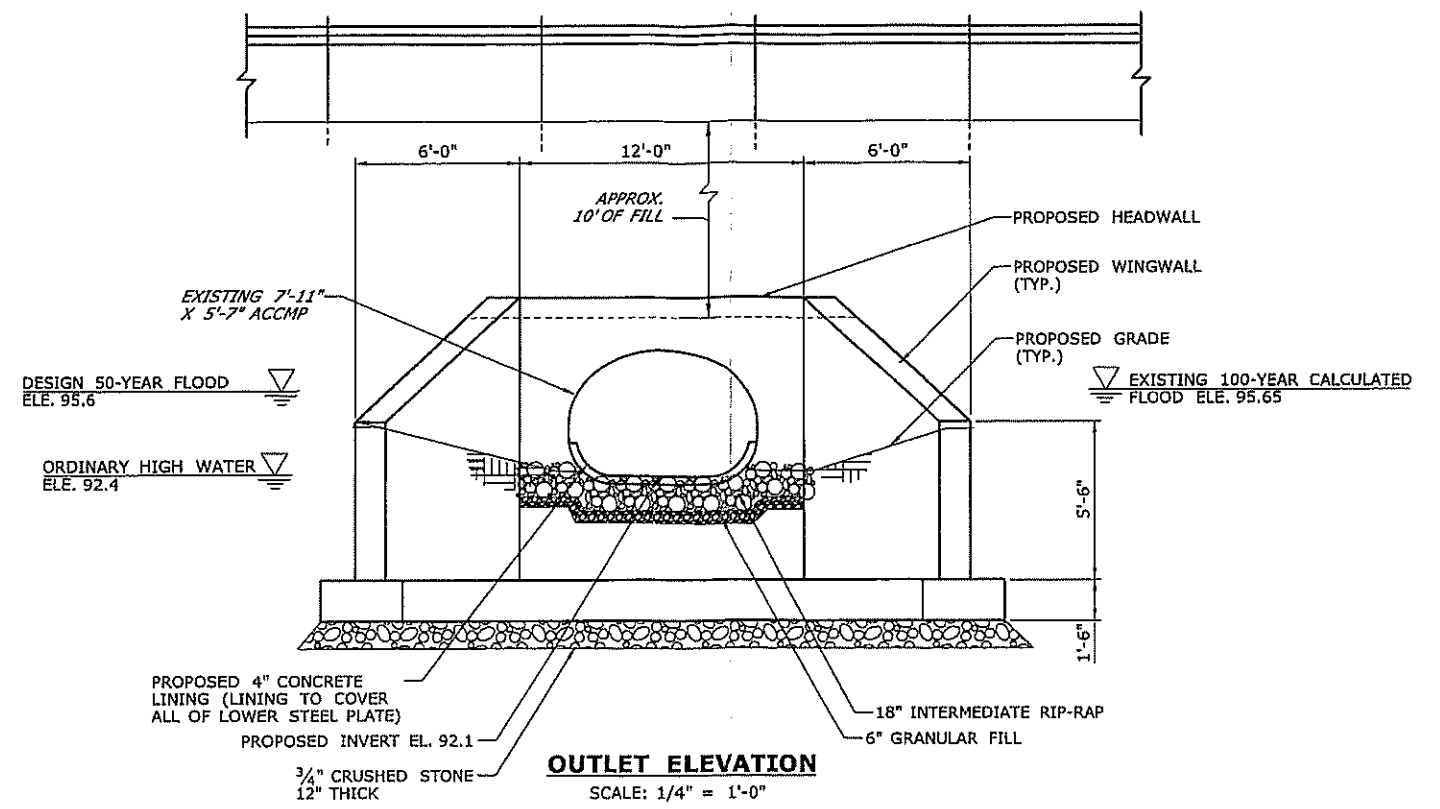
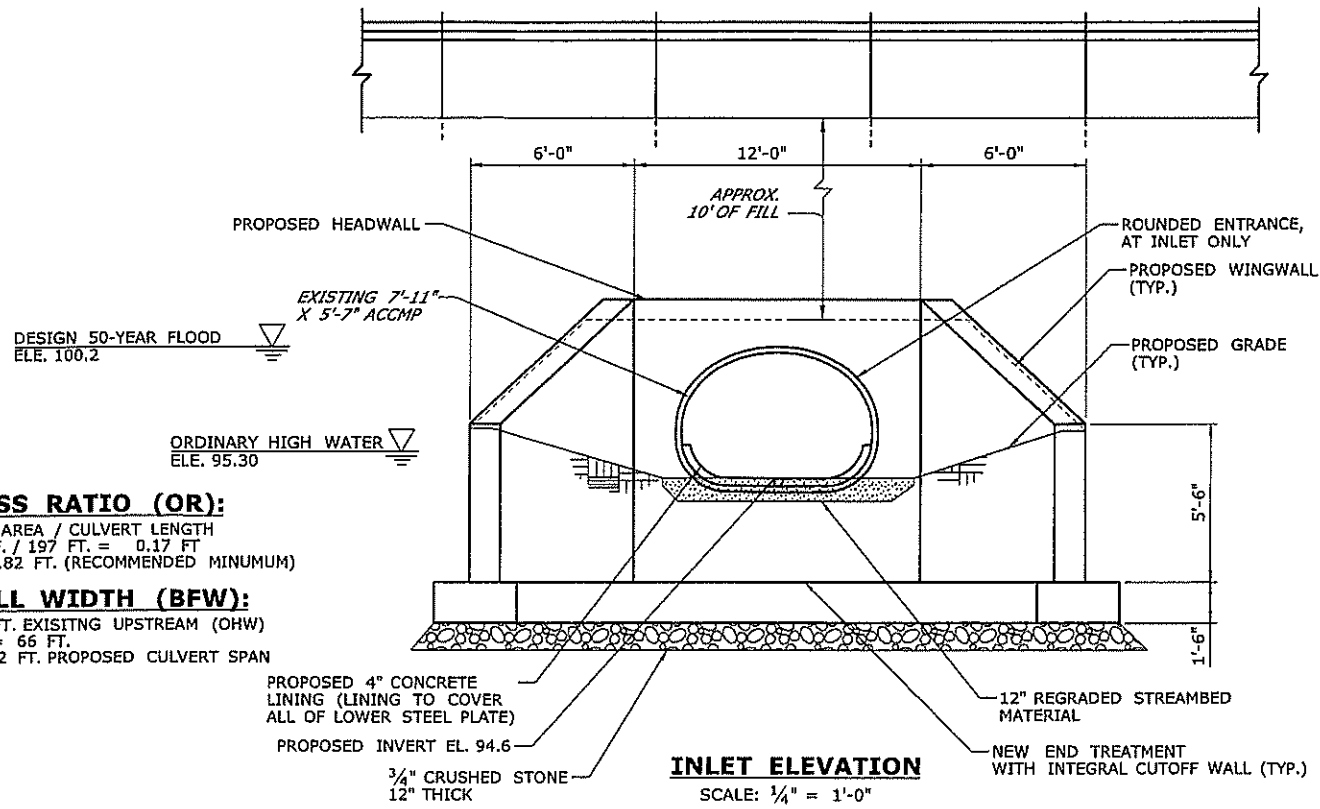
1. CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE.
2. ALL DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

WETLAND IMPACT TABLE			
WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS 1	1800 S.F. (0.04 AC.)	1400 S.F. (0.03 AC.)	3200 S.F. (0.07 AC.)
TEMPORARY IMPACTS 1	1200 S.F. (0.03 AC.)	400 S.F. (0.01 AC.)	1600 S.F. (0.04 AC.)
TOTAL IMPACTS	3000 S.F. (0.07 AC.)	1800 S.F. (0.04 AC.)	4800 S.F. (0.10 AC.)



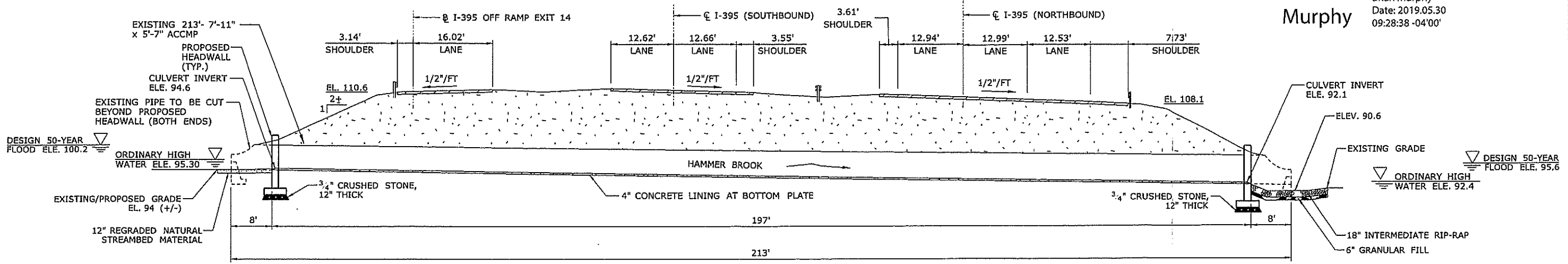
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/9/2019

DESIGNER/DRAFTER: MAM	CHECKED BY: MAM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		SIGNATURE/ BLOCK: Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-03 SHEET NO.
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	SCALE AS NOTED	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	NORWICH	103-266 PMT-03
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 4/9/2019			Filename: ...\\HW_MSH_0103-0266.Br 06795_WIP_PLN-01.DGN.dgn				

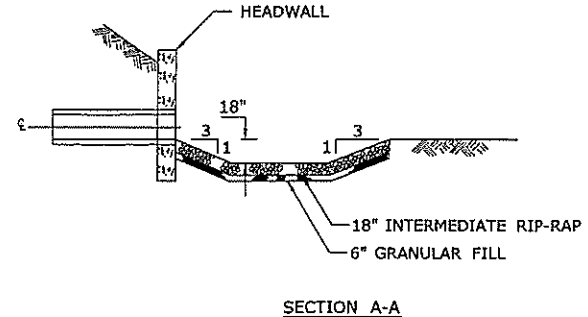
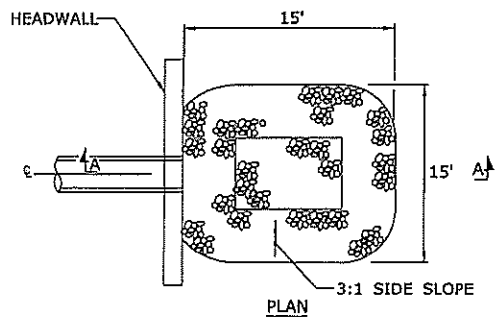


OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 34 S.F. / 197 FT. = 0.17 FT
 0.17 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):
 BFW = 55 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 66 FT.
 66 FT. > 7.92 FT. PROPOSED CULVERT SPAN



Brian Murphy
 Digitally signed by Brian Murphy
 Date: 2019.05.30 09:28:38 -04'00'



PREFORMED SCOUR HOLE
 N.T.S.

PROPOSED LONGITUDINAL SECTION (LOOKING NORTH)
 SCALE: 1" = 10'

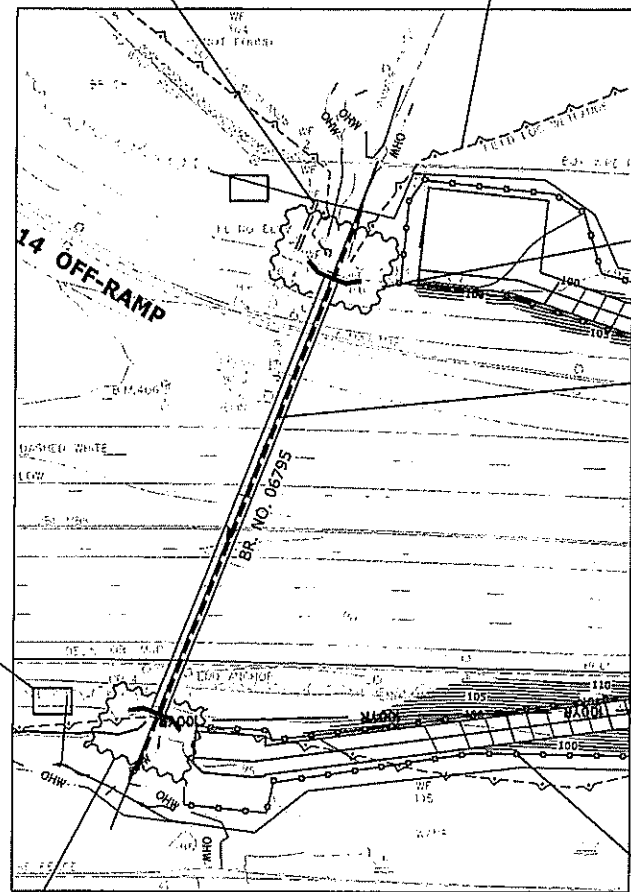
- NATIVE STREAMBED MATERIAL NOTES**
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PARTIAL CULVERT REMOVAL AND NEW END TREATMENT INSTALLATION SHALL BE STOCKPILED AND THEN REPLACED AT THE INLET TO THE DEPTH SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER, AND IN ACCORDANCE WITH THE PERMIT DOCUMENTS.
 2. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.

HYDRAULIC DATA 06795	
DRAINAGE AREA	0.73 SQ MILES
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	305 CFS
AVERAGE DAILY FLOW ELEVATION	95.0
UPSTREAM DESIGN SURFACE WATER ELEVATION	100.2
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	95.6

ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 3/1/2019

DESIGNER/DRAFTER: MM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266
CHECKED BY: MJM					
SCALE AS NOTED	FILENAME: ...\SB_MSH_0103-0266_Br06795_ES_Plan.dgn	SIGNATURE/BLOCK:	SHEET NO.	SHEET NO.	SHEET NO.
REV. DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 3/1/2019		

12" TEMPORARY EXTENSION PIPE
STATE/FEDERAL WETLANDS (TYP.)



WATER-HANDLING COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL (TYP.) MIN. TOP OF COFFERDAM ELEV. 99.0
18" HDPE TEMPORARY WATER HANDLING BYPASS PIPE

TEMPORARY DEWATERING BASIN (APPROX. LOCATION) (TYP.)

WATER-HANDLING COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL MIN. TOP OF COFFERDAM ELEV. 94.5

STAGE - 1 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS ROADS.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY WATER-HANDLING FACILITIES, INCLUDING TEMPORARY WATER-HANDLING COFFERDAM AND TEMPORARY BYPASS PIPE. WATER HANDLING TO REMAIN THROUGH ALL STAGES.
5. POWER WASH INTERIOR OF PIPE AND FILL VOIDS (SEE NOTES).
6. EXCAVATE AND PUMP DRY. CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, HEADWALL AND HALF OF INVERT LINING.

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY BYPASS PIPE AS SHOWN DURING CONSTRUCTION OF THE NEW LINING AND END TREATMENTS.

EQUIPMENT SHALL NOT BE PERMITTED IN THE STREAM WHEN TEMPORARY BYPASS PIPE IS NOT IN PLACE WITHOUT APPROVAL FROM THE ENGINEER.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

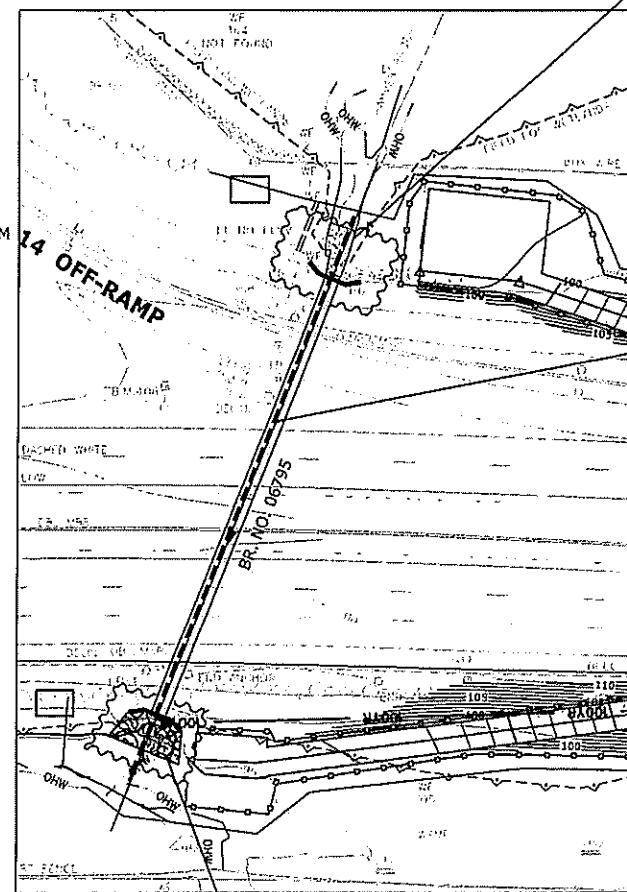
TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREA. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. NO ADDITIONAL REGULATORY IMPACTS WILL BE ALLOWED BEYOND THE AREAS SHOWN. ALL DISTURBED AREAS SHALL BE RESTORED.

WATER FROM POWER WASHING OPERATIONS MUST BE COMPLETELY CONTAINED AND PUMPED INTO A SETTLING BASIN.

TEMPORARY HYDRAULIC DATA 06795	
AVERAGE DAILY FLOW	1.4 CFS
AVERAGE SPRING FLOW	2.7 CFS
2-YEAR FREQUENCY DISCHARGE	30 CFS
TEMPORARY DESIGN DISCHARGE	30 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	98 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	92.5 FT

12" REGRADED STREAMBED MATERIAL

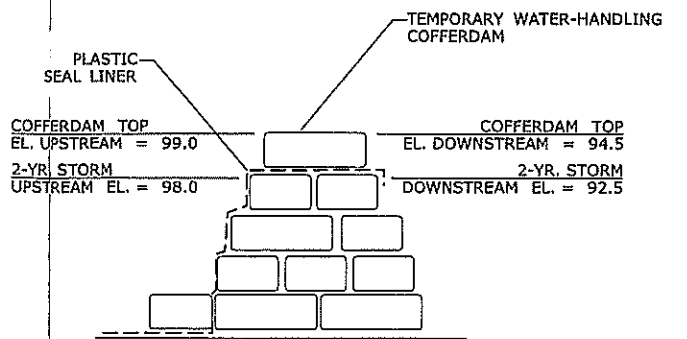


18" HDPE TEMPORARY WATER HANDLING BYPASS PIPE

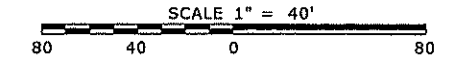
STAGE - 2 SUGGESTED SEQUENCE

1. RELOCATE TEMPORARY WATER HANDLING BYPASS PIPE.
2. CONSTRUCT OTHER HALF OF INVERT LINER.
3. INSTALL RIP-RAP PREFORMED SCOUR HOLE AT OUTLET.
4. REGRADE EXISTING NATURAL STREAMBED MATERIAL AT THE INLET TO NEW INVERT.
5. REMOVE TEMPORARY WATER HANDLING FACILITIES.
6. INSTALL CONSERVATION SEEDING AND PROPOSED PLANTINGS.
7. REMOVE EROSION AND SEDIMENTATION CONTROL UPON PERMANENT STABILIZATION.

INTERMEDIATE RIP-RAP



COFFERDAM TOP EL. UPSTREAM = 99.0
COFFERDAM TOP EL. DOWNSTREAM = 94.5
2-YR. STORM UPSTREAM EL. = 98.0
2-YR. STORM DOWNSTREAM EL. = 92.5



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/9/2019

DESIGNER/DRAFTER: MAM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH</p>	<p>PROJECT NO. 103-266</p>
CHECKED BY: MJM					
SCALE AS NOTED	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH</p>	<p>PROJECT NO. 103-266</p>
REV. DATE REVISION DESCRIPTION SHEET NO.	<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>DESIGNER/DRAFTER: MAM</p> <p>CHECKED BY: MJM</p> <p>SCALE AS NOTED</p>	<p>SIGNATURE/ BLOCK:</p>	<p>DRAWING TITLE: BR. NO. 06795 STAGING AND WATER HANDLING PLAN</p>	<p>DRAWING NO. PMT-07</p> <p>SHEET NO.</p>
Plotted Date: 4/9/2019	<p>FILENAME: ...\\HW.HSH.0103-0266.Br.06795.WHP.PLN-01.DGN.dgn</p>	<p>2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH</p>	<p>PROJECT NO. 103-266</p>

To be provided by Sponsoring Agency		
PS#	Core CT Contract #	PO#

**MEMORANDUM OF AGREEMENT
BETWEEN THE
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND
THE DEPARTMENT OF TRANSPORTATION**

This Memorandum of Agreement (MOA) is entered into by the Department of Energy and Environmental Protection (DEEP) and the Department of Transportation (DOT) for the purpose of undertaking a project of mutual interest pursuant to Section CGS 22a-41 in anticipation of a DEEP License being issued for Project 103-266.

1. **Duration:** The period of this MOA shall begin upon execution and shall expire when all conditions have been met but in any case no later than three years from the transfer of funds from DOT to DEEP.
2. **Title:** This project is entitled: *"Fisheries Mitigation – Br. No. 06795, I-395 over Hammer Brook, Norwich; State Project 103-266"*.
3. **Total Project Costs** for the period of this MOA shall not exceed **\$235,000**.
4. **Project Directors:** The following individuals are designated to serve as Project Directors (or Project Managers or Principal Investigators):

For the DOT

Andrew H. Davis
 Transportation Supervising Planner
 Office of Environmental Planning
 Department of Transportation
 2800 Berlin Turnpike
 Newington, CT 06131
 Email: andrew.h.davis@ct.gov
 Phone: (860)594-2157

For the DEEP

Brian D. Murphy
 Senior Fisheries Habitat Biologist
 DEEP – Bureau of Natural Resources
 Fisheries Division
 209 Hebron Road
 Marlborough, CT 06447
 Email: brian.murphy@ct.gov
 Phone: (860) 424-4142

5. **Business Contacts:** The following individuals are designated to serve as contacts for business matters:

For the DOT:

Kimberly C. Lesay
 Transportation Assistant Planning Director

 Department of Transportation
 2800 Berlin Turnpike
 PO Box 317546
 Newington, CT 06131
 email: Kimberly.Lesay@ct.gov
 Phone: 860-594-2931

For the DEEP:

Deidre Persson
 Fiscal/Administrative Assistant

 DEEP FSS – Financial Management Division
 79 Elm Street
 Hartford, CT 06106-5127
 email: deidre.persson@ct.gov
 Phone: (860) 424-3977
 Fax: (860) 424-4122

6. **General Supervision:** Primary responsibility for general supervision of all activities and compliance with all applicable laws and standards and the terms of this MOA rests with the DEEP.
7. **Description:** This MOA will cover work that will be conducted by DEEP for a fisheries project within the Meshomasic State Forest in East Hampton (hereinafter called project). A substandard culvert that conveys Mott Hill Brook under Del Reeves Road, located on DEEP State Forest Property has scoured at its outlet

resulting in perched conditions. This condition forms a barrier and blocks upstream fish passage for the native brook trout populations. The main project goal is to restore upstream fish passage and instream habitats for the wild brook trout population and provide stream connectivity to over 1.68 miles of upstream habitats.

Project objectives are: (1) remove an existing barrier to fish passage and replace it with a box culvert,(2) restore and stabilize instream and streambank habitats at and below the road crossing , and (3) monitoring of brook trout population response through two pre and two post project annual fish surveys.

The restoration project will be conducted by DEEP. DEEP will obtain all required state/federal permits for the project.

The selected restoration project has been chosen as off-site mitigation for DOT Project 103-266 which involves the repair of culvert #06795 with a smooth concrete bottom at Hammer Brook, Norwich. The project has been flagged as requiring mitigation due to the fact that the existing culvert provides fish passage but the proposed smooth concrete bottom repair of the culvert will prevent the passage of fish through the repaired culvert. The Meshomasic State Forest project has been discussed with DEEP Land and Water Reuse Division (LWRD) and LWRD staff are in agreement with the suitability of this project as adequate mitigation for Project 103-266. (See Appendix A)

8. **Project Location:** DOT Project 103-266 is located in Norwich; Bridge #06795 carries I-395 over Hammer Brook. The off-site mitigation project is located on State property within the boundary of Meshomasic State Forest in East Hampton.

9. **Deliverables:**

A. By the DOT-

1) DOT will secure funding to support the mitigation project (See Appendix B).

2) A transfer of funds from DOT to DEEP to reimburse DEEP costs for the restoration project will take place following the receipt of invoices for said work. Initial project design and engineering work is expected to occur in 2018 and the amount to be expended will be approximately \$38,726 which will be made immediately available to DEEP for design funds in Accordance with Appendix C and is not to exceed \$38,726. The remainder of the funding for construction, \$193,629, will be made available to DEEP once Project 103-266 construction funds are obligated, which is approximately scheduled for 8/14/2019. DEEP shall invoice the DOT for costs not to exceed \$235,000 and in accordance with the cost estimate in Appendix C. Costs above this amount may be considered for reimbursement but are subject to eligibility restrictions and available funds.

B. By the DEEP-

1) Construction machinery, equipment, and personnel to complete the box culvert work on Mott Hill Brook.

2) Provide summary report to DOT following schedule in Paragraph 11 below.

3) Upon completion of the work, DEEP will invoice for actual expenses incurred.

10. **Budget:** A total of up to \$235,000 will be provided by the DOT pursuant to the terms of the MOA. The project estimate given to DOT by DEEP for the cost of the work is \$232,355 (Refer to Appendix C for cost estimate).

11. **Schedule of Reports:**

A. **Project Completion Report:** Upon completion of the project, DEEP will provide a summary report of the completed activities to DOT once the post project annual fish survey is complete. Such summaries should be submitted to the DOT no later than three months following project completion of the final post project annual fish survey.

12. **Schedule of Activities:** Upon DOT's formal authorization to DEEP for construction activities to commence the project activities will be scheduled and completed by DEEP. Timing of the project is to be determined by DEEP but shall be completed as expeditiously as practical. Initial project design and engineering work is expected to occur in 2018 and the amount to be expended will be approximately \$38,726 which will be made immediately available to DEEP for design funds in Accordance with Appendix C and is not to exceed \$38,726. The remainder of the funding for construction, \$193,629, will be made available to DEEP once Project 103-266 construction funds are obligated, which is approximately scheduled for 8/14/2019. This obligation date is subject to change based on project 103-266 progression. If the obligation date is to change then DOT will notify DEEP of the date change. Invoicing and reimbursement for actual expenses will occur after work is completed but no later than December 31, 2021.

13. **Cancellation:** Either party may propose to terminate this MOA. The party proposing termination must notify the other party of the MOA explaining the reasons for termination and afford at least ninety (90) days to consult and seek alternatives to termination. Should such consultation fail, the MOA will be terminated. In the event that the DOT is the proponent of the cancellation after the transfer of the funds has been completed, or should DOT project 103-266 not proceed, the completed mitigation work will be transferrable to a future DOT project requiring off-site mitigation. In the event DEEP is the proponent of the cancellation then the requirement for off-site mitigation for Project 103-266 shall still be deemed satisfied unless otherwise agreed in writing.

14. **Extensions/Amendments:** This MOA may be modified by the mutual agreement in writing of the DOT and the DEEP. Revisions may include but not be limited to:

- a. timing of the restoration work,
- b. any other agreement revisions determined material by either agency.

15. **Use of Funds:** The DEEP agrees to limit expenses and efforts to the quoted scope and cost estimate solely for the purpose of the project work at Mott Hill Brook, Meshomasic State Forest. The DEEP agrees to submit all invoices pursuant to this MOA prior to December 31, 2021.

16. **CFDA Number is NA.** (Include if federal funding is used) 100% State Funding

17. **Approved by:**

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

DEPARTMENT OF TRANSPORTATION

APPROVED

APPROVED

Date: May 31, 2018

Date: May 17, 2018

By: Susan Whalen
Authorized Signature

By: Kimberly Lesauy
Authorized Signature

Chartfield Distributions For Sponsor Agency use only.

Amount	Dept	Fund	SID	Program	Project	Activity	Bud Ref	Agency CF 1	Agency CF 2	Account
					DEP_NONPROJECT					

From: Murphy, Brian
Sent: Tuesday, June 27, 2017 8:46 AM
To: Gilmore, Robert
Subject: RE: Mitigation for Project 103-266 Hammer Brook, Norwich

APPENDIX A : LWRD APPROVAL

From: Gilmore, Robert
Sent: Tuesday, June 27, 2017 8:29 AM
To: Murphy, Brian
Cc: Davis, Andrew H
Subject: RE: Mitigation for Project 103-266 Hammer Brook, Norwich

Brian – I support this mitigation proposal. It's a good project.

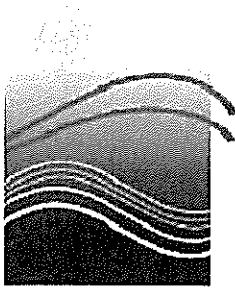
From: Murphy, Brian
Sent: Monday, June 26, 2017 10:20 AM
To: Gilmore, Robert <Robert.Gilmore@ct.gov>
Cc: Gephard, Steve <Steve.Gephard@ct.gov>
Subject: Mitigation for Project 103-266 Hammer Brook, Norwich

Hi Bob,

RE: Hammer Brook, Norwich (RTE 395):

The DOT is using a concrete lining to rehabilitate this culvert. For various property and flooding issues, we cannot modify the culvert to maintain existing fish passage. Since we will lose fish passage at this site due to the lining, I have asked for fish resource mitigation. There is a perched culvert on Del Reeves Road, Mott Hill Brook in Meshomasic State Forest, East Hampton that blocks fish passage for a native brook trout population that I would like to propose as suitable mitigation. In the past, I tried unsuccessfully to obtain an Eastern Brook Trout Joint Venture grant for this project, see attached grant proposal for details. In essence, I want to replace the perched, undersized culvert with a timber bridge that will provide fish passage, restore the channel and increase the openness ratio. Andy Davis appears to be on board with this project as mitigation however he would like a regulatory opinion as to the suitability of this project as mitigation since it would be tied to permit approval. Can you take a look at the original concept proposal and let me know your initial thoughts. We can bring it up at the monthly meeting at DOT if necessary. Thanks.

Brian D. Murphy, Senior Fisheries Habitat Biologist
Fisheries Division
Habitat Conservation and Enhancement Program
Connecticut Department of Energy and Environmental Protection
Eastern District Headquarters
209 Hebron Road
Marlborough, CT 06447
P: 860.295-9523 | F: 860.295.8175 | brian.murphy@ct.gov



Connecticut Department of

ENERGY &
ENVIRONMENTAL
P R O T E C T I O N

www.ct.gov/deep

*Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.*

Attachment B

CTDOT Project 103-266 KCL
Fisheries Mitigation for Rehabilitation of Bridge 06795
Interstate 395 over Hammer Brook, Norwich

Bridge Number 06795 carries I-395 over Hammer Brook in the Town of Norwich. The existing structure is a 96" x 66" ACCMP which currently displays signs of corrosion, section loss, and perforations, and requires rehabilitation. The structure is currently rated a 4. The structure lies adjacent the confluence with Norwichtown Brook and lies within the Yantic River subregional basin. As part of project coordination, bridge 06795 and surrounding tributaries were surveyed by CTDEEP Fisheries Division and were found to provide for fish passage in the existing condition except for during extreme low flows. These waterways were found to support native fish populations, including native brook trout, which are listed as a Species of Greatest Conservation Need in Connecticut. A full structure replacement was investigated but was dismissed as it resulted in additional project cost, construction duration and would require at least a partial closure of I-395 during construction. The existing structure is characterized by hydraulic inadequacies; therefore, slip-lining was dismissed as well. The rehabilitation of the structure will consist of repairing the bottom portion of the culvert with concrete. The concrete will be smooth as to not exacerbate flooding conditions. Private property upstream currently experiences flooding.

Coordination with CTDEEP regarding permitting needs for the project were ongoing throughout 2016 and various rehabilitation strategies for the structure as well as mitigation strategies were explored, including taking different action within the structure, paired with berms to protect adjacent properties from the increased flooding. However, the berms were found to also increase flooding as well as result in additional property and regulated resource impacts for the physical berm itself. Typically for projects of this type, measures can be taken within or around the pipe (baffles, blocks, weirs) to slow velocities associated with the rehabilitation efforts, however the hydraulic conditions on site prevent these measures from being able to be implemented without creating additional adverse flooding conditions.

Hydraulic analysis conducted for the proposed project rehabilitation reveal the smooth culvert bottom will increase water velocities and will also raise the bottom elevation of the structure, rendering the structure impassable for fish. The loss of passage at bridge 06795 will prevent fish from being able to reach 1.2 miles of stream habitat currently existing upstream of the structure. CTDEEP's Fisheries Division therefore requested mitigation to offset this loss of available habitat.

Since mitigation is not feasible on site, CTDEEP and the Department investigated other mitigation options. Over the summer of 2017, CTDEEP Fisheries Division investigated various sites to find a location that would provide additional fish passage for the same species that are impacted due to the rehabilitation at structure 06795. CTDEEP identified the replacement of a substandard 30" concrete culvert which conveys Del Reeves Road over Mott Hill Brook in East Hampton as acceptable mitigation. The culvert is located within the Meshomasic State Forest property owned by CTDEEP. The culvert is currently undersized and results in roadway overtopping and erosion. A large scour pool has formed downstream of the culvert which has resulted in a perched outlet condition, which prevents fish passage for native brook trout present in the brook. Mott Hill Brook is a tributary to Cold Brook and is located within the Connecticut River Basin. The proposed structure at this location would be a pre-fabricated timber clear span bridge on concrete abutments and would restore fish passage. This mitigation project will provide connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both up and downstream of the structure. Design, permitting and construction oversight will be the responsibility of CTDEEP.

The Department will not be held to long term commitments and involvement is limited to the funding as outlined in an Memorandum of Agreement between the two agencies. The MOA calls for the Department to secure funding in the amount of \$235,000 which is to be transferred to DEEP as a reimbursement following receipt of invoices for the proposed project. This off-Site mitigation arrangement allows the State to maintain its infrastructure and adequately and efficiently mitigate for unavoidable impacts to natural resources.

Attachment C

Project Title:	<u>Del Reeves Culvert Replacement</u>	Date:	<u>9/1/2017</u>
Bridge # :	N/A	Estimated by:	<u>JSB</u>
Project Number:	TBD	Checked by:	<u>JSB</u>
Project Location:	Meshomasic State Forest, East Hampton, CT	Base year:	<u>2017</u>
	Preliminary Estimated Construction Phase Cost	Construction year:	<u>2018</u>
		Inflation (%):	<u>3.5</u>

Item No.	Item Name/Description	Units	Quantity	Units Price	Line Item Value
1	Earth Excavation	CY	30	15	450
2	Structure Excavation - Earth	CY	10	30	300
3	Sedimentation Control System	LF	100	4	400
4	Removal of Existing Pipe Culvert & Wingwalls	SF	110	70	7700
5	Disposal of Debris	CF	792	20	15840
6	Replace Culvert (Precast Box Culvert (5' Rise x 5' Span)	SF	110	240	26400
7	Culvert Footings	LF	44	150	6600
8	Metal Beam Rail (Type R-B 350)	LF	92	35	3220
9	R-B 350 Bridge Attachment - Vertical Shape	EA	4	2300	9200
10	R-B End Anchorage - Type II	EA	4	1300	5200
11	Furnishing and Placing Top Soil	SY	187	6	1122
12	Formation of Subgrade (Culvert Base)	SY	35	5	175
13	Subbase, Processed Aggregate Base (3/4" Stone)	CY	5.5	35	193
14	Filter fabric/Geotextile Fence	SF	150	3	450
15	Pervious Structure Backfill	CY	60	80	4800
16	Membrane Water Proofing (Cold Liquid Elastomer)	SY	20	60	1200
17	Sweeping For Dust Control	HR	20	40	800
18	Turf Establishment	SY	20	1	24
19	Temporary Precast Concrete Barrier	LF	30	25	750
20	Traffic Control (Traffic Drums)	EA	10	50	500
21	Construction Signs	SF	100	15	1500
22	Crane Rental (Including Delivery & Pickup)	LS	1	10000	10000
				SUBTOTAL (INDEFINITE WORK)	96824
	Estimated Based on % of Subtotal contract Cost	%			
23	Cofferdam and Dewatering (Sand Bags & Water Pumps)	10			9682
24	Handing Water (By Pass Conduits (2 - 30" HDPE Pipes))	5			4841
25	Right of Way (ROW)	0			0
26	Utility Relocation	0			0
27	MINOR ITEMS	10			9682
				TOTAL (INDEFINITE WORK)	121029
	Estimated Based on % of total contract Cost	%			
	Clearing & Grubbing	2			2421
	Maintenance & Protection of Traffic	4			4841
	Construction Staking	2			2421
	Mobilization & Project Closeout	6.5			7857
	CONTRACT WORK				\$138,579
	CONTINGENCY	25			34645
	INCIDENTAL COST (Inspection, Materials Testing, Construction Phase design)	10			13858
	CONTRACT WORK, INCLUDING CONTINGENCY, IN BASE YEAR				\$187,081
	CONTRACT WORK, INCLUDING CONTINGENCY AND INFLATION				\$193,629
	ESTIMATED PROJECT CONSTRUCTION PHASE COST				\$ 193,629

Project Title:	Del Reeves Culvert Replacement	Date:	9/1/2017
Bridge # :	N/A	Estimated by:	JSB
Project Number:	TBD	Checked by:	JSB
Project Location:	Meshomasic State Forest, East Hampton, CT		
Preliminary Estimated Design & Construction Phase Cost			

Item No.	Cost Classification	Notes	Budget
1	Construction Phase Cost	See Estimated Project construction Phase cost	193629
2	Planning & Design Cost		38726
	a.Design & Permitting	Estimated at 20% of item 1	38726
	b.Bidding	Estimated at 0% of item 1	0
	c. Contract Administration	Estimated at 0% of item 1	0
	d.Construction/Project Inspection	Estimated at 0% of Item 1	0
ESTIMATED TOTAL PROJECT COST			\$ 232,355

Attachment I: Interagency Regulatory Coordination Meeting Notes



DEEP / DOT REGULATORY COORDINATION Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. **Bridge No. 06795-**

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCOMP) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes

2. **Bridge No. 06796-**

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. **Bridge No. 06797-**

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.

Attachment J: ACOE Application

860-594-2931

July 02, 2019

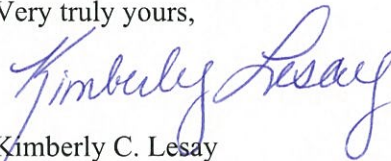
Ms. Susan Lee
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Subject: State Project No. 103-266
Bridge No. 06795: Interstate 395 over Hammer Brook
City of Norwich

Dear Ms. Lee,

Enclosed please find the Section 404 permit application for the General Permit 19 – Stream, River and Brook Crossings for your review and approval. An application for a 401 Water Quality Certification (via the Connecticut Addendum) was previously submitted to the Connecticut Department of Energy and Environmental Protection under a separate cover letter for processing. Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at 860-594-2157.

Very truly yours,



Kimberly C. Lesay
Transportation Assistant Planning Director
Bureau of Policy and Planning

Attachments

cc: Nathan Margason – USEPA

Naomi C. Hodges/nch

bcc: Kimberly Lesay

Andrew H. Davis – Chris W. Samorajczyk – Alexander T. Finch

Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin

Robert E. Obey – Eileen Ego (District 2 Construction)

Donald P. Wurst – Aaron J. Foster (CME)

U.S. Army Corps of Engineers (USACE)
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
 33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -
 OMB No. 0710-0003
 Expires: 01-08-2018*

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at . Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website:

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - Connecticut Department of Transportation E-mail Address - Kimberly.Lesay@ct.gov	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- 2800 Berlin Turnpike City - Newington State - CT Zip - 06131 Country - USA	9. AGENT'S ADDRESS: Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax 860-594-2931 860-594-3028	10. AGENTS PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT

DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) Rehabilitation of Bridge No. 06795 carrying Hammer Brook beneath I-395 located in Norwich, Connecticut	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Hammer Brook	14. PROJECT STREET ADDRESS (if applicable) Address N/A on Interstate-395
15. LOCATION OF PROJECT Latitude: °N 41°33'22.73" Longitude: °W 72° 6'16.35"	City - Norwich State- CT Zip- 06360
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID N/A Municipality Section - Township - Range -	

17. DIRECTIONS TO THE SITE

The project site is situated immediately north of Interchange 14, in Norwich, Connecticut. The culvert inlet is approximately 715 feet northeast from the Courtyard by Marriott, which is located at 181 W Town Street, Norwich, CT. Directions from the US Army Corps of Engineers New England District Main Office include: MA-2A E to I-95 S. Then take exit 25 to I-90 W. Take exit 10 toward MA-12 N, and keep right at the fork to merge onto I-395 S. The culvert is near exit 14 (toward CT-2 W/CT-32 N).

18. Nature of Activity (Description of project, include all features)

Please See Attached.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of this project is to address the structural deficiencies identified in inspection. Bridge No. 06795 is considered to be structurally deficient due to presence of perforations and section loss along the invert and distortion to corrugated steel pipe arch culvert. The bridge is also considered hydraulically inadequate due to the 2.5 feet of headwater above natural conditions. The deterioration of the structure requires rehabilitation.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

The project requires impacts to the surrounding wetlands for the rehabilitation of Bridge No. 06795. This project consists of installing a 4 inch thick reinforced concrete lining along the full length of the culvert invert. Constructing concrete cut-off and return walls will be constructed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the culvert in order to maintain the existing headwater elevation. At the inlet, salvaged natural streambed material will be regraded to raise the streambed to the new invert elevation. A preformed riprap scour hole will be placed at the outlet to prevent additional scour. The construction of permanent access roads is required to access the culvert. These access roads will have minor impacts to the adjacent wetlands. All temporarily disturbed areas will be revegetated after the completion of construction. A planting plan has been included on PMT-08 of the Environmental Permit Plans.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
-------------------------------	-------------------------------	-------------------------------

Please See Attached.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Please See Attached.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Please See Attached.

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- CY Norwich Hotel LLC (181 West Town Street, Norwich, CT) 440 Bedford St

City - Lexington State - MA Zip - 02420

b. Address- City of Norwich Deborah Tennant School (30 Case Street, Norwich, CT) 100 Broadway

City - Norwich State - CT Zip - 06360

c. Address- Rogulski, Amy L (21 Huntington Avenue, Norwich, CT) 321 Ross Hill Road

City - Lisbon State - CT Zip - 06351

d. Address- Emma Ferdinand A and Emma Raechel R (29 Huntington Avenue, Norwich, CT) 31 Huntington Avenue

City - Norwich State - CT Zip - 06360

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CTDEEP	PGP Addendum		Concurrently		
CTDOT	FMC - General	N/A	2019-01-29	2019-02-26	
CTDEEP	Water Res. Const. GP		Post PCN Approval		

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Keith Hill, Director, for Thomas Maziarz 7/1/2019
 SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ACOE Block 18: Nature of Activity

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06795 Culvert Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

Bridge No. 06795 is approximately 7.91 feet wide by 5.58 feet high asphalt-coated corrugated metal pipe (ACCOMP) arch culvert that conveys Hammer Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Hammer Brook under Project No. 327-01. The total structure length of the bridge is 213 feet and the culvert is located under approximately 10 feet of fill. There are no existing headwalls or wingwalls. Bridge No. 06795 is situated north of the I-395 southbound Exit 14 off-ramp. This structure is situated below six lanes of traffic. There are two northbound lanes, and one on-ramp lane, as well as two southbound lanes, and one off-ramp. The existing culvert is rated to be structurally deficient due to the presence of corrosion, section loss, and distortion to the pipe. The existing barrel of the steel pipe arch culvert exhibits loss of asphalt coating and heavy laminar rust at and below the springline. The existing ACCOMP structure results in approximately 2.5 feet of backwater at the approach cross-section and is hydraulically inadequate. This proposed culvert rehabilitation is part of State Project No. 103-266 and is to be repaired and relined in conjunction with Bridge Nos. 06796 and 06797, also located along I-395.

Hammer Brook has a drainage area of 0.73 square miles. The watercourse lies within the Yantic River Regional Basin No. 3900 and in the Thames River Major Basin No. 3. The watershed is located in the western portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land, and agricultural fields (CLEAR Land Use 2015). Wetlands are adjacent to the Hammer Brook watercourse at the inlet and outlet of Bridge No. 06795. These wetlands contain muck soils, scrub-shrub wetland plant species, and broad-leaved deciduous plants. Hammer Brook flows west to east. At the outlet, Hammer Brook acts as a tributary and joins Norwichtown Brook, which runs further south along the I-395 northbound embankment and ultimately discharges into the Yantic River. The project utilizes the 50-year design storm as it is considered a small structure according to the Drainage Manual.

The project proposes to cast-in-place 4 inch thick reinforced concrete lining along the full length of the culvert invert. The inlet and outlet of the pipe will be cut back approximately 8 feet to the full pipe section. Concrete headwalls, cutoff walls, and flared wingwalls will be constructed at both ends of the culvert to reduce scour and improve the flow of the brook. The proposed length of the structure from headwall to headwall is 197 feet. The proposed headwalls will be approximately 12 feet in length by 12 feet in height. The flared wingwalls will be approximately 6 feet in length and 12 feet in height. The proposed cutoff wall will be approximately 10 feet in length and 4 feet in height. A preformed riprap scour hole will be placed at the culvert outlet to prevent scour as well as raise the streambed to the new invert elevation. Salvaged natural streambed material will be regraded at the inlet to raise the streambed to the new invert elevation. At the inlet of the culvert, rounded corners of the headwall will be constructed to facilitate flow through the culvert as well as maintain the existing headwater elevation. Asphaltic coating will be applied along the remaining portion of the pipe, not lined by concrete, to minimize corrosion and increase durability. In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed on the upstream and downstream sides of the culvert. The downstream access road includes a temporary staging

area. Subsequent to construction, temporarily impacted areas will be revegetated, as appropriate. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The proposed roadway width, alignment and profile will match all existing conditions. The proposed lining reduces the hydraulic opening by approximately 9%. The model results for the 50-year storm event show that the reduction in the hydraulic opening with proposed improvements at the inlet results in decreased water surface elevations upstream of the crossing. Immediately upstream of the crossing is a private hotel and a developed parking lot. Currently, the right overbank spillway floods to the developed hotel parking lot. The proposed conditions will continue to flood the nearby hotel parking lot; however, the proposed structure will result in an 11% decrease in flow over the spillway when compared to existing conditions. The proposed water surface elevations are not expected to adversely impact existing structures on properties adjacent to the project site. The culvert inlet will provide adequate freeboard of approximately 9.8 feet to the I-395 roadway. The project is scheduled to be constructed in spring of 2020. It is anticipated to be completed in one construction season.

Construction Sequencing

The project site will require the construction of permanent construction access roads to allow materials and heavy construction equipment to access the culvert. Access roads will be constructed at the upstream and downstream sides, which will require clearing and grubbing as well as some permanent impacts to wetlands. A sedimentation and erosion control system will be installed along the access roads and employed throughout all phases of construction. To minimize traffic impacts on I-395, the work zone adjacent to I-395 will be contained to the shoulder of both the northbound and southbound lanes. Off-peak temporary shoulder and/or lane closures may be used for equipment or construction personnel to enter and exit the access roads, as required. The lining and construction at the inlet and outlet of Bridge No. 06795 will require the installation of temporary water-handling-cofferdams and temporary dewatering of portions of Hammer Brook within the project area.

The construction is anticipated to take place in two stages. In Stage 1, a temporary water handling bypass pipe will be installed along one side of the entire length of the culvert and temporary water-handling cofferdams will be placed at the inlet and outlet of the structure. Water will be confined to the temporary bypass pipe. During this stage the entire pipe will be power-washed and voids filled. The water from the power-washing operations will be completely contained and pumped to a settling basin. Once the existing pipe is cleaned, half of the culvert invert to be lined with the proposed 4 inches of concrete in the dry. During Stage 1, the temporary water-handling cofferdams will allow for the proposed cut-off wall, wingwalls, and headwalls to be installed in the dry at the inlet and outlet. In Stage 2, the bypass pipe will be relocated to the other side of the culvert so that the remaining portion of the culvert invert may be lined. A preformed riprap scour hole will be placed at the culvert outlet to prevent additional scour. Salvaged natural streambed material will be regraded at the inlet to raise the streambed to the new culvert invert elevation. Once construction is completed the temporary water-handling equipment will be removed restoring flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatered groundwater to a temporary sedimentation basin located in an upland area. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. All temporarily disturbed areas will be restored at the completion of construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The sedimentation and erosion control system shall be removed upon permanent stabilization. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control

Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Additional permits being sought include a State of Connecticut Addendum to the Army Corps of Engineers General Permit and a CTDEEP General Permit for Water Resources Construction Activities. A CTDOT Flood Management General Certification has been issued for this project.

ACOE Block 21: Types of Material Being Discharged and Amount of Each Type in Cubic Yards

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06795 Culvert Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

Type of Material	Amount Discharged	Comment
Embankment Fill	15 CY	For the construction of the access roads
Streambed Material	4 CY	To grade the streambed to the new culvert invert elevation at the inlet
Granular Fill	4.5 CY	For the construction of the riprap scour hole
Concrete Lining	24 CY	To provide a 4 inch layer along the length of the culvert invert
Processed Aggregate	62 CY	For the construction of the cutoff walls
Intermediate Rip-Rap	9 CY	For the construction of the riprap scour hole and to grade the culvert invert elevation at the outlet

ACOE Block 22: Surface Area in Acres of Wetlands or Other Waters Filled

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
 Rehabilitation of Bridge 06795 Carrying Hammer Brook under Interstate 395
 Norwich, Connecticut

The proposed project results in 1,900 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads, the placement of the preformed riprap scour hole at the outlet and associated channel grading, as well as the construction at the inlet and outlet of the culvert. In order to place the material into the regulated areas, heavy machinery and equipment will be required. The project results in 1,400 square feet (0.03 acres) of permanent watercourse impacts. This number accounts for the lining of the culvert, the construction of the headwalls, wingwalls, cutoff walls at the inlet and outlet, and placement of riprap at the outlet and associated channel grading. Though this is described as a permanent impact, the watercourse will remain. The project will not result in permanent conversion of watercourse to upland. Temporary impacts include the area necessary for the water handling and tree clearing. Temporary impact to the wetlands is 1,600 square feet (0.04 acres) and to the watercourse is 400 square feet (0.01 acres). The total wetland and watercourse impact is 5,300 square feet (0.12 acres). Impacts are described within the table below:

Bridge No. 06795 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	1,600 sqft (0.04 ac)	400 sqft (0.01 ac)	2,000 sqft (0.05 ac)
Permanent	1,900 sqft (0.04 ac)	1,400 sqft (0.03 ac)	3,300 sqft (0.08 ac)
Total	3,500 sqft (0.08 ac)	1,800 sqft (0.04 ac)	5,300 sqft (0.12 ac)

ACOE Block 23: Description of Avoidance, Minimization, and Compensation

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06795 Culvert Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of proposed impacts. These design elements include, utilizing a water handling system for the flow of Hammer Brook during construction, placing riprap at the outlet of the culvert to prevent scour and to grade the streambed to the new invert elevation, as well as the construction of flared concrete wingwalls at the inlet and outlet, and a rounded entrance at the inlet of the culvert to improve the flow of the brook. Salvaged natural streambed material will be placed at the inlet of the culvert to grade the streambed to the new invert elevation. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers, and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed construction access roads and staging areas. Although the project counts areas within the culvert and at the inlet and outlet as permanent impact, those areas will remain watercourse following the completion of the project. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The proposed project could not incorporate any onsite fisheries mitigation due to potential flooding on to private property. As a result, offsite mitigation has been coordinated to offset adverse fisheries impacts as a result of the invert lining of Bridge No. 06795. The selected offsite mitigation is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed mitigation location will provide channel connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both upstream and downstream of the structure. The proposed work involves the replacement of the existing perched and undersized culvert with a timber bridge on Del Reeves Road. This mitigation proposes to conserve the native brook trout population. The MOA between CTDOT and DEEP Inland Fisheries has been attached to the regulatory permit applications. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

ATTACHMENTS

Attachment A: Location Maps

- USGS Map
- Aerial Map

Attachment B: Site Permit Plans

Attachment C: Site Photos

Attachment D: Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

Attachment E: Northern Long Eared Bat Consultation

Attachment F: CTDEEP Fisheries Approval and Memorandum of Agreement (MOA)

Attachment G: State Historic Preservation Office (SHPO) Exemption

Attachment H: Tribal Historic Preservation Office (THPO) Exemption

Attachment I: FEMA FIRMette and Inundation Maps

Attachment J: Interagency Coordination Meeting Notes

Attachment A

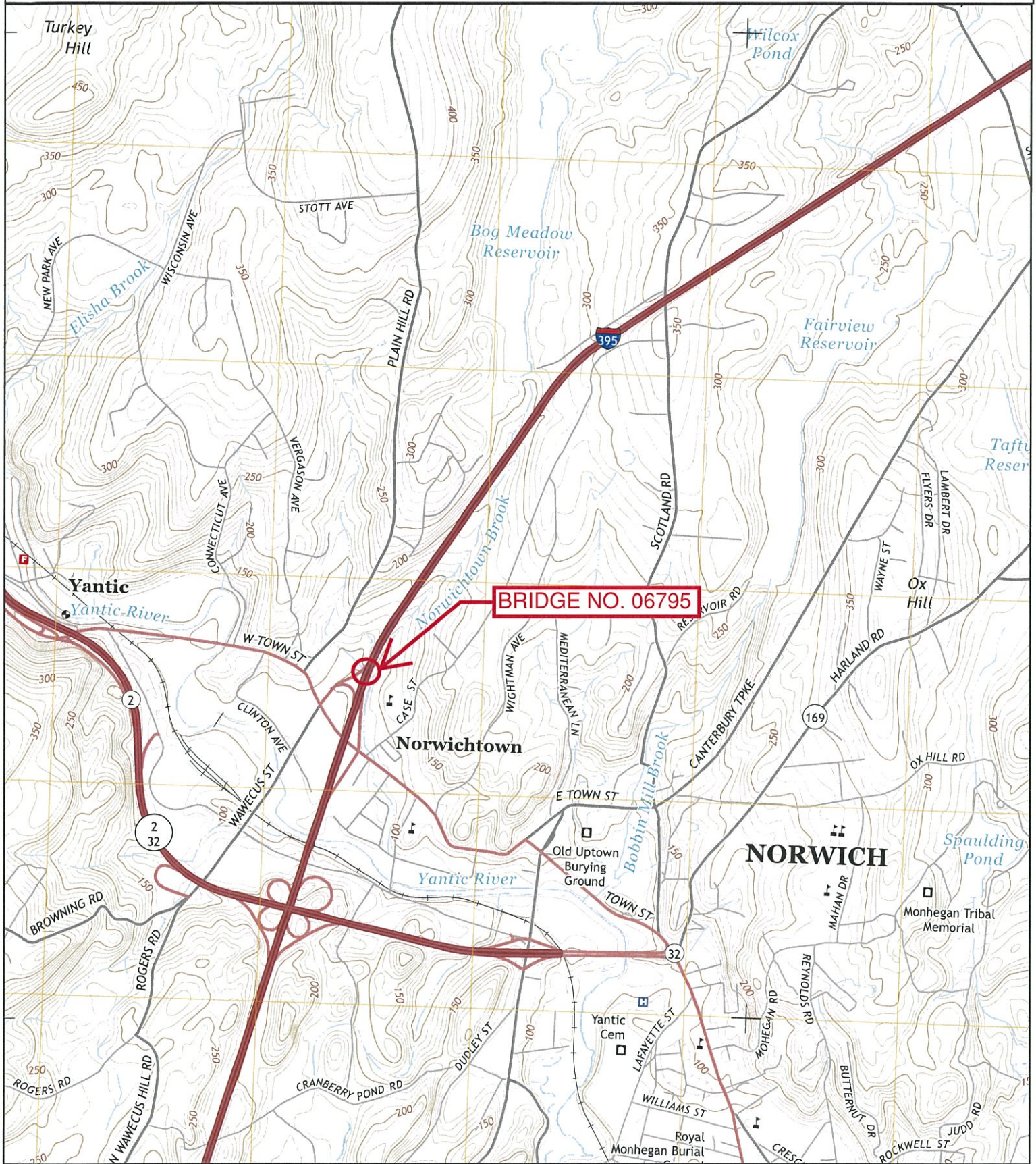
Location Maps

- USGS Map
- Aerial Map

USGS QUADRANGLE MAP

BRIDGE NO. 06795 IN NORWICH, CT

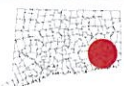
INTERSTATE 395 OVER HAMMER BROOK



BRIDGE NO. 06795



USGS MAP #72
NORWICH,
CONNECTICUT



Created: 2019




1 INCH = 2,000 FEET



DETAILED AERIAL MAP BRIDGE NO. 06795 IN NORWICH, CT INTERSTATE 395 OVER HAMMER BROOK



CTDEEP, USGS. Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENTP, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

	CTECO AERIAL MAP NORWICH, CONNECTICUT	 Created: 2019	1 INCH = 500 FEET 
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Attachment B
Site Plans



CONNECTICUT DEPARTMENT OF TRANSPORTATION



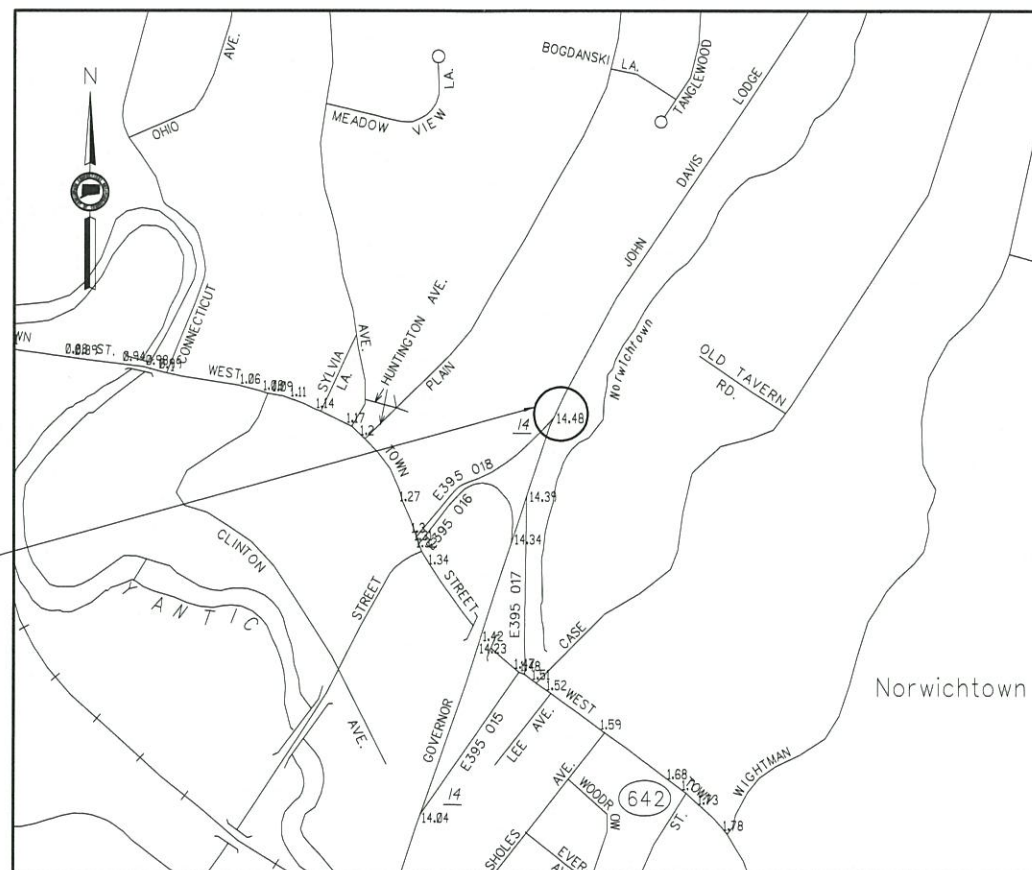
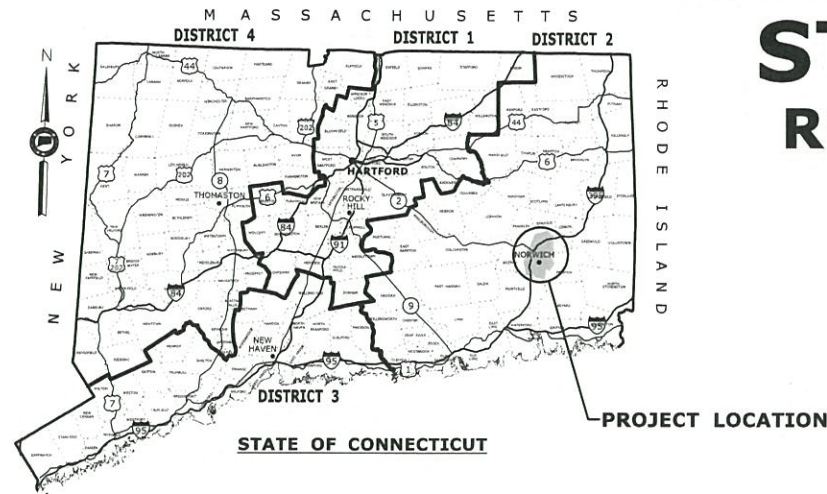
ENVIRONMENTAL PERMIT PLANS

STATE PROJECT NO. 103-266

REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK,

(SITE No. 1)

IN THE CITY OF NORWICH



LOCATION PLAN

SCALE: 1" = 500'

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06795 TITLE SHEET
PMT-02	BR. NO. 06795 GENERAL SITE PLAN
PMT-03	BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06795 CROSS-SECTIONS
PMT-05	BR. NO. 06795 100-YEAR FLOOD IMPACT PLAN
PMT-06	BR. NO. 06795 ELEV. & SECTION PLAN
PMT-07	BR. NO. 06795 STAGING AND WATER HANDLING PLAN
PMT-08	BR. NO. 06795 PERMIT PLANTING PLAN

LOUIS BERGER US, Inc
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577



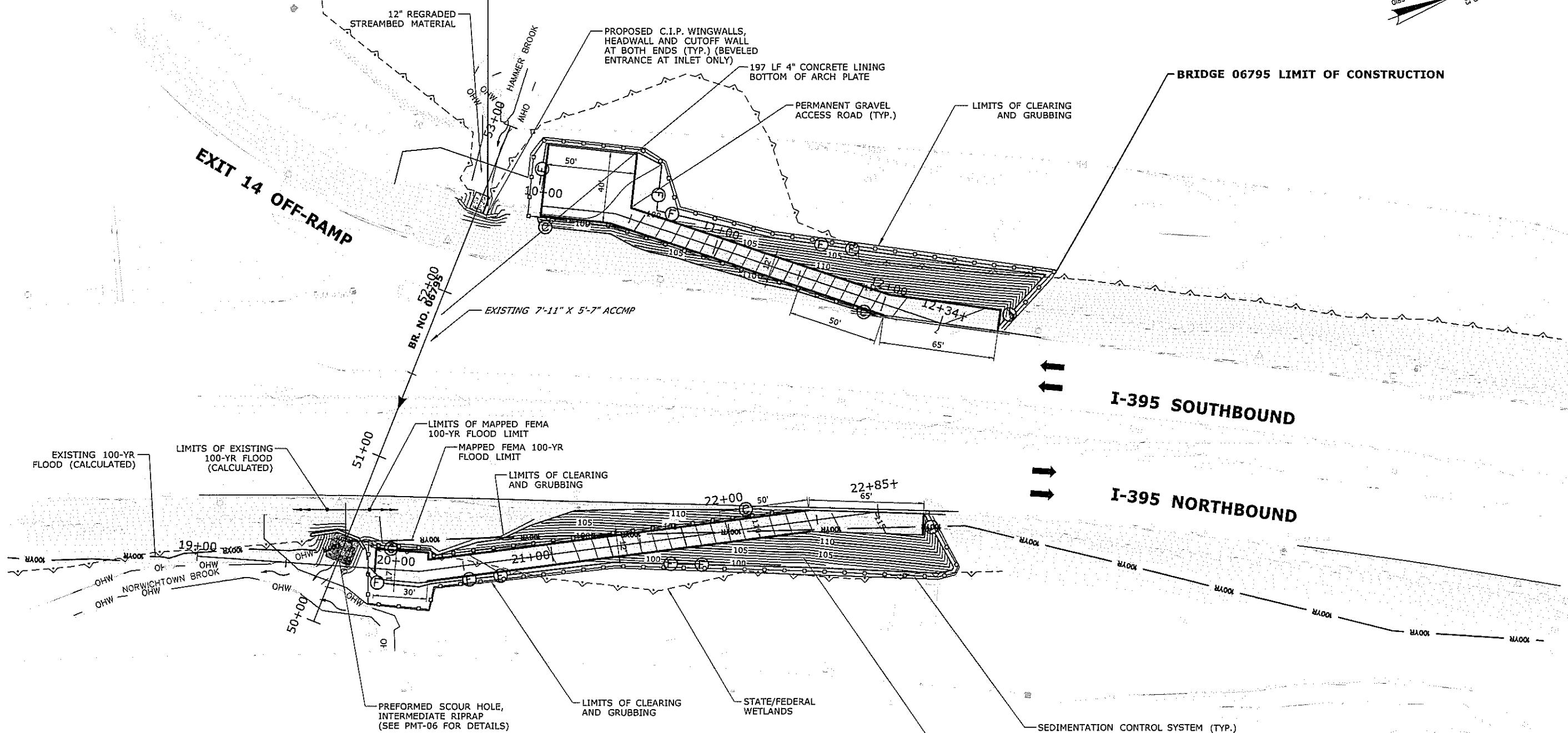
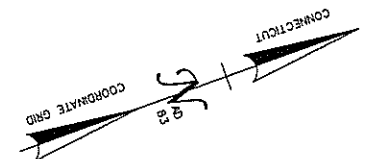
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by Robert Lin
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ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/25/2019

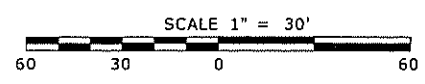
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BEGIN STATE PROJECT NO. 103-266
 BRIDGE 06795 LIMIT OF CONSTRUCTION
 STA. 10+00



LEGEND:

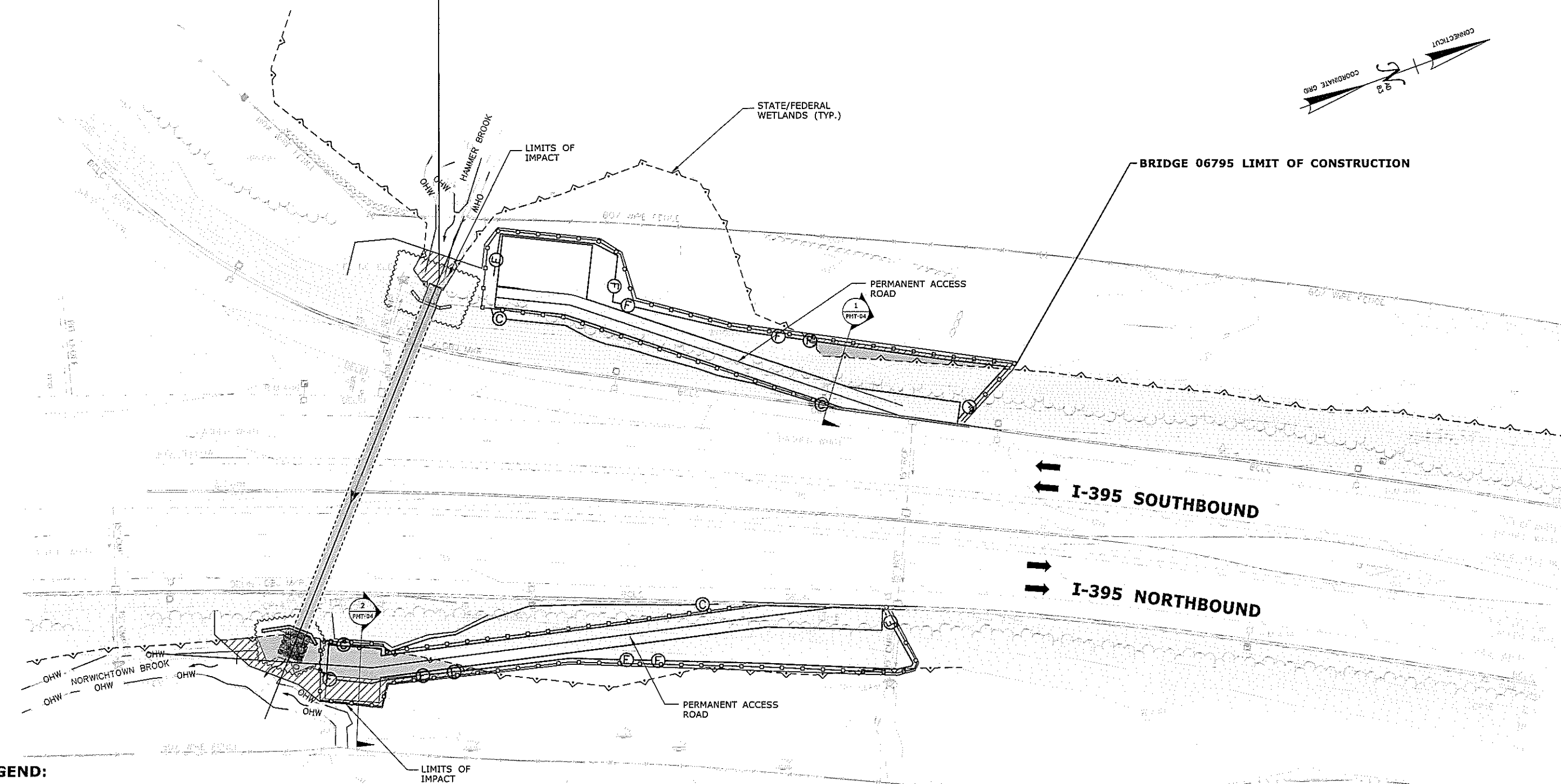
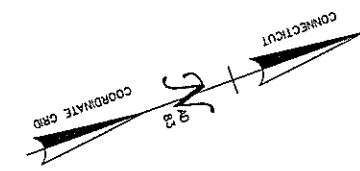
- 100YR - MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW - ORDINARY HIGH WATER
- - - - STATE/FEDERAL WETLANDS
- o - o - SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/25/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...VHW_MSH_0103-0266_Br 06795_RDP_PLN-01.DGN.dgn	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06795 GENERAL SITE PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-02 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/25/2019			

BRIDGE 06795 LIMIT OF CONSTRUCTION



LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- PERMANENT IMPACT
- MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

NOTES:

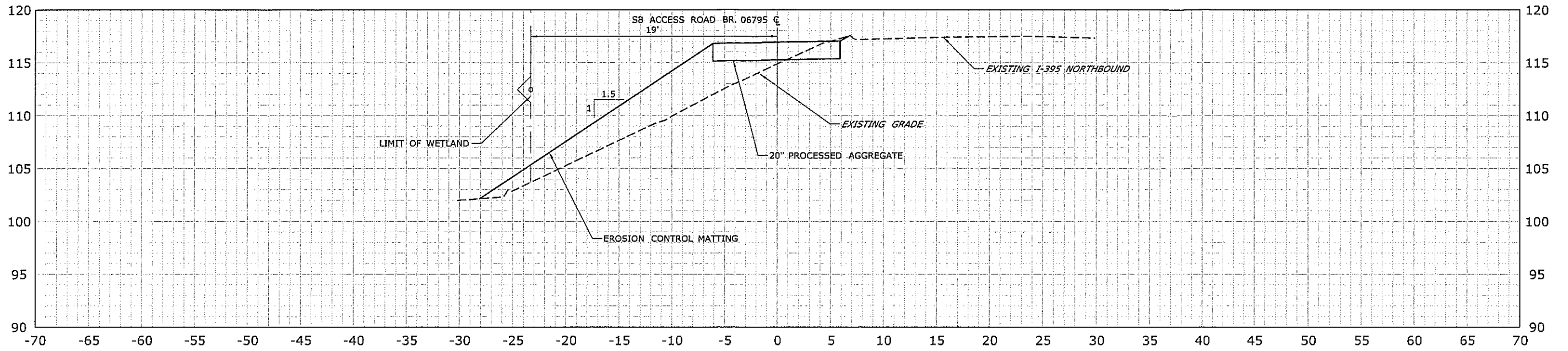
1. CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE.
2. ALL DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

WETLAND IMPACT TABLE				
	WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS	1	1900 S.F. (0.04 AC.)	1400 S.F. (0.03 AC.)	3300 S.F. (0.08 AC.)
TEMPORARY IMPACTS	1	1600 S.F. (0.04 AC.)	400 S.F. (0.01 AC.)	2000 S.F. (0.05 AC.)
TOTAL IMPACTS		3500 S.F. (0.08 AC.)	1800 S.F. (0.04 AC.)	5300 S.F. (0.12 AC.)

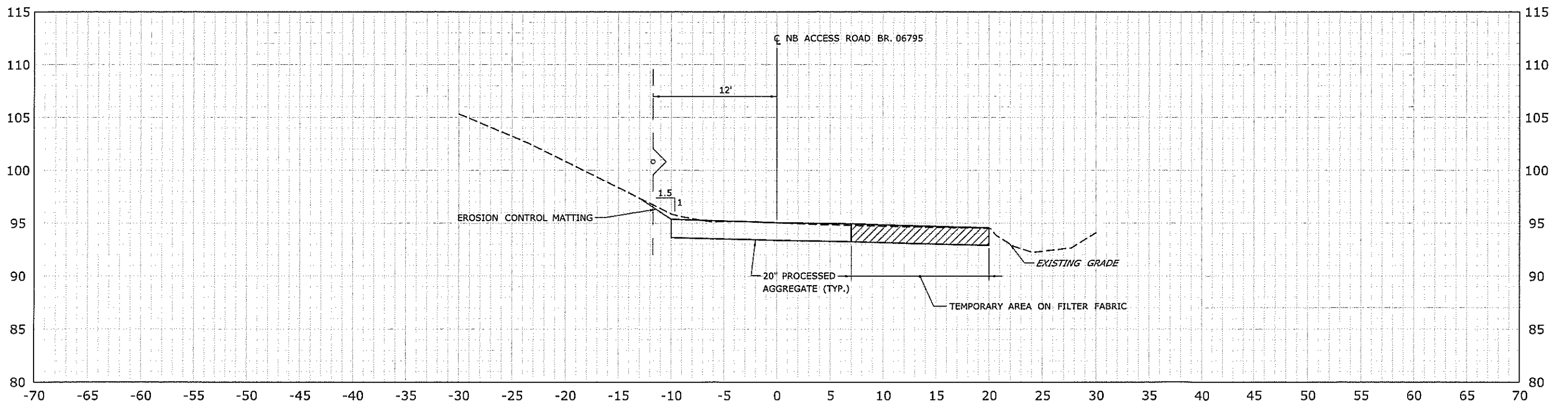
SCALE 1" = 30'

ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/25/2019

<p>DESIGNER/DRAFTER: MAM CHECKED BY: MJM</p>	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH</p>	<p>PROJECT NO. 103-266 DRAWING NO. PMT-03 SHEET NO.</p>	
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		SCALE AS NOTED Plotted Date: 6/25/2019	FILENAME: ...LHW MSH_0103-0266_Br 06795 WIP PLN-01.DGN		



1 ACCESS ROAD SECTION
PMT-03



2 ACCESS ROAD SECTION
PMT-03

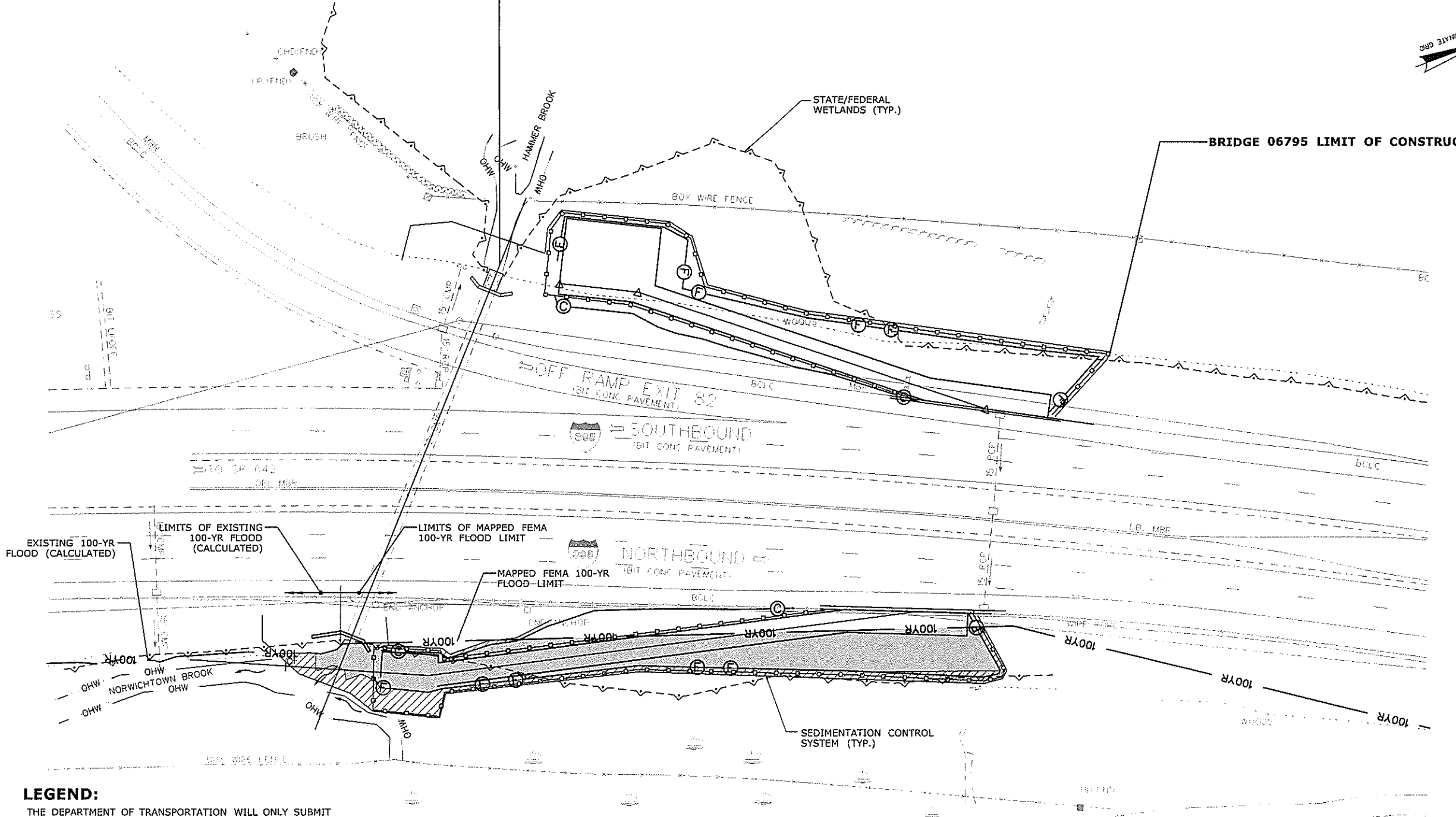
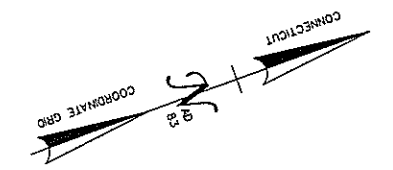
ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/25/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT CHECKED BY: MAM SCALE IN FEET 	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06795 CROSS-SECTIONS	PROJECT NO. 103-266 DRAWING NO. PMT-04 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/25/2019			

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BRIDGE 06795 LIMIT OF CONSTRUCTION

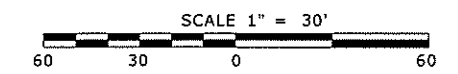


LEGEND:
 THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- PERMANENT IMPACT
- 100YR MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

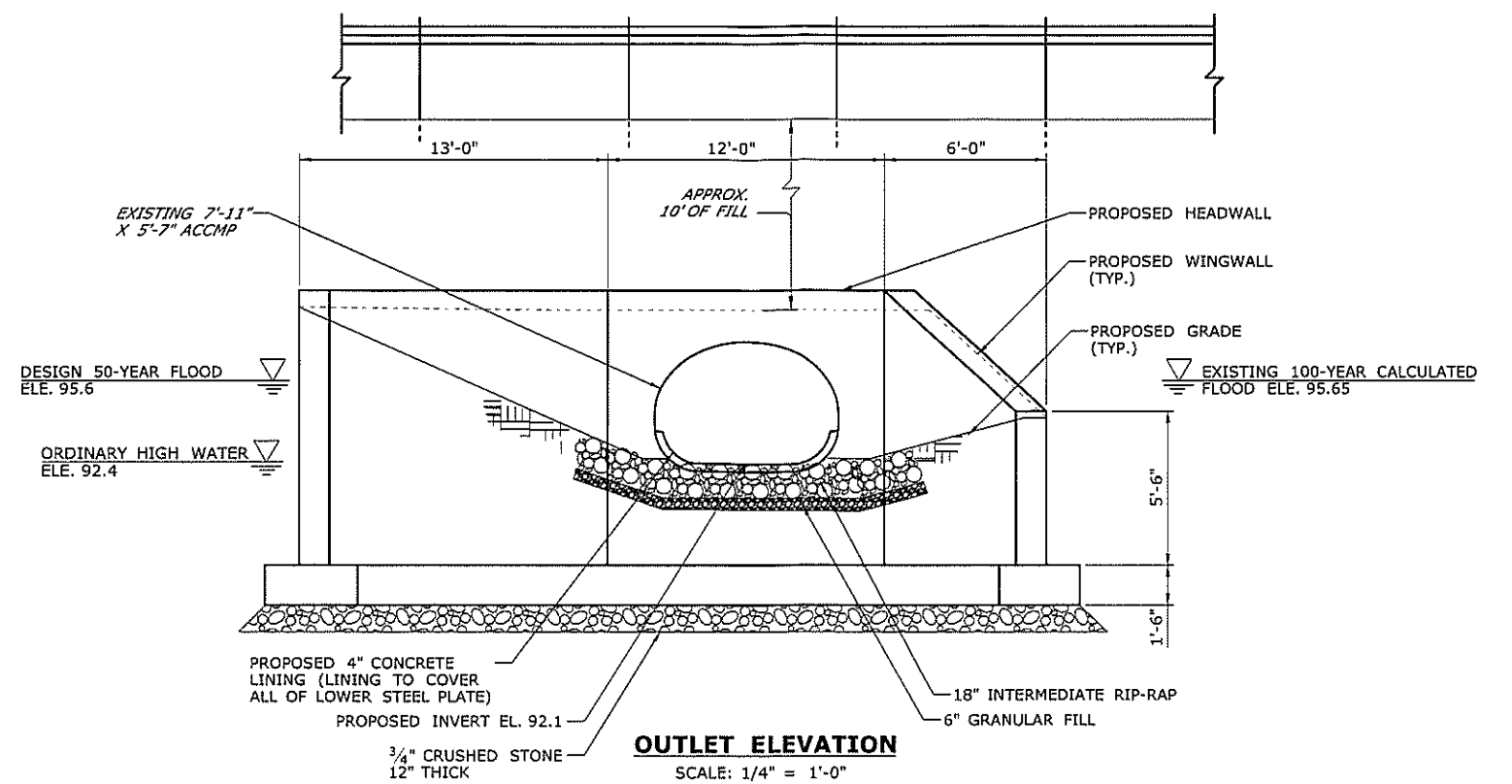
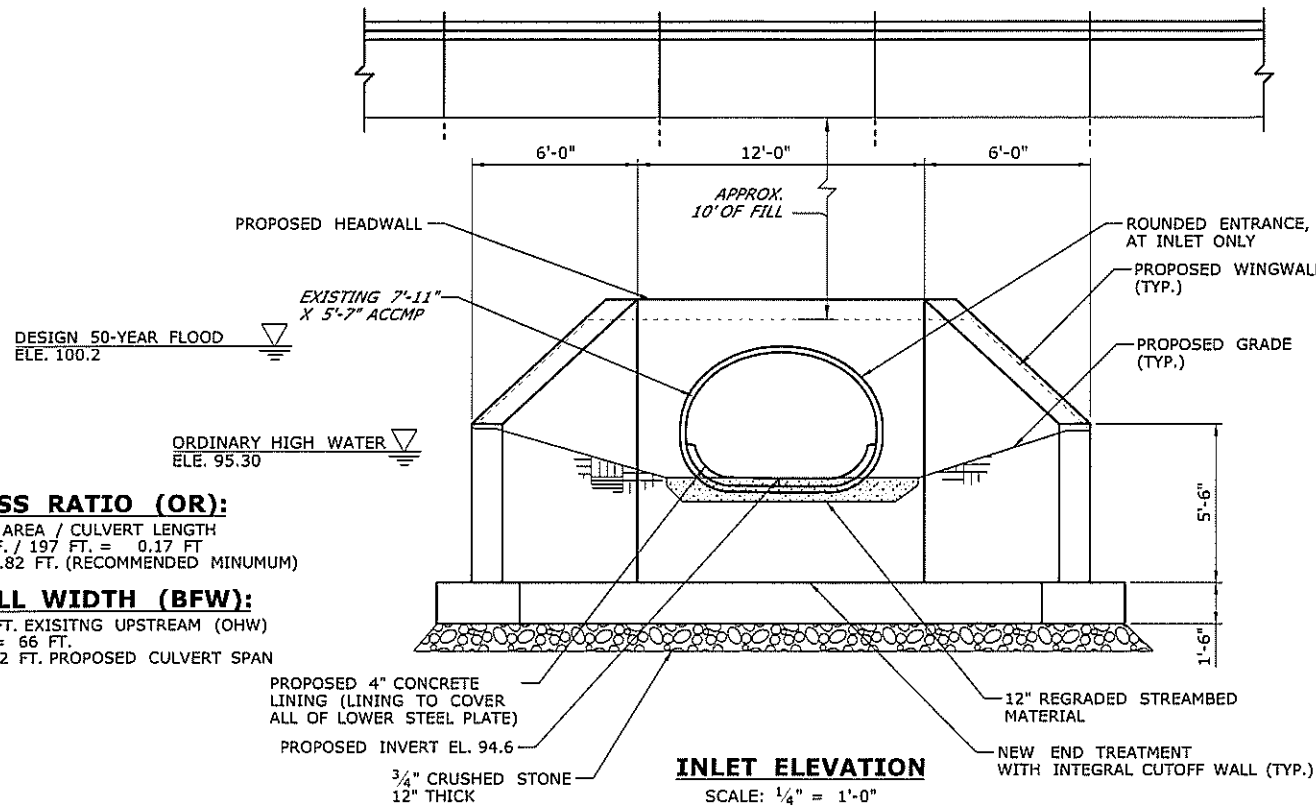
NOTE:
 CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

100-YEAR FLOODPLAIN AREA IMPACTS, CUT AND FILL			
AREA IMPACTS		VOLUME IMPACTS	
TEMPORARY IMPACT AREA	PERMANENT IMPACT AREA	EXCAVATION IN FEMA FLOOD PLAIN	FILL IN FEMA FLOODPLAIN
2400 S.F.	6800 S.F.	52 C.Y.	200 C.Y.



ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/25/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06795 100-YEAR FLOOD IMPACT PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-05 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/25/2019	Filename: ...UHW_MSH 0103-0266 Br 06795.FIP PLN-01.DGN.dgn					

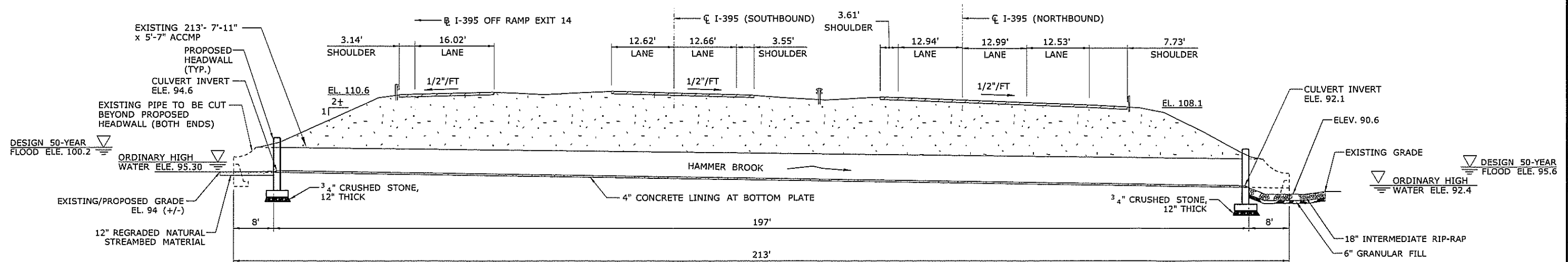


OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 34 S.F. / 197 FT. = 0.17 FT.
 0.17 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

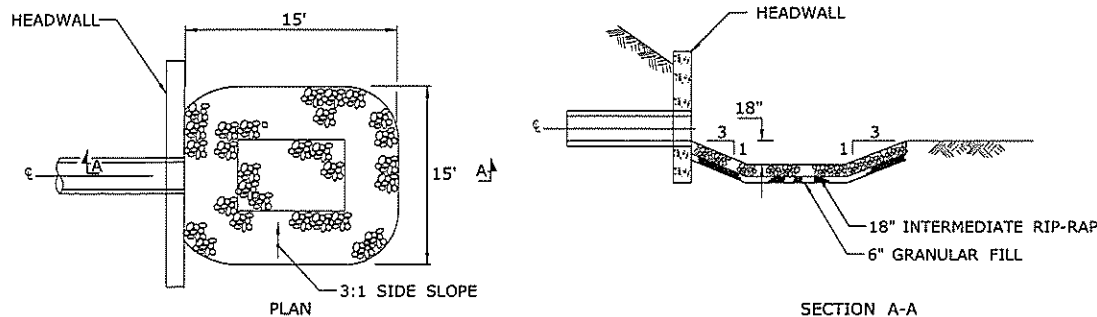
BANKFULL WIDTH (BFW):
 BFW = 55 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 66 FT.
 66 FT. > 7.92 FT. PROPOSED CULVERT SPAN

INLET ELEVATION
 SCALE: 1/4" = 1'-0"

OUTLET ELEVATION
 SCALE: 1/4" = 1'-0"



PROPOSED LONGITUDINAL SECTION
 (LOOKING NORTH)
 SCALE: 1" = 10'



PREFORMED SCOUR HOLE
 N.T.S.

SECTION A-A

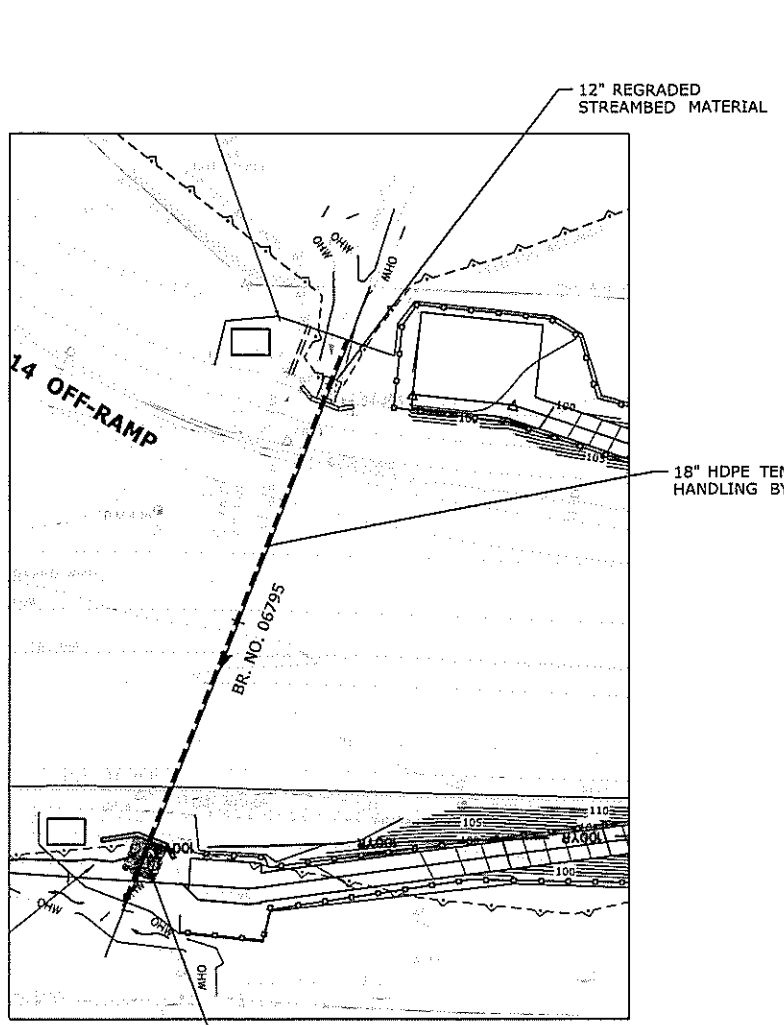
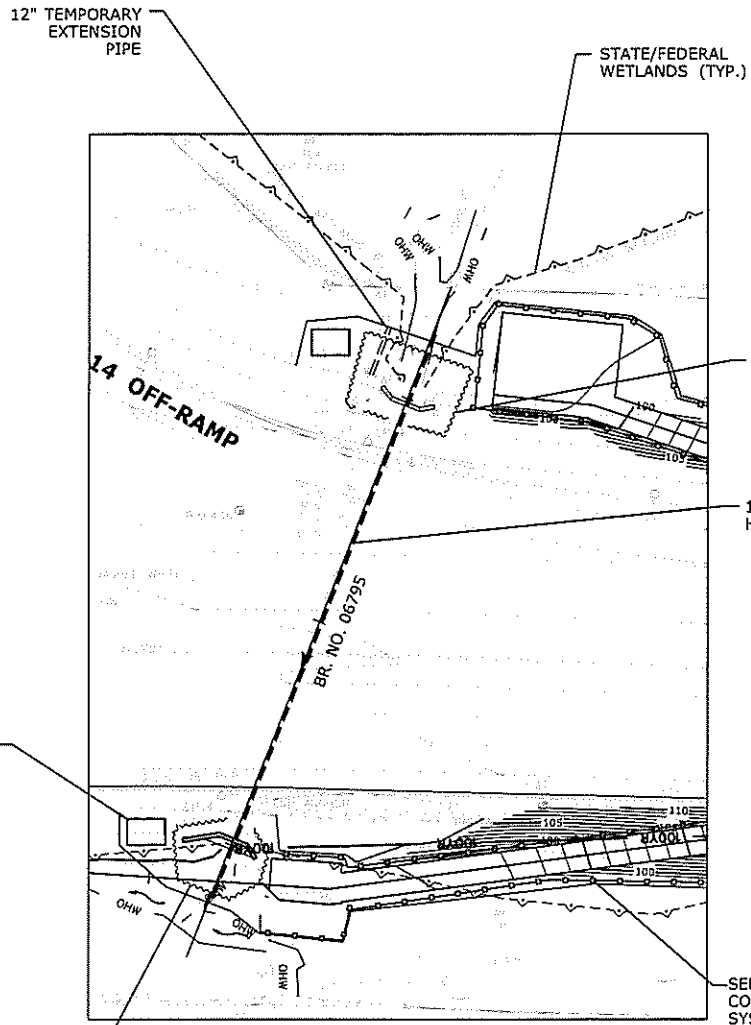
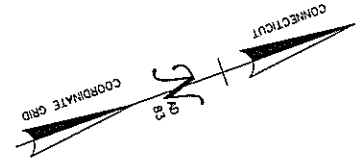
NATIVE STREAMBED MATERIAL NOTES

1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PARTIAL CULVERT REMOVAL AND NEW END TREATMENT INSTALLATION SHALL BE STOCKPILED AND THEN REPLACED AT THE INLET, TO THE DEPTH SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER, AND IN ACCORDANCE WITH THE PERMIT DOCUMENTS.
2. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.

HYDRAULIC DATA 06795	
DRAINAGE AREA	0.73 SQ MILES
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	305 CFS
AVERAGE DAILY FLOW ELEVATION	95.0
UPSTREAM DESIGN SURFACE WATER ELEVATION	100.2
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	95.6

ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/26/2019

DESIGNER/DRAFTER: MM		SIGNATURE/ BLOCK:	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWH: NORWICH	PROJECT NO. 103-266
CHECKED BY: MJM		LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	DRAWING TITLE: BR. NO. 06795 ELEV. & SECTION PLAN	SHEET NO. PMT-06	
SCALE AS NOTED	Plotted Date: 6/26/2019	Filename: ...\\SB_MSH_0103-0266_Br06795_E5_PLAN.dgn			



TEMPORARY DEWATERING BASIN (APPROX. LOCATION) (TYP.)

COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL MIN. TOP OF COFFERDAM ELEV. 94.5

STAGE - 1 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS ROADS.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY WATER-HANDLING FACILITIES, INCLUDING TEMPORARY COFFERDAM AND TEMPORARY BYPASS PIPE.
5. WATER HANDLING TO REMAIN THROUGH ALL STAGES.
6. POWER WASH INTERIOR OF PIPE AND FILL VOIDS (SEE NOTES).
7. EXCAVATE AND PUMP DRY. CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, HEADWALL AND HALF OF INVERT LINING.

STAGE - 2 SUGGESTED SEQUENCE

1. RELOCATE TEMPORARY WATER HANDLING BYPASS PIPE.
2. CONSTRUCT OTHER HALF OF INVERT LINER.
3. INSTALL RIP-RAP PREFORMED SCOUR HOLE AT OUTLET.
4. REGRADE EXISTING NATURAL STREAMBED MATERIAL AT THE INLET TO NEW INVERT.
5. REMOVE TEMPORARY WATER HANDLING FACILITIES.
6. INSTALL CONSERVATION SEEDING AND PROPOSED PLANTINGS.
7. REMOVE EROSION AND SEDIMENTATION CONTROL UPON PERMANENT STABILIZATION.

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY BYPASS PIPE AS SHOWN DURING CONSTRUCTION OF THE NEW LINING AND END TREATMENTS.

EQUIPMENT SHALL NOT BE PERMITTED IN THE STREAM WHEN TEMPORARY BYPASS PIPE IS NOT IN PLACE WITHOUT APPROVAL FROM THE ENGINEER.

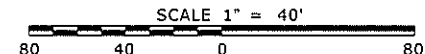
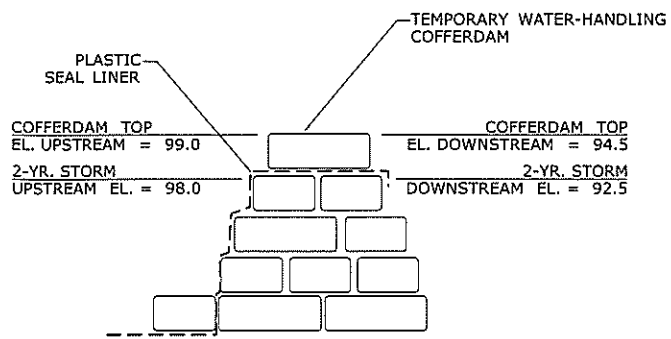
A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREA. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. NO ADDITIONAL REGULATORY IMPACTS WILL BE ALLOWED BEYOND THE AREAS SHOWN. ALL DISTURBED AREAS SHALL BE RESTORED.

WATER FROM POWER WASHING OPERATIONS MUST BE COMPLETELY CONTAINED AND PUMPED INTO A SETTLING BASIN.

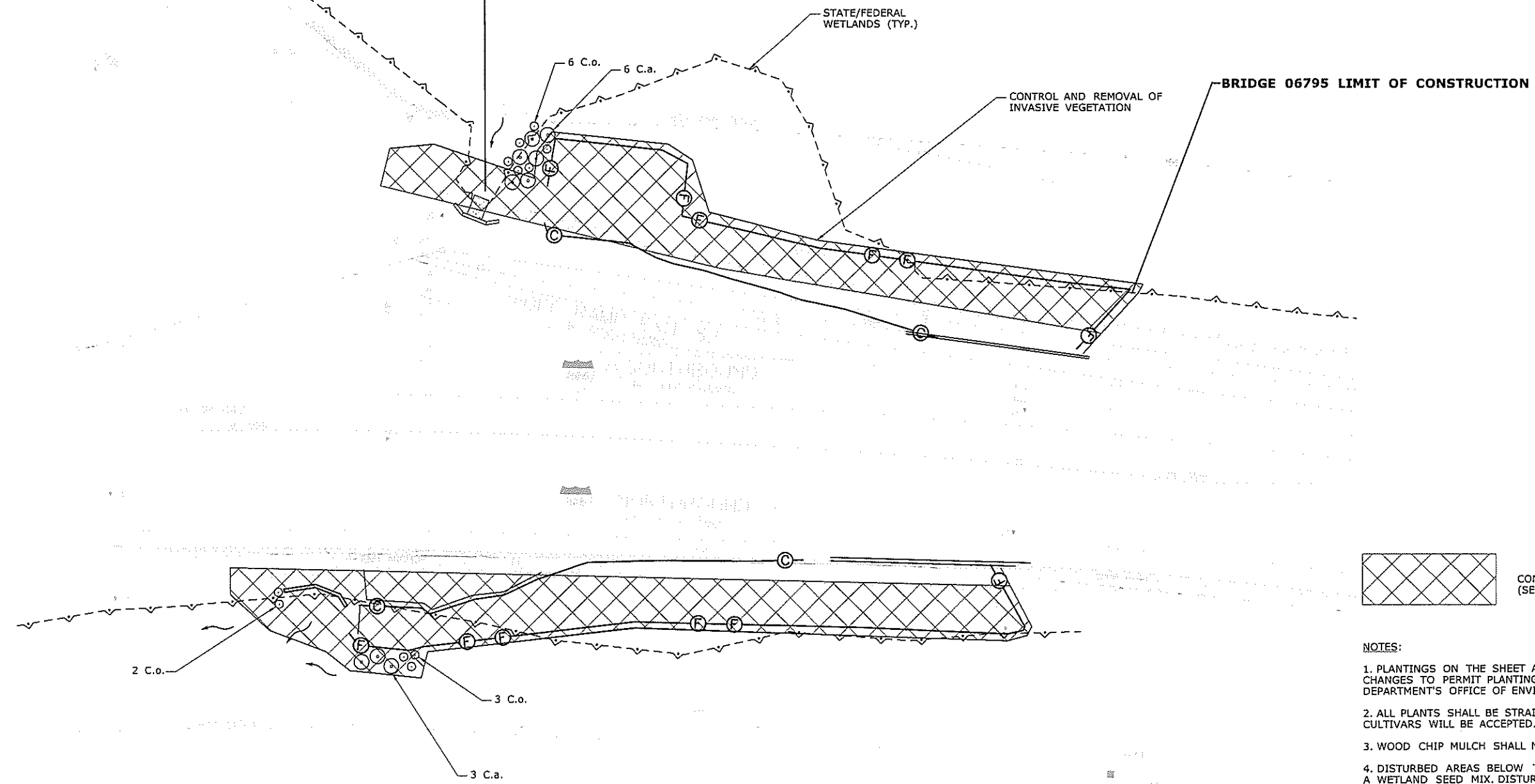
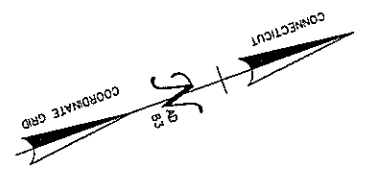
TEMPORARY HYDRAULIC DATA 06795	
AVERAGE DAILY FLOW	1.4 CFS
AVERAGE SPRING FLOW	2.7 CFS
2-YEAR FREQUENCY DISCHARGE	30 CFS
TEMPORARY DESIGN DISCHARGE	30 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	98 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	92.5 FT



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/13/2019

<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>SIGNATURE/BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH</p> <p>DRAWING TITLE: BR. NO. 06795 STAGING AND WATER HANDLING PLAN</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-07</p> <p>SHEET NO.</p>
<p>REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/13/2019</p>	<p>Filename: ...VHW MSH 0103-0266_Br 06795 WHP_PLN-01.DGN.dgn</p>					

BRIDGE 06795 LIMIT OF CONSTRUCTION



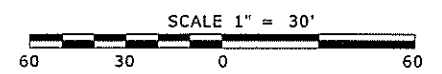
CONTROL AND REMOVAL OF INVASIVE SPECIES (SEE NOTE 5)

NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.

PERMIT PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	COMMENTS	WETLAND INDICATOR
C.a.	Cornus amomum	Silky Dogwood	24"-36" HT.	9	Field Located		FACW
C.o.	Cephalanthus occidentalis	Buttonbush	24" - 36" HT. B.B.	11	Field Located		OBL
		Wood Chip Mulch		0 S.Y.			



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/13/2019

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<p>REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/13/2019</p>						

Attachment C
Site Photos



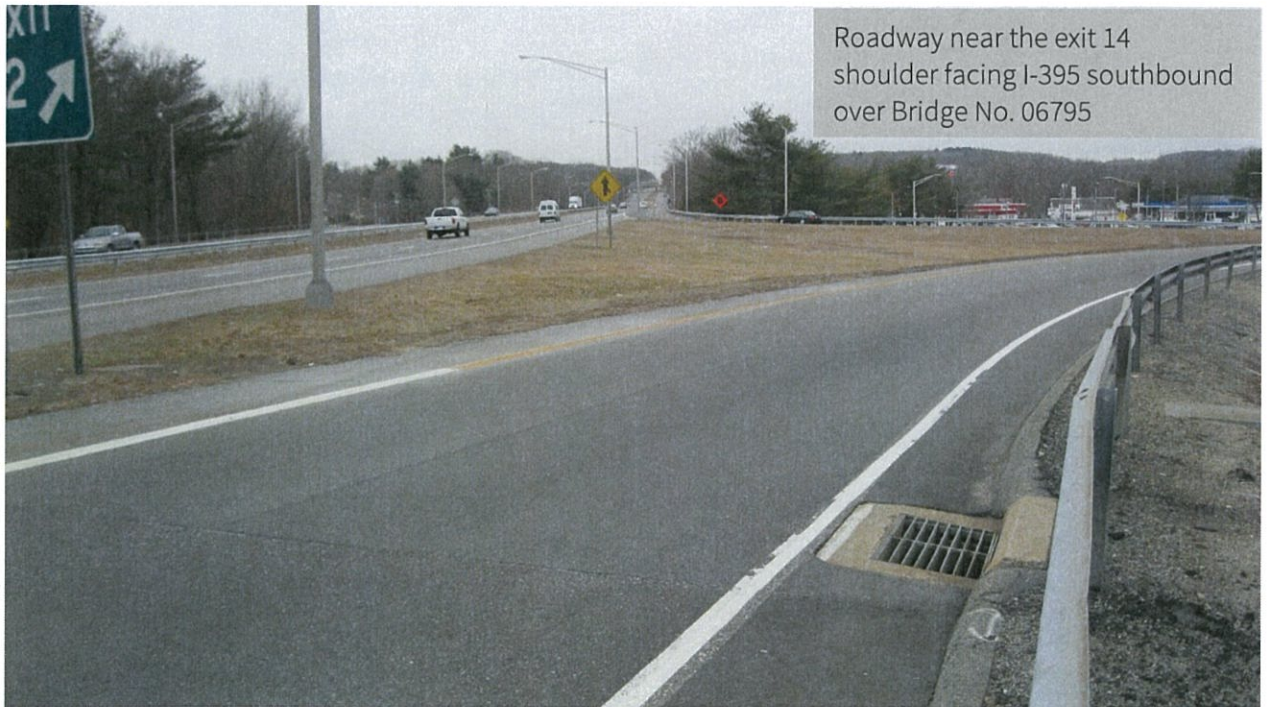
Aerial Photo of Bridge
No. 06795, Google
Images



Downstream Face of
Culvert, Bridge No. 06795



Upstream Face of the
Culvert, Bridge No. 06795



Roadway near the exit 14
shoulder facing I-395 southbound
over Bridge No. 06795



Downstream from Bridge No. 06795,
Hammer Brook flowing from the outlet to
the braided channel of Norwichtown Brook



Hammer Brook upstream
of Bridge No. 06795

Attachment D

Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06795 Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06795 in Norwich, Connecticut. Bridge No. 06795 is approximately 7.91 feet wide by 5.58 feet high asphalt-coated corrugated metal pipe (ACCOMP) arched culvert that conveys Hammer Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Hammer Brook. The total structure length of the bridge is 213 feet and it is under approximately 10 feet of fill. The existing culvert is rated to be structurally deficient due to the presence of corrosion, section loss, and distortion to the pipe and requires rehabilitation. The existing barrel of the steel pipe arch culvert exhibits loss of asphalt coating and heavy laminar rust at and below the springline. The project involves constructing cast-in-place reinforced concrete flared wingwalls, cut-off walls, and headwalls at both ends of the culvert with a rounded entrance at the inlet. The culvert will also have concrete lining along the full length of the pipe along the invert. Project No. 103-266 also includes Bridges No. 06796 and 06797. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06796 and 06797 are being processed under separate permits.

Site Information

Hammer Brook has a drainage area of 0.73 square mile. The watercourse lies within the Yantic River Regional Basin No. 3900 and in the Thames River Major Basin No. 3. The watershed is located in the western portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural fields (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map number 09011C0211G (Panel 211 of 554), New London County, Connecticut (effective date July 18, 2011), the area of the crossing is not within a mapped FEMA floodplain. Upstream of Hammer Brook, the area is located in a 500-year floodplain, within Flood Zone X. Downstream of the crossing, Hammer Brook flows into Norwichtown Brook. This area is mapped as FEMA Flood Zone A, a Special Hazard Area.

Study Area

Bridge No. 06795 culvert allows I-395 northbound and southbound to cross Hammer Brook. Land use in the vicinity of the Site includes transportation (roadway), forest, commercial and residential properties. Cover on undeveloped land includes both forest land and scrub-shrub wetlands.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are adjacent to the Hammer Brook watercourse at the inlet and outlet of Bridge No. 06795. Hammer Brook flows west to east. The watercourse of Hammer Brook is riverine (R4SBC) with intermittent, seasonally flooded water in the streambed. The channel width varies with narrower sections in areas with rocky substrate. At the outlet, Hammer Brook acts as a tributary and joins Norwichtown Brook, which runs further south along the

I-395 northbound embankment through a series of culverts south of West Town Street and ultimately discharges into the Yantic River. The confluence between Hammer Brook and Norwichtown Brook is approximately 20 feet downstream of the bridge outlet. The wetlands within the project area contain muck soils, scrub-shrub wetland plant species, and broad-leaved deciduous plants. The wetland in the northern portion of the project area, adjacent to the inlet is a Freshwater Forested/Shrub Wetland (PSS1E). The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

The area adjacent to Hammer Brook upstream of the crossing includes dense brush dominated by Multiflora rose (*Rosa multiflora*). Other species present include Morrow's Honeysuckle (*Lonicera morrowii*), Garlic Mustard (*Alliaria petiolata*), Common Mullein (*Verbascum Thapsus*) and *Carex* spp. Downstream of the crossing has a tree canopy dominated by Red Maple (*Acer rubrum*) and American Beech (*Fagus grandifolia*). The area adjacent to the roadway includes trees and saplings of Eastern White Pine (*Pinus strobus*), Red Maple, as well as Japanese Barberry (*Berberis thunbergii*), and Asiatic Bittersweet (*Celastrus orbiculatus*).

Soils

Soils found within the project area mapped by the Natural Resource Conservation Service (NRCS) predominantly includes Udorthents-Urban Land complex (Map #306) and Urban Land (Map #307). The surrounding area adjacent to the project area at the inlet is Raypol Silt Loam (Map #12) and adjacent to the project area at the outlet is Rippowam Fine Sandy Loam (Map #102). The adjacent area has wetland soils present, which includes areas of mucky mineral and mucky-fine sandy loam soil.

Functions and Values

The primary wetland functions and values of Hammer Brook and wetlands in the project area are fisheries and wildlife habitat, flood flow alteration, and sediment/nutrient retention. The stream channel functions within the culvert are limited to fish and wildlife passage and flood flow alteration. The field environmental assessment was limited to observations made during wetland delineation. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest.

The proposed project will have limited effects on wetland function and values in the project area. The two critical issues with culvert lining are alteration of flood flows and impacts to fish passage. This project is designed to minimize changes to the existing conditions to the maximum extent practicable; however, the changes proposed will impact the flows and thus impair the fish passage. As a result of the impacts to fish passage, offsite mitigation has been included in this project which will restore fish passage to over 1.68 miles of natural stream habitat to native trout brook populations. The design process for this project also included hydraulic modeling of the proposed culvert lining. The hydraulic modeling analysis found that the 50-year water surface elevation will be 0.4 feet less than the existing water elevation. The proposed culvert rehabilitation involves changing the bottom of the culvert to be smooth lining; given the low gradient of the culvert, a slight increase of the stream flow velocity is anticipated. The project meets the design criteria for the CTDOT Drainage Manual for small structures. The proposed water surface elevations are not expected to adversely impact existing structures. The structure maintains approximately 9.8 feet of freeboard to the I-395 roadway in the modeled conditions for the 50-year discharge. Flood waters will continue to overtop the right overbank spillway and flood the nearby hotel parking lot; however, the proposed project is not expected to adversely impact existing structures as compared to existing conditions. The proposed rehabilitated culvert will result in a 11% decrease in flow over the spillway when

compared to the existing conditions. Inundation maps for the 50-year and 100-year storm have been attached to the applications. The hydraulic analysis showed no discernable difference between the existing and proposed 10-year and 25-year storm; therefore, inundation maps for those storm frequencies have been omitted.

Short-term effects as a result of construction activities are minimized by:

- Erosion and sedimentation control plan.
- Inclusion of a water handling plan.
- Minimizing work area in the watercourse and wetlands.
- Limiting areas of disturbance in uplands.
- Restoration of temporarily disturbed areas.

Regulatory Impacts

To gain access to the structure to perform the work, permanent access roads will be constructed at the upstream and downstream side of Bridge No. 06795. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction.

Construction access and water handling:

The project site will require the construction of permanent construction access roads to allow materials and heavy construction equipment to access the culvert. Access roads will be constructed at the upstream and downstream sides, which will require clearing and grubbing as well as some permanent impacts to wetlands. A sedimentation and erosion control system will be installed along the access roads and employed throughout all phases of construction. To minimize traffic impacts on I-395, the work zone adjacent to I-395 will be contained to the shoulder of both the northbound and southbound lanes. Off-peak temporary shoulder and/or lane closures may be used for equipment or construction personnel to enter and exit the access roads, as required. The lining and construction at the inlet and outlet of Bridge No. 06795 will require the installation of temporary water-handling-cofferdams and temporary dewatering of portions of Hammer Brook within the project area.

The construction is anticipated to take place in two stages. In Stage 1, a temporary water handling bypass pipe will be installed along one side of the entire length of the culvert and temporary water-handling cofferdams will be placed at the inlet and outlet of the structure. Water will be confined to the temporary bypass pipe. During this stage the entire pipe will be power-washed and voids filled. The water from the power-washing operations will be completely contained and pumped to a settling basin. Once the existing pipe is cleaned, half of the culvert invert to be lined with the proposed 4 inches of concrete in the dry. During Stage 1, the temporary water-handling cofferdams will allow for the proposed cut-off wall, wingwalls, and headwalls to be installed in the dry at the inlet and outlet. In Stage 2, the bypass pipe will be relocated to the other side of the culvert so that the remaining portion of the culvert invert may be lined. A preformed riprap scour hole will be placed at the culvert outlet to prevent additional scour. Salvaged natural streambed material will be regraded at the inlet to raise the streambed to the new culvert invert elevation. Once construction is completed the temporary water-handling equipment will be removed restoring flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatered groundwater to a temporary sedimentation basin located in an upland area. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. All temporarily disturbed areas will be restored at the completion of construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set.

The sedimentation and erosion control system shall be removed upon permanent stabilization. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Cast-in-Place Concrete Lining:

The cast-in-place concrete lining will occur within Bridge No. 06795. The project proposes to install a 4 inch thick concrete lining along the bottom invert of the culvert. The lining will result in minor changes in the existing conditions. The greatest concern for this lining is reducing the hydraulic capacity and altering flooding and hydraulic conditions at the culvert. The recommended lining will reduce the hydraulic opening of the crossing. The proposed water surface elevation will decrease by 0.4 feet as compared to existing conditions. As previously stated, the proposed water surface elevations are acceptable under the CTDOT Drainage Manual based on the freeboard of the roadway. Changes of the area flooded in a 50-year event (design storm) are negligible based on the changes to the water surface elevation and upstream topography.

Fish Passage:

The project includes feasible elements designed to minimize project impacts to fisheries while minimizing channel connectivity impacts from the cast-in-place concrete lining. The proposed design culvert will result in increased water velocities in the culvert and a raised elevation exacerbating shallow water depth. The proposed design will impact the existing fisheries in the area and Bridge No. 06795 will be impassable. Native brook trout will not be able to reach the 1.2 miles of stream habitat currently existing upstream of the structure. On-site mitigation alternatives were determined to be not possible due to a lack of a viable/feasible alternative that would not create backwater conditions or flood upstream private properties. Due to impacts to upstream fish passage, CTDEEP Fisheries Division proposed an offsite mitigation site. This offsite mitigation has been coordinated between CTDOT and CTDEEP Fisheries. The selected mitigation site is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed project will conserve the native brook trout population and improve existing conditions. The proposed mitigation location will provide channel connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both up and downstream of the structure. The proposed work involves the replacement of the existing perched, undersized culvert with a timber bridge on Del Reeves Road. This mitigation proposes to conserve the native brook trout population. The proposed mitigation is further outlined in the Memorandum of Agreement (MOA) between CTDOT and DEEP Fisheries attached to the regulatory permit applications.

Fisheries design elements include:

- Placement of a preformed riprap scour hole at the outlet and the placement of salvaged natural streambed material at the inlet which will raise the streambed to the new culvert invert elevation to ensure that the structure does not create a 'drop' barrier to fish movement.
- The restoration of disturbed areas.
- Offsite mitigation to offset the adverse impacts from the culvert lining.

Proposed Impacts:

The proposed project results in 1,900 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads, the placement of the preformed riprap scour hole at the outlet and associated channel grading, as well as the construction at the inlet and outlet of the

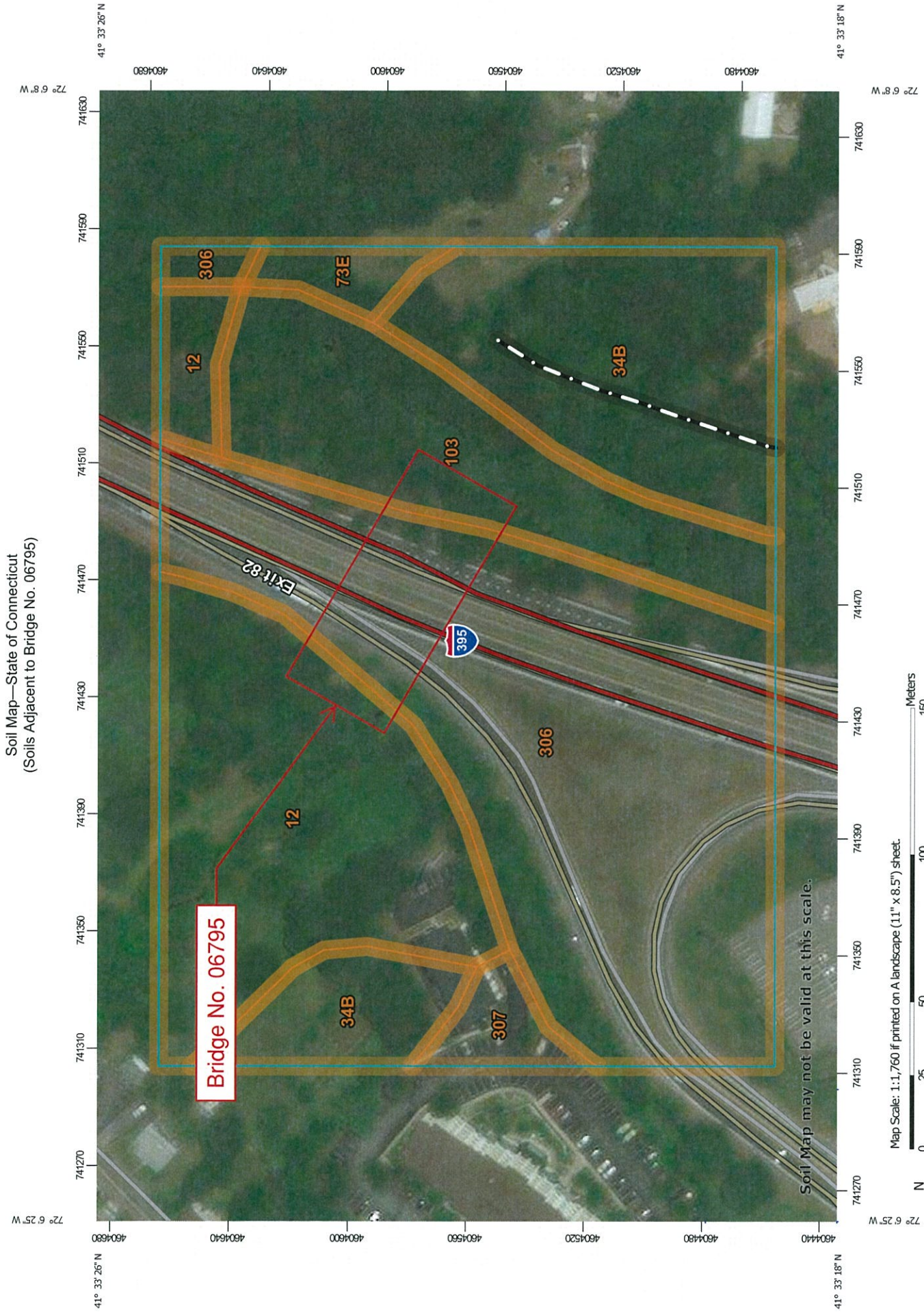
culvert. In order to place the material into the regulated areas, heavy machinery and equipment will be required. The project results in 1,400 square feet (0.03 acres) of permanent watercourse impacts. This number accounts for the lining of the culvert, the construction of the headwalls, wingwalls, cutoff walls at the inlet and outlet, and placement of riprap at the outlet and associated channel grading. Though this is described as a permanent impact, the watercourse will remain. The project will not result in permanent conversion of watercourse to upland. Temporary impacts include the area necessary for the water handling and tree clearing. Temporary impact to the wetlands is 1,600 square feet (0.04 acres) and to the watercourse is 400 square feet (0.01 acres). The total wetland and watercourse impact is 5,300 square feet (0.12 acres). Impacts are described within the table below:

Bridge No. 06795 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	1,600 sqft (0.04 ac)	400 sqft (0.01 ac)	2,000 sqft (0.05 ac)
Permanent	1,900 sqft (0.04 ac)	1,400 sqft (0.03 ac)	3,300 sqft (0.08 ac)
Total	3,500 sqft (0.08 ac)	1,800 sqft (0.04 ac)	5,300 sqft (0.12 ac)







































Mitigation, Minimization, and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of proposed impacts. These design elements include, utilizing a water handling system for the flow of Hammer Brook during construction, placing riprap at the outlet of the culvert to prevent scour and to grade the streambed to the new invert elevation, as well as the construction of flared concrete wingwalls at the inlet and outlet, and a rounded entrance at the inlet of the culvert to improve the flow of the brook. Salvaged natural streambed material will be placed at the inlet of the culvert to grade the streambed to the new invert elevation. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers, and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed construction access roads and staging areas. Although the project counts areas within the culvert and at the inlet and outlet as permanent impact, those areas will remain watercourse following the completion of the project. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The proposed project could not incorporate any onsite fisheries mitigation due to potential flooding on to private property. As a result, offsite mitigation has been coordinated to offset adverse fisheries impacts as a result of the invert lining of Bridge No. 06795. The selected offsite mitigation is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed mitigation location will provide channel connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both upstream and downstream of the structure. The proposed work involves the replacement of the existing perched and undersized culvert with a timber bridge on Del Reeves Road. This mitigation proposes to conserve the native brook trout population. The MOA between CTDOT and DEEP Inland Fisheries has been attached to the regulatory permit applications. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
 (Soils Adjacent to Bridge No. 06795)



MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Soils		Stony Spot
	Soil Map Unit Polygons		Very Stony Spot
	Soil Map Unit Lines		Wet Spot
	Soil Map Unit Points		Other
	Special Point Features		Special Line Features
	Blowout		
	Borrow Pit	Water Features	
	Clay Spot		Streams and Canals
	Closed Depression	Transportation	
	Gravel Pit		Rails
	Gravelly Spot		Interstate Highways
	Landfill		US Routes
	Lava Flow		Major Roads
	Marsh or swamp		Local Roads
	Mine or Quarry	Background	
	Miscellaneous Water		Aerial Photography
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 18, Dec 6, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 14, 2011—Aug 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12	Raypol silt loam	3.3	22.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	2.9	20.1%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	0.3	1.8%
103	Rippowam fine sandy loam	2.0	14.1%
306	Udorthents-Urban land complex	5.7	39.1%
307	Urban land	0.3	2.0%
Totals for Area of Interest		14.5	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06795 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): concave Slope (%): 4
 Subregion (LRR or MLRA): LRR R Lat: 41.5564 Long: -72.1048 Datum: NAD83
 Soil Map Unit Name: Raypol Silt Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
---	---

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
---	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Acer rubrum</i></u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>30</u> =Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____ =Total Cover		
Herb Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Onoclea sensibilis</i></u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>
2. <u><i>Symplocarpus foetidus</i></u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>
3. <u><i>Cichorium intybus</i></u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>25</u> =Total Cover		
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Berberis thunbergii</i></u>	<u>2</u>	<u>No</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>2</u> =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>10</u>	x 1 = <u>10</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>30</u>	x 3 = <u>90</u>
FACU species <u>7</u>	x 4 = <u>28</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>57</u> (A)	<u>148</u> (B)
Prevalence Index = B/A = <u>2.60</u>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 4/6	98	7.5YR 4/4	2	C	M	Mucky Loam/Clay	
2-10	10YR 4/2	90	7.5YR 5/6	10	C	M	Mucky Loam/Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> MLRA 149B	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Dark Surface (S7)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
---	--

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06795 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): slope Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5564 Long: -72.1048 Datum: _____
 Soil Map Unit Name: Raypol Silt Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
--	--

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Acer rubrum</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>20</u> =Total Cover		
Sapling/Shrub Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Rosa multiflora</i></u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>
2. <u><i>Lonicera morrowii</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>80</u> =Total Cover		
Herb Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Alliaria petiolata</i></u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>10</u> =Total Cover		
Woody Vine Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Celastrus orbiculatus</i></u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>10</u> =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>20</u>	x 3 = <u>60</u>
FACU species <u>90</u>	x 4 = <u>360</u>
UPL species <u>10</u>	x 5 = <u>50</u>
Column Totals: <u>120</u> (A)	<u>470</u> (B)
Prevalence Index = B/A = <u>3.92</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

Attachment E
Northern Long Eared Bat Consultation

Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

Information to Determine 4(d) Rule Compliance:

	YES	NO
1. Does the project occur wholly outside of the WNS Zone ¹ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Have you contacted the appropriate agency ² to determine if your project is near known hibernacula or maternity roost trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Could the project disturb hibernating NLEBs in a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Could the project alter the entrance or interior environment of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

You are eligible to use this form if you have answered yes to question #1 or yes to question #2 and no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

Agency: FHWA – Connecticut Division

Applicant³ (Name, Email, Phone No.):

Connecticut Department of Transportation
 Amanda M. Saul, Office of Environmental Planning
DOT.NLEB@ct.gov, (860)594-2939

Project Name: CTDOT0103-0266

Project Location (include coordinates if known): I-395 Norwich (coordinates listed below) at three locations

Basic Project Description (provide narrative below or attach additional information):

This project involves the rehabilitation of three culverts under I-395 in the town of Norwich, Bridge 06795 over Hammer Brook (41.556303, -72.104585), Bridge 06796 over Byron Brook (41.577787, -72.076136), and Bridge 06797 over unnamed brook (41.583895, -72.061892).

¹ <http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>

² See <http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html>

³ If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

General Project Information	YES	NO
Does the project occur within 0.25 miles of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project occur within 150 feet of a known maternity roost tree?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project include forest conversion ⁴ ? (if yes, report acreage below)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Estimated total acres of forest conversion	1.5 ac	
If known, estimated acres ⁵ of forest conversion from April 1 to October 31		
If known, estimated acres of forest conversion from June 1 to July 31 ⁶		
Does the project include timber harvest? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of timber harvest		
If known, estimated acres of timber harvest from April 1 to October 31		
If known, estimated acres of timber harvest from June 1 to July 31		
Does the project include prescribed fire? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of prescribed fire		
If known, estimated acres of prescribed fire from April 1 to October 31		
If known, estimated acres of prescribed fire from June 1 to July 31		
Does the project install new wind turbines? (if yes, report capacity in MW below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated wind capacity (MW)		

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: Amanda M. Saul

Digitally signed by Amanda M. Saul
 DN: cn=Amanda M. Saul, o=Connecticut
 Department of Transportation, ou=Office of
 Environmental Planning,
 email=amanda.saul@ct.gov, c=US
 Date: 2019.03.15 09:14:22 -04'00'

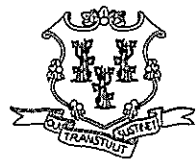
Date Submitted: 3/15/2019

⁴ Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).

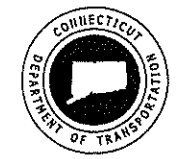
⁵ If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.

⁶ If the activity includes tree clearing in June and July, also include those acreage in April to October.

Attachment F
CTDEEP Fisheries Approval and Memorandum of Agreement (MOA)



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

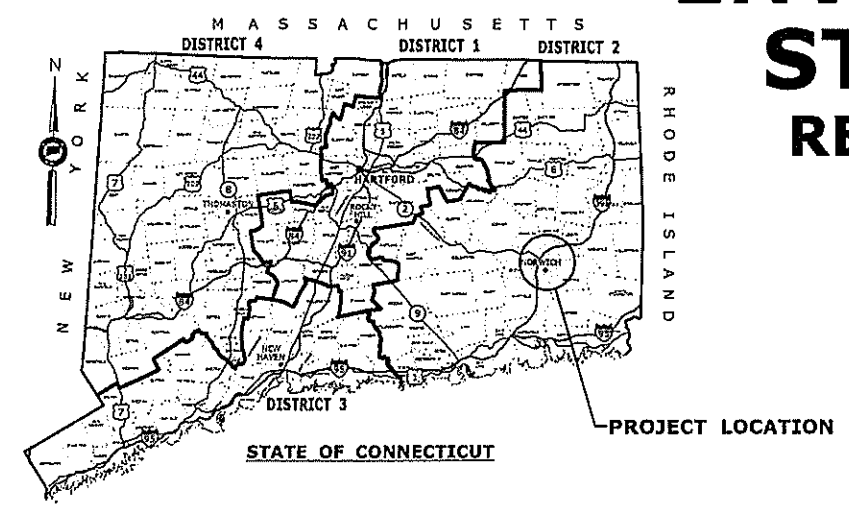
STATE PROJECT NO. 103-266

REHABILITATION OF BRIDGE No. 06795

I-395 OVER HAMMER BROOK,

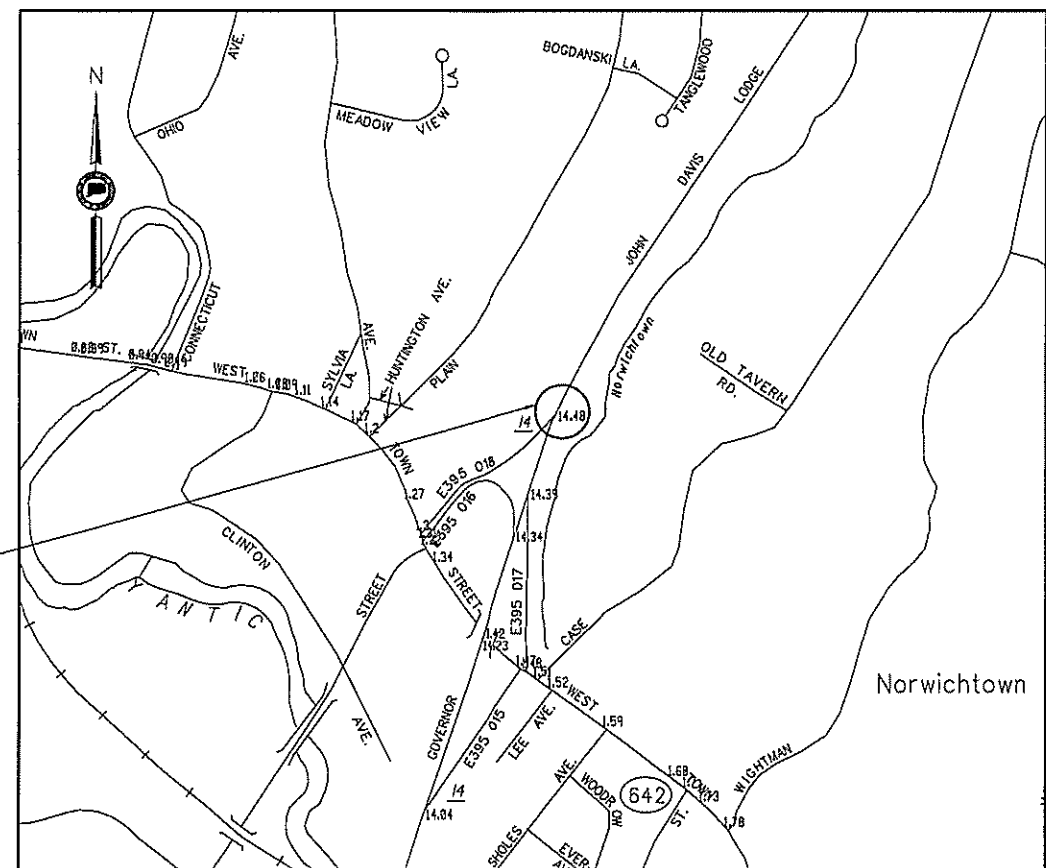
(SITE No. 1)

IN THE CITY OF NORWICH



Brian
Murphy

Digitally signed
by Brian Murphy
Date: 2019.05.30
09:26:28 -04'00'



LOCATION PLAN
SCALE: 1" = 500'

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06795 TITLE SHEET
PMT-02	BR. NO. 06795 GENERAL SITE PLAN
PMT-03	BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06795 CROSS-SECTIONS
PMT-05	BR. NO. 06795 100-YEAR FLOOD IMPACT PLAN
PMT-06	BR. NO. 06795 ELEV. & SECTION PLAN
PMT-07	BR. NO. 06795 STAGING AND WATER HANDLING PLAN
PMT-08	BR. NO. 06795 PERMIT PLANTING PLAN

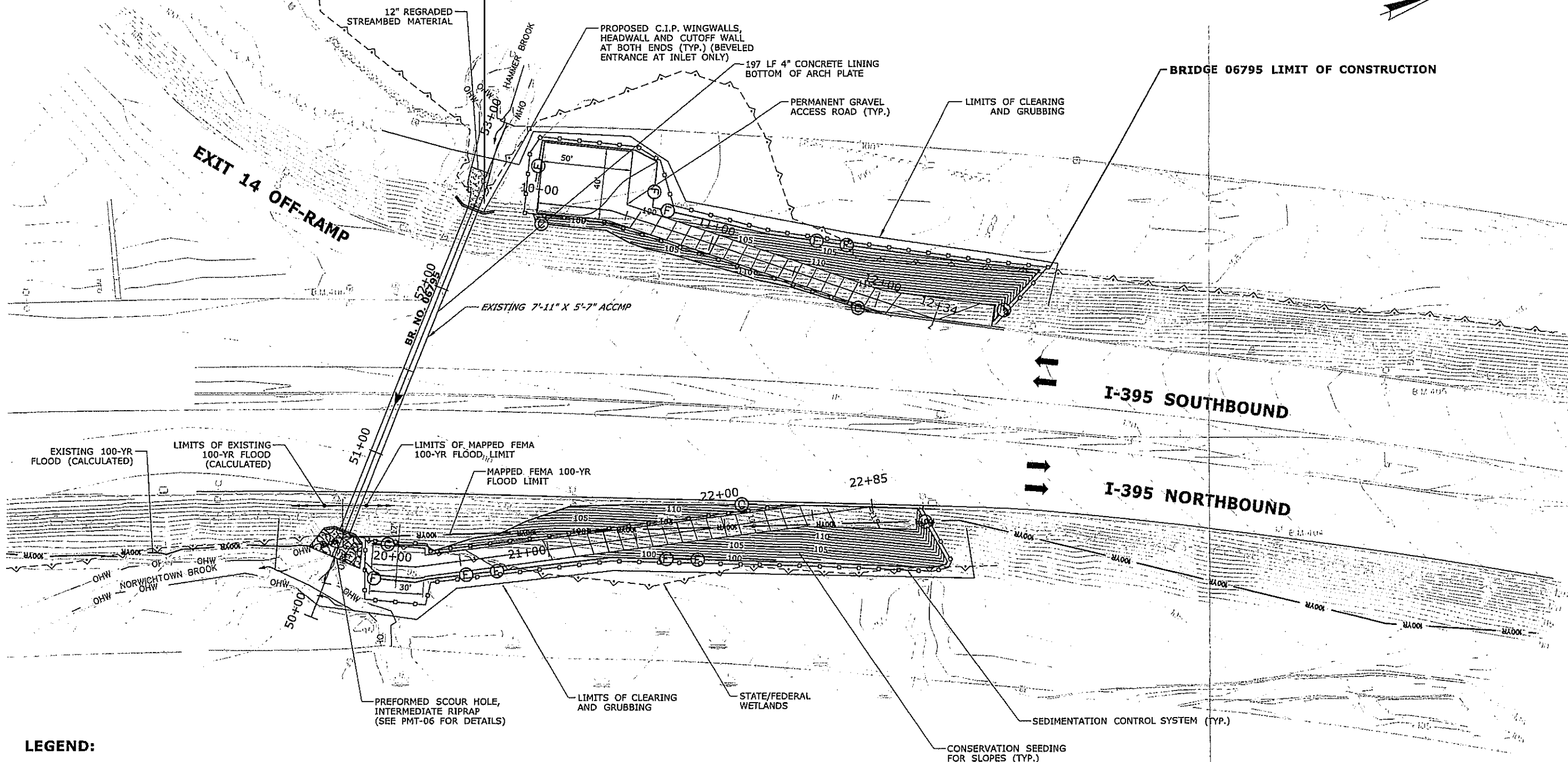
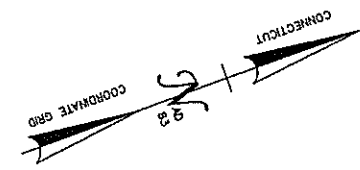
LOUIS BERGER
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Robert Lin
2019.04.10
10:12:20-04'00'

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/9/2019

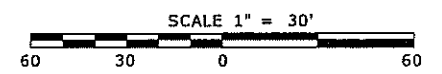
DESIGNER/DRAFTER: JPM	CHECKED BY:	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266
SCALE AS NOTED	FILENAME: ...\\HV.HSH.0103.0266.06795.TSH.dgn				DRAWING TITLE: BR. NO. 06795 TITLE SHEET	DRAWING NO. PMT-01
REV. DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 4/9/2019			SHEET NO.

BEGIN STATE PROJECT NO. 103-266
 BRIDGE 06795 LIMIT OF CONSTRUCTION
 STA. 10+00

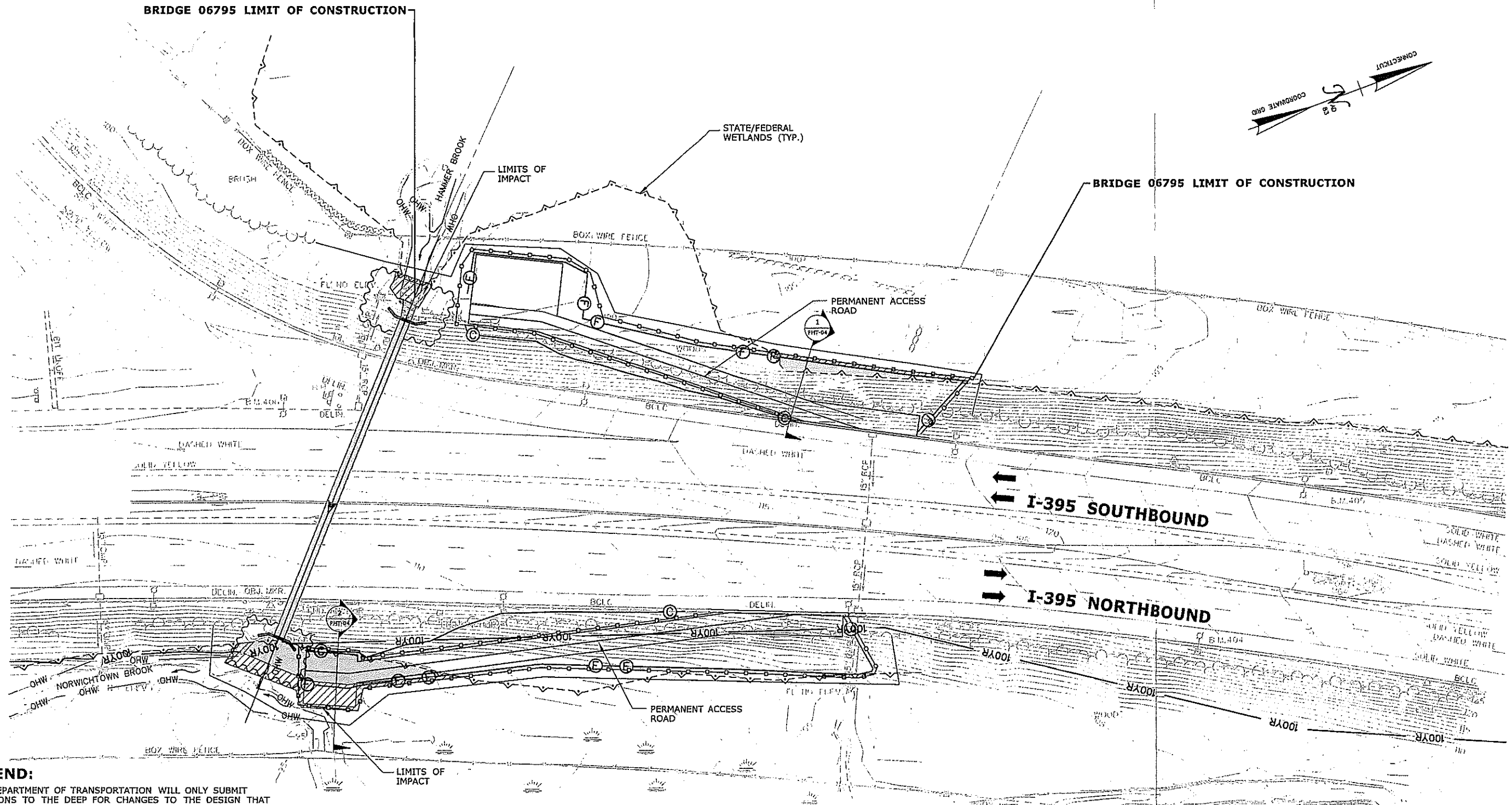


LEGEND:

- 100YR - MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW - ORDINARY HIGH WATER
- - - - STATE/FEDERAL WETLANDS
- o - o - SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 4/9/2019



LEGEND:

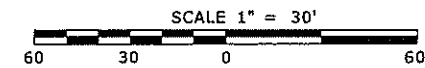
THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- PERMANENT IMPACT
- MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

NOTES:

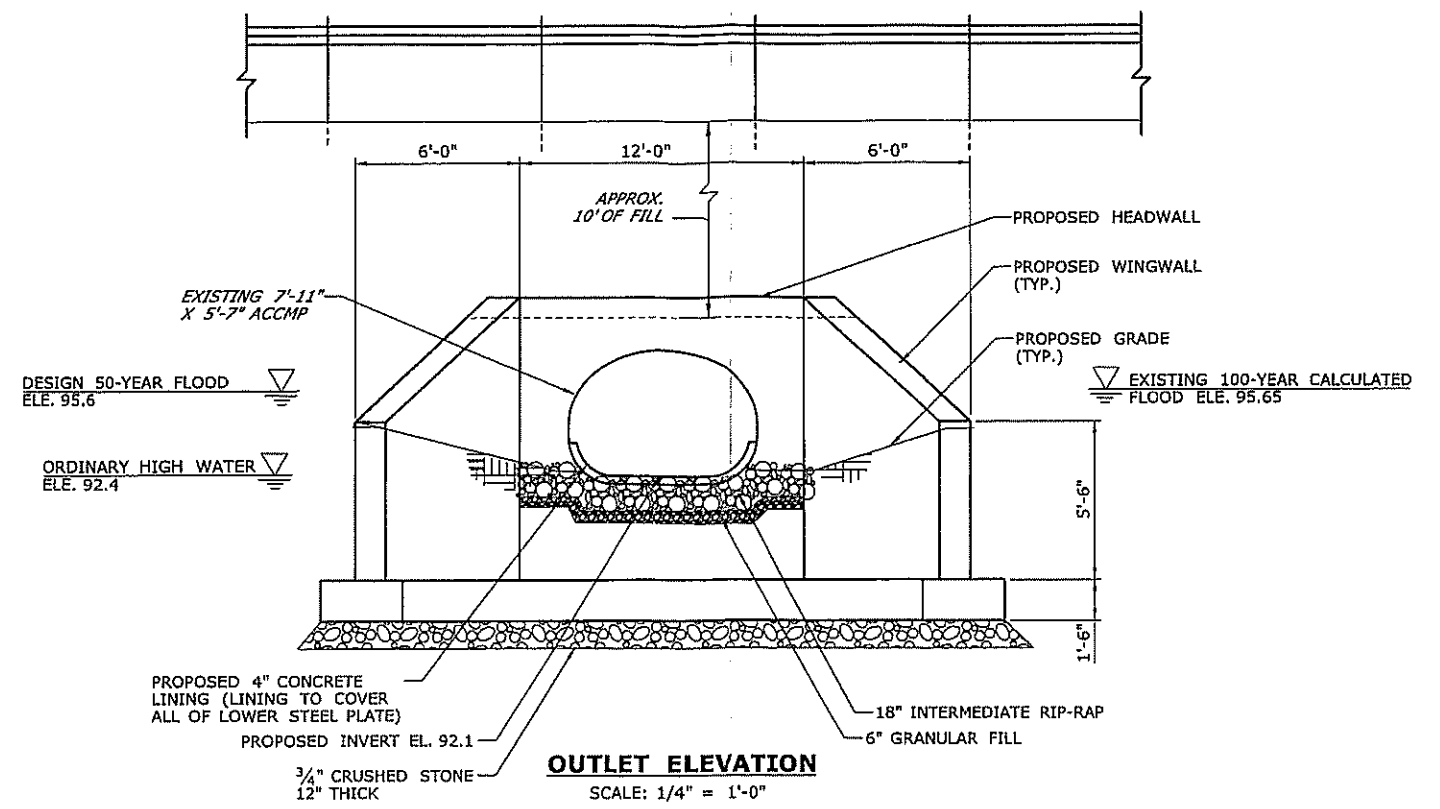
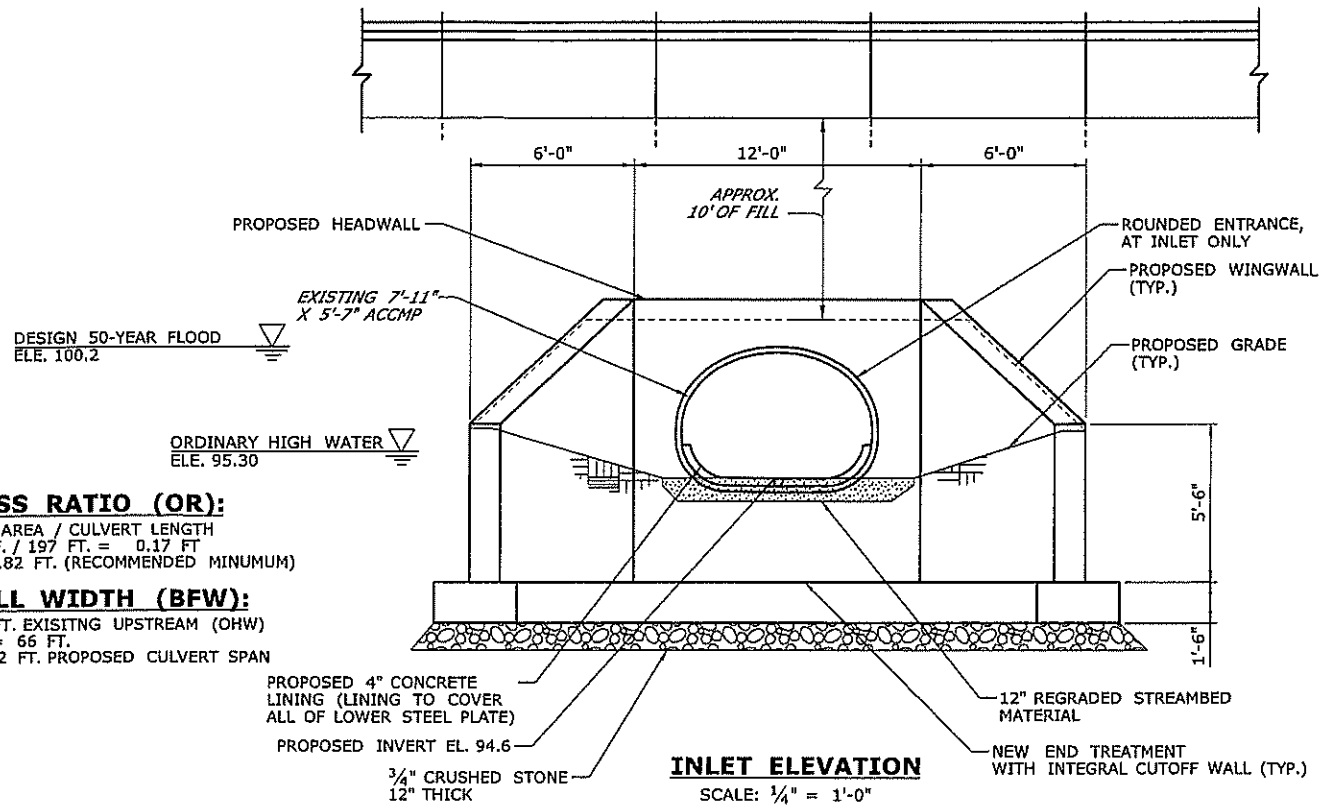
1. CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE.
2. ALL DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

WETLAND IMPACT TABLE			
WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS 1	1800 S.F. (0.04 AC.)	1400 S.F. (0.03 AC.)	3200 S.F. (0.07 AC.)
TEMPORARY IMPACTS 1	1200 S.F. (0.03 AC.)	400 S.F. (0.01 AC.)	1600 S.F. (0.04 AC.)
TOTAL IMPACTS	3000 S.F. (0.07 AC.)	1800 S.F. (0.04 AC.)	4800 S.F. (0.10 AC.)



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/9/2019

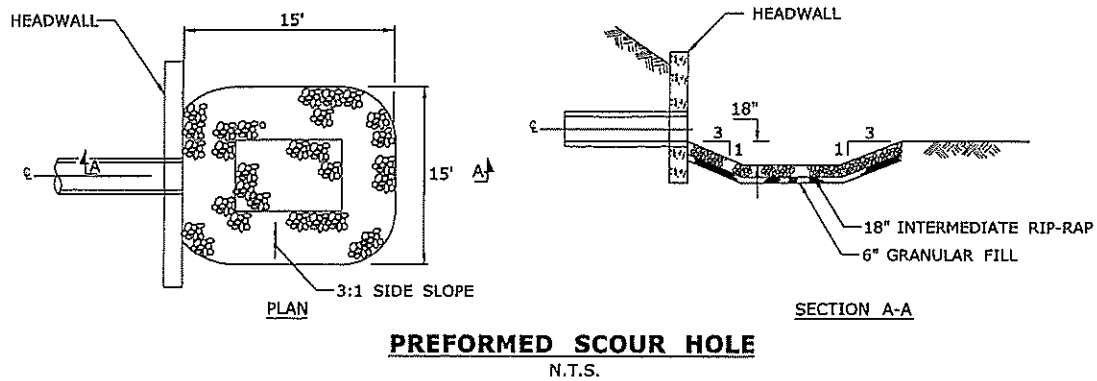
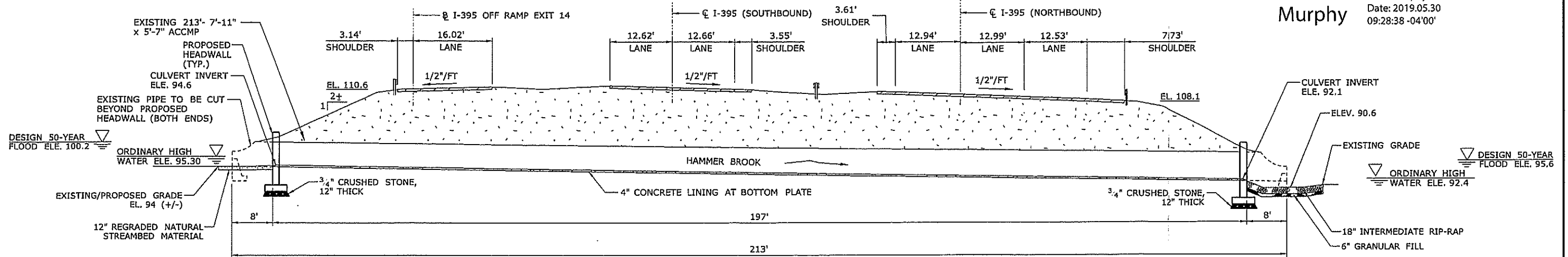
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 4/9/2019	DESIGNER/DRAFTER: MAM CHECKED BY: MAM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>SIGNATURE/ BLOCK:</p> <p> Louis Berger</p> <p>2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE:</p> <p>REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN:</p> <p>NORWICH</p> <p>DRAWING TITLE: BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-03</p> <p>SHEET NO.</p>



OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 34 S.F. / 197 FT. = 0.17 FT
 0.17 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):
 BFW = 55 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 66 FT.
 66 FT. > 7.92 FT. PROPOSED CULVERT SPAN

Brian Murphy
 Digitally signed by
 Brian Murphy
 Date: 2019.05.30
 09:28:38 -04'00'



**PROPOSED LONGITUDINAL SECTION
 (LOOKING NORTH)**
 SCALE: 1" = 10'

NATIVE STREAMBED MATERIAL NOTES

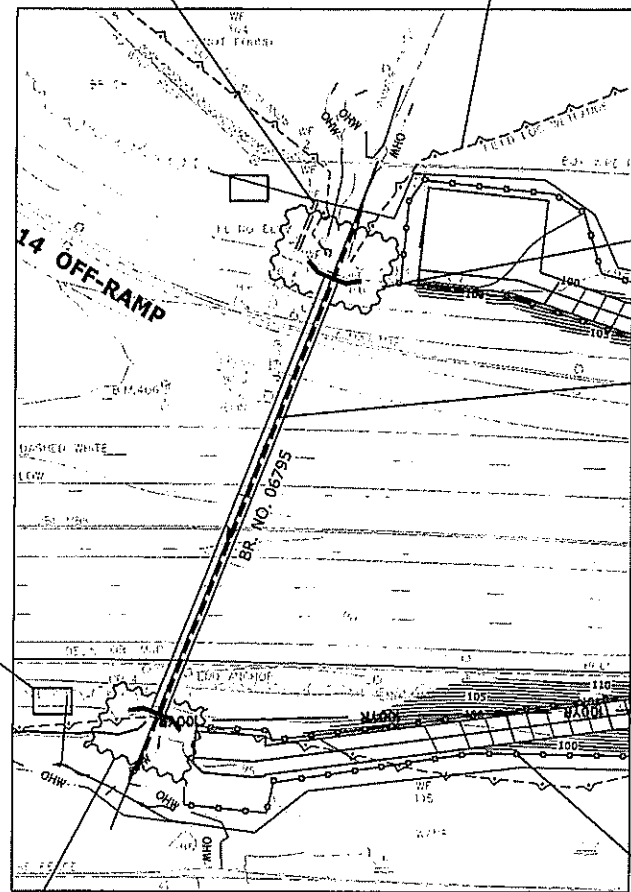
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PARTIAL CULVERT REMOVAL AND NEW END TREATMENT INSTALLATION SHALL BE STOCKPILED AND THEN REPLACED AT THE INLET TO THE DEPTH SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER, AND IN ACCORDANCE WITH THE PERMIT DOCUMENTS.
2. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.

HYDRAULIC DATA 06795	
DRAINAGE AREA	0.73 SQ MILES
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	305 CFS
AVERAGE DAILY FLOW ELEVATION	95.0
UPSTREAM DESIGN SURFACE WATER ELEVATION	100.2
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	95.6

ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 3/1/2019

DESIGNER/DRAFTER: MM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266
CHECKED BY: MJM					
SCALE AS NOTED	FILENAME: ...USB_MSH_0103-0266_Br06795_ES_Plan.dgn	SIGNATURE/BLOCK:	PROJECT NO.	TOWN:	PROJECT NO.
REV. DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 3/1/2019		

12" TEMPORARY EXTENSION PIPE
STATE/FEDERAL WETLANDS (TYP.)



WATER-HANDLING COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL (TYP.) MIN. TOP OF COFFERDAM ELEV. 99.0
18" HDPE TEMPORARY WATER HANDLING BYPASS PIPE

TEMPORARY DEWATERING BASIN (APPROX. LOCATION) (TYP.)

WATER-HANDLING COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL MIN. TOP OF COFFERDAM ELEV. 94.5

STAGE - 1 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS ROADS.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY WATER-HANDLING FACILITIES, INCLUDING TEMPORARY WATER-HANDLING COFFERDAM AND TEMPORARY BYPASS PIPE. WATER HANDLING TO REMAIN THROUGH ALL STAGES.
5. POWER WASH INTERIOR OF PIPE AND FILL VOIDS (SEE NOTES).
6. EXCAVATE AND PUMP DRY. CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, HEADWALL AND HALF OF INVERT LINING.

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY BYPASS PIPE AS SHOWN DURING CONSTRUCTION OF THE NEW LINING AND END TREATMENTS.

EQUIPMENT SHALL NOT BE PERMITTED IN THE STREAM WHEN TEMPORARY BYPASS PIPE IS NOT IN PLACE WITHOUT APPROVAL FROM THE ENGINEER.

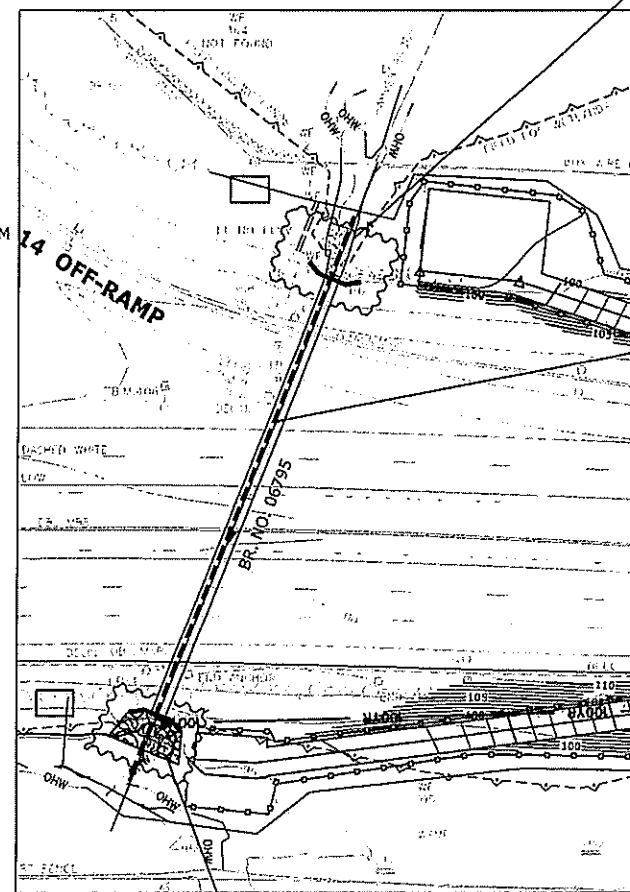
A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREA. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. NO ADDITIONAL REGULATORY IMPACTS WILL BE ALLOWED BEYOND THE AREAS SHOWN. ALL DISTURBED AREAS SHALL BE RESTORED.

WATER FROM POWER WASHING OPERATIONS MUST BE COMPLETELY CONTAINED AND PUMPED INTO A SETTLING BASIN.

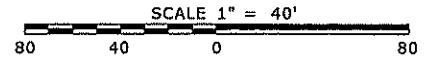
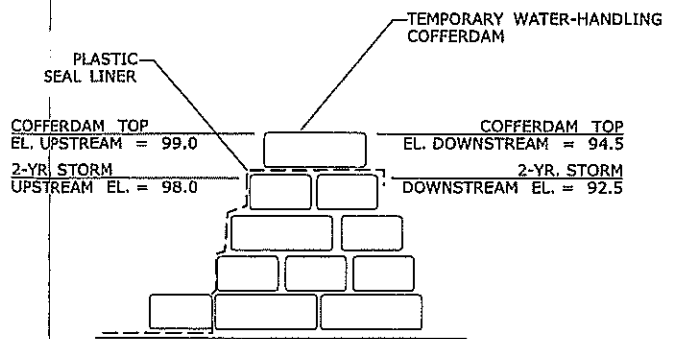
TEMPORARY HYDRAULIC DATA 06795	
AVERAGE DAILY FLOW	1.4 CFS
AVERAGE SPRING FLOW	2.7 CFS
2-YEAR FREQUENCY DISCHARGE	30 CFS
TEMPORARY DESIGN DISCHARGE	30 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	98 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	92.5 FT



12" REGRADED STREAMBED MATERIAL
18" HDPE TEMPORARY WATER HANDLING BYPASS PIPE

STAGE - 2 SUGGESTED SEQUENCE

1. RELOCATE TEMPORARY WATER HANDLING BYPASS PIPE.
2. CONSTRUCT OTHER HALF OF INVERT LINER.
3. INSTALL RIP-RAP PREFORMED SCOUR HOLE AT OUTLET.
4. REGRADE EXISTING NATURAL STREAMBED MATERIAL AT THE INLET TO NEW INVERT.
5. REMOVE TEMPORARY WATER HANDLING FACILITIES.
6. INSTALL CONSERVATION SEEDING AND PROPOSED PLANTINGS.
7. REMOVE EROSION AND SEDIMENTATION CONTROL UPON PERMANENT STABILIZATION.



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/9/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/BLOCK: <p>Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06795 STAGING AND WATER HANDLING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-07 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plistd Date: 4/9/2019						

To be provided by Sponsoring Agency		
PS#	Core CT Contract #	PO#

**MEMORANDUM OF AGREEMENT
BETWEEN THE
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND
THE DEPARTMENT OF TRANSPORTATION**

This Memorandum of Agreement (MOA) is entered into by the Department of Energy and Environmental Protection (DEEP) and the Department of Transportation (DOT) for the purpose of undertaking a project of mutual interest pursuant to Section CGS 22a-41 in anticipation of a DEEP License being issued for Project 103-266.

1. **Duration:** The period of this MOA shall begin upon execution and shall expire when all conditions have been met but in any case no later than three years from the transfer of funds from DOT to DEEP.
2. **Title:** This project is entitled: *“Fisheries Mitigation – Br. No. 06795, I-395 over Hammer Brook, Norwich; State Project 103-266”*.
3. **Total Project Costs** for the period of this MOA shall not exceed **\$235,000**.
4. **Project Directors:** The following individuals are designated to serve as Project Directors (or Project Managers or Principal Investigators):

For the DOT

Andrew H. Davis
Transportation Supervising Planner
Office of Environmental Planning
Department of Transportation
2800 Berlin Turnpike
Newington, CT 06131
Email: andrew.h.davis@ct.gov
Phone: (860)594-2157

For the DEEP

Brian D. Murphy
Senior Fisheries Habitat Biologist
DEEP – Bureau of Natural Resources
Fisheries Division
209 Hebron Road
Marlborough, CT 06447
Email: brian.murphy@ct.gov
Phone: (860) 424-4142

5. **Business Contacts:** The following individuals are designated to serve as contacts for business matters:

For the DOT:

Kimberly C. Lesay
Transportation Assistant Planning Director

Department of Transportation
2800 Berlin Turnpike
PO Box 317546
Newington, CT 06131
email: Kimberly.Lesay@ct.gov
Phone: 860-594-2931

For the DEEP:

Deidre Persson
Fiscal/Administrative Assistant

DEEP FSS – Financial Management Division
79 Elm Street
Hartford, CT 06106-5127
email: deidre.persson@ct.gov
Phone: (860) 424-3977
Fax: (860) 424-4122

6. **General Supervision:** Primary responsibility for general supervision of all activities and compliance with all applicable laws and standards and the terms of this MOA rests with the DEEP.
7. **Description:** This MOA will cover work that will be conducted by DEEP for a fisheries project within the Meshomasic State Forest in East Hampton (hereinafter called project). A substandard culvert that conveys Mott Hill Brook under Del Reeves Road, located on DEEP State Forest Property has scoured at its outlet

resulting in perched conditions. This condition forms a barrier and blocks upstream fish passage for the native brook trout populations. The main project goal is to restore upstream fish passage and instream habitats for the wild brook trout population and provide stream connectivity to over 1.68 miles of upstream habitats.

Project objectives are: (1) remove an existing barrier to fish passage and replace it with a box culvert,(2) restore and stabilize instream and streambank habitats at and below the road crossing , and (3) monitoring of brook trout population response through two pre and two post project annual fish surveys.

The restoration project will be conducted by DEEP. DEEP will obtain all required state/federal permits for the project.

The selected restoration project has been chosen as off-site mitigation for DOT Project 103-266 which involves the repair of culvert #06795 with a smooth concrete bottom at Hammer Brook, Norwich. The project has been flagged as requiring mitigation due to the fact that the existing culvert provides fish passage but the proposed smooth concrete bottom repair of the culvert will prevent the passage of fish through the repaired culvert. The Meshomasic State Forest project has been discussed with DEEP Land and Water Reuse Division (LWRD) and LWRD staff are in agreement with the suitability of this project as adequate mitigation for Project 103-266. (See Appendix A)

8. **Project Location:** DOT Project 103-266 is located in Norwich; Bridge #06795 carries I-395 over Hammer Brook. The off-site mitigation project is located on State property within the boundary of Meshomasic State Forest in East Hampton.

9. **Deliverables:**

A. By the DOT-

1) DOT will secure funding to support the mitigation project (See Appendix B).

2) A transfer of funds from DOT to DEEP to reimburse DEEP costs for the restoration project will take place following the receipt of invoices for said work. Initial project design and engineering work is expected to occur in 2018 and the amount to be expended will be approximately \$38,726 which will be made immediately available to DEEP for design funds in Accordance with Appendix C and is not to exceed \$38,726. The remainder of the funding for construction, \$193,629, will be made available to DEEP once Project 103-266 construction funds are obligated, which is approximately scheduled for 8/14/2019. DEEP shall invoice the DOT for costs not to exceed \$235,000 and in accordance with the cost estimate in Appendix C. Costs above this amount may be considered for reimbursement but are subject to eligibility restrictions and available funds.

B. By the DEEP-

1) Construction machinery, equipment, and personnel to complete the box culvert work on Mott Hill Brook.

2) Provide summary report to DOT following schedule in Paragraph 11 below.

3) Upon completion of the work, DEEP will invoice for actual expenses incurred.

10. **Budget:** A total of up to \$235,000 will be provided by the DOT pursuant to the terms of the MOA. The project estimate given to DOT by DEEP for the cost of the work is \$232,355 (Refer to Appendix C for cost estimate).

11. **Schedule of Reports:**

A. **Project Completion Report:** Upon completion of the project, DEEP will provide a summary report of the completed activities to DOT once the post project annual fish survey is complete. Such summaries should be submitted to the DOT no later than three months following project completion of the final post project annual fish survey.

12. **Schedule of Activities:** Upon DOT's formal authorization to DEEP for construction activities to commence the project activities will be scheduled and completed by DEEP. Timing of the project is to be determined by DEEP but shall be completed as expeditiously as practical. Initial project design and engineering work is expected to occur in 2018 and the amount to be expended will be approximately \$38,726 which will be made immediately available to DEEP for design funds in Accordance with Appendix C and is not to exceed \$38,726. The remainder of the funding for construction, \$193,629, will be made available to DEEP once Project 103-266 construction funds are obligated, which is approximately scheduled for 8/14/2019. This obligation date is subject to change based on project 103-266 progression. If the obligation date is to change then DOT will notify DEEP of the date change. Invoicing and reimbursement for actual expenses will occur after work is completed but no later than December 31, 2021.

13. **Cancellation:** Either party may propose to terminate this MOA. The party proposing termination must notify the other party of the MOA explaining the reasons for termination and afford at least ninety (90) days to consult and seek alternatives to termination. Should such consultation fail, the MOA will be terminated. In the event that the DOT is the proponent of the cancellation after the transfer of the funds has been completed, or should DOT project 103-266 not proceed, the completed mitigation work will be transferrable to a future DOT project requiring off-site mitigation. In the event DEEP is the proponent of the cancellation then the requirement for off-site mitigation for Project 103-266 shall still be deemed satisfied unless otherwise agreed in writing.

14. **Extensions/Amendments:** This MOA may be modified by the mutual agreement in writing of the DOT and the DEEP. Revisions may include but not be limited to:

- a. timing of the restoration work,
- b. any other agreement revisions determined material by either agency.

15. **Use of Funds:** The DEEP agrees to limit expenses and efforts to the quoted scope and cost estimate solely for the purpose of the project work at Mott Hill Brook, Meshomasic State Forest. The DEEP agrees to submit all invoices pursuant to this MOA prior to December 31,2021.

16. **CFDA Number is NA.** (Include if federal funding is used) 100% State Funding

17. **Approved by:**

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

DEPARTMENT OF TRANSPORTATION

APPROVED

APPROVED

Date: May 31, 2018

Date: May 17, 2018

By: Susan Whole
Authorized Signature

By: Kimberly Lesauy
Authorized Signature

Chartfield Distributions For Sponsor Agency use only.

Amount	Dept	Fund	SID	Program	Project	Activity	Bud Ref	Agency CF 1	Agency CF 2	Account
					DEP_NONPROJECT					

From: Murphy, Brian
Sent: Tuesday, June 27, 2017 8:46 AM
To: Gilmore, Robert
Subject: RE: Mitigation for Project 103-266 Hammer Brook, Norwich

APPENDIX A : LWRD APPROVAL

From: Gilmore, Robert
Sent: Tuesday, June 27, 2017 8:29 AM
To: Murphy, Brian
Cc: Davis, Andrew H
Subject: RE: Mitigation for Project 103-266 Hammer Brook, Norwich

Brian – I support this mitigation proposal. It's a good project.

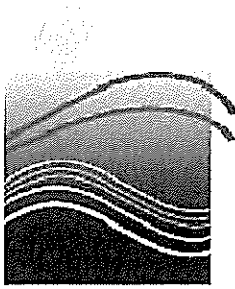
From: Murphy, Brian
Sent: Monday, June 26, 2017 10:20 AM
To: Gilmore, Robert <Robert.Gilmore@ct.gov>
Cc: Gephard, Steve <Steve.Gephard@ct.gov>
Subject: Mitigation for Project 103-266 Hammer Brook, Norwich

Hi Bob,

RE: Hammer Brook, Norwich (RTE 395):

The DOT is using a concrete lining to rehabilitate this culvert. For various property and flooding issues, we cannot modify the culvert to maintain existing fish passage. Since we will lose fish passage at this site due to the lining, I have asked for fish resource mitigation. There is a perched culvert on Del Reeves Road, Mott Hill Brook in Meshomasic State Forest, East Hampton that blocks fish passage for a native brook trout population that I would like to propose as suitable mitigation. In the past, I tried unsuccessfully to obtain an Eastern Brook Trout Joint Venture grant for this project, see attached grant proposal for details. In essence, I want to replace the perched, undersized culvert with a timber bridge that will provide fish passage, restore the channel and increase the openness ratio. Andy Davis appears to be on board with this project as mitigation however he would like a regulatory opinion as to the suitability of this project as mitigation since it would be tied to permit approval. Can you take a look at the original concept proposal and let me know your initial thoughts. We can bring it up at the monthly meeting at DOT if necessary. Thanks.

Brian D. Murphy, Senior Fisheries Habitat Biologist
Fisheries Division
Habitat Conservation and Enhancement Program
Connecticut Department of Energy and Environmental Protection
Eastern District Headquarters
209 Hebron Road
Marlborough, CT 06447
P: 860.295-9523 | F: 860.295.8175 | brian.murphy@ct.gov



Connecticut Department of

**ENERGY &
ENVIRONMENTAL
PROTECTION**

www.ct.gov/deep

*Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.*

Attachment B

CTDOT Project 103-266 KCL
Fisheries Mitigation for Rehabilitation of Bridge 06795
Interstate 395 over Hammer Brook, Norwich

Bridge Number 06795 carries I-395 over Hammer Brook in the Town of Norwich. The existing structure is a 96" x 66" ACCMP which currently displays signs of corrosion, section loss, and perforations, and requires rehabilitation. The structure is currently rated a 4. The structure lies adjacent the confluence with Norwichtown Brook and lies within the Yantic River subregional basin. As part of project coordination, bridge 06795 and surrounding tributaries were surveyed by CTDEEP Fisheries Division and were found to provide for fish passage in the existing condition except for during extreme low flows. These waterways were found to support native fish populations, including native brook trout, which are listed as a Species of Greatest Conservation Need in Connecticut. A full structure replacement was investigated but was dismissed as it resulted in additional project cost, construction duration and would require at least a partial closure of I-395 during construction. The existing structure is characterized by hydraulic inadequacies; therefore, slip-lining was dismissed as well. The rehabilitation of the structure will consist of repairing the bottom portion of the culvert with concrete. The concrete will be smooth as to not exacerbate flooding conditions. Private property upstream currently experiences flooding.

Coordination with CTDEEP regarding permitting needs for the project were ongoing throughout 2016 and various rehabilitation strategies for the structure as well as mitigation strategies were explored, including taking different action within the structure, paired with berms to protect adjacent properties from the increased flooding. However, the berms were found to also increase flooding as well as result in additional property and regulated resource impacts for the physical berm itself. Typically for projects of this type, measures can be taken within or around the pipe (baffles, blocks, weirs) to slow velocities associated with the rehabilitation efforts, however the hydraulic conditions on site prevent these measures from being able to be implemented without creating additional adverse flooding conditions.

Hydraulic analysis conducted for the proposed project rehabilitation reveal the smooth culvert bottom will increase water velocities and will also raise the bottom elevation of the structure, rendering the structure impassable for fish. The loss of passage at bridge 06795 will prevent fish from being able to reach 1.2 miles of stream habitat currently existing upstream of the structure. CTDEEP's Fisheries Division therefore requested mitigation to offset this loss of available habitat.

Since mitigation is not feasible on site, CTDEEP and the Department investigated other mitigation options. Over the summer of 2017, CTDEEP Fisheries Division investigated various sites to find a location that would provide additional fish passage for the same species that are impacted due to the rehabilitation at structure 06795. CTDEEP identified the replacement of a substandard 30" concrete culvert which conveys Del Reeves Road over Mott Hill Brook in East Hampton as acceptable mitigation. The culvert is located within the Meshomasic State Forest property owned by CTDEEP. The culvert is currently undersized and results in roadway overtopping and erosion. A large scour pool has formed downstream of the culvert which has resulted in a perched outlet condition, which prevents fish passage for native brook trout present in the brook. Mott Hill Brook is a tributary to Cold Brook and is located within the Connecticut River Basin. The proposed structure at this location would be a pre-fabricated timber clear span bridge on concrete abutments and would restore fish passage. This mitigation project will provide connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both up and downstream of the structure. Design, permitting and construction oversight will be the responsibility of CTDEEP.

The Department will not be held to long term commitments and involvement is limited to the funding as outlined in an Memorandum of Agreement between the two agencies. The MOA calls for the Department to secure funding in the amount of \$235,000 which is to be transferred to DEEP as a reimbursement following receipt of invoices for the proposed project. This off-Site mitigation arrangement allows the State to maintain its infrastructure and adequately and efficiently mitigate for unavoidable impacts to natural resources.

Attachment C

Project Title:	Del Reeves Culvert Replacement	Date:	9/1/2017
Bridge # :	N/A	Estimated by:	JSB
Project Number:	TBD	Checked by:	JSB
Project Location:	Meshomasic State Forest, East Hampton, CT	Base year:	2017
Preliminary Estimated Construction Phase Cost		Construction year:	2018
		Inflation (%):	3.5

Item No.	Item Name/Description	Units	Quantity	Units Price	Line Item Value
1	Earth Excavation	CY	30	15	450
2	Structure Excavation - Earth	CY	10	30	300
3	Sedimentation Control System	LF	100	4	400
4	Removal of Existing Pipe Culvert & Wingwalls	SF	110	70	7700
5	Disposal of Debris	CF	792	20	15840
6	Replace Culvert (Precast Box Culvert (5' Rise x 5' Span)	SF	110	240	26400
7	Culvert Footings	LF	44	150	6600
8	Metal Beam Rail (Type R-B 350)	LF	92	35	3220
9	R-B 350 Bridge Attachment - Vertical Shape	EA	4	2300	9200
10	R-B End Anchorage - Type II	EA	4	1300	5200
11	Furnishing and Placing Top Soil	SY	187	6	1122
12	Formation of Subgrade (Culvert Base)	SY	35	5	175
13	Subbase, Processed Aggregate Base (3/4" Stone)	CY	5.5	35	193
14	Filter fabric/Geotextile Fence	SF	150	3	450
15	Pervious Structure Backfill	CY	60	80	4800
16	Membrane Water Proofing (Cold Liquid Elastomer)	SY	20	60	1200
17	Sweeping For Dust Control	HR	20	40	800
18	Turf Establishment	SY	20	1	24
19	Temporary Precast Concrete Barrier	LF	30	25	750
20	Traffic Control (Traffic Drums)	EA	10	50	500
21	Construction Signs	SF	100	15	1500
22	Crane Rental (Including Delivery & Pickup)	LS	1	10000	10000
SUBTOTAL (INDEFINITE WORK)					96824
Estimated Based on % of Subtotal contract Cost				%	
23	Cofferdam and Dewatering (Sand Bags & Water Pumps)		10		9682
24	Handling Water (By Pass Conduits (2 - 30" HDPE Pipes))		5		4841
25	Right of Way (ROW)		0		0
26	Utility Relocation		0		0
27	MINOR ITEMS		10		9682
TOTAL (INDEFINITE WORK)					121029
Estimated Based on % of total contract Cost				%	
Clearing & Grubbing			2		2421
Maintenance & Protection of Traffic			4		4841
Construction Staking			2		2421
Mobilization & Project Closeout			6.5		7867
CONTRACT WORK					\$138,579
CONTINGENCY					34645
INCIDENTAL COST (Inspection, Materials Testing, Construction Phase design)					13858
CONTRACT WORK, INCLUDING CONTINGENCY, IN BASE YEAR					\$187,081
CONTRACT WORK, INCLUDING CONTINGENCY AND INFLATION					\$193,629
ESTIMATED PROJECT CONSTRUCTION PHASE COST					\$ 193,629

Project Title:	Del Reeves Culvert Replacement	Date:	9/1/2017
Bridge #:	N/A	Estimated by:	JSB
Project Number:	TBD	Checked by:	JSB
Project Location:	Meshomasic State Forest, East Hampton, CT		
Preliminary Estimated Design & Construction Phase Cost			

Item No.	Cost Classification	Notes	Budget
1	Construction Phase Cost	See Estimated Project construction Phase cost	193629
2	Planning & Design Cost		38726
	a.Design & Permitting	Estimated at 20 % of Item 1	38726
	b.Bidding	Estimated at 0 % of Item 1	0
	c. Contract Administration	Estimated at 0 % of Item 1	0
	d.Construction/Project Inspection	Estimated at 0 % of Item 1	0
ESTIMATED TOTAL PROJECT COST			\$ 232,355

Attachment G
State Historic Preservation Office (SHPO) Exemption



STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Determination of Effect to Historic Properties

Author: Mark McMillan **Date:** October 20, 2015

Project: State No.: 103-266
F.A.P. No.: TBD
Project Title: Rehabilitation of Culverts
#06795, 06796, and 06797
Town: Norwich

Determination of Effect: No Historic Properties Affected

Project Description

Using federal and state funds, the Connecticut Department of Transportation (CTDOT) proposes to rehabilitate three structurally deficient culverts in Norwich. All three are single-bore asphaltic coated corrugated metal pipes installed beneath I-395. They have been listed on the Bridge Program List 28 for structures requiring major rehabilitation or replacement. The undertaking is currently in its concept level of development and a Rehabilitation Study is underway.

The range of alternatives being considered includes relining the existing pipes to replacing the structures entirely. It is possible that the rehabilitation of each culvert will be different from the other, depending on their individual conditions. No widening or other modifications to the existing configuration of I-395 is included as part of this work. Construction is anticipated to being in Spring, 2018.

Technical Review of Project

The specific conditions of each culvert vary, but each is a single cell asphalt-coated corrugated metal pipe (ACCMP) with reinforced concrete headwalls. All three culverts are categorized as Not Eligible for the National Register of Historic Places the statewide bridge inventory database maintained by CTDOT. Staff from the Office of Environmental Planning concur with this assessment.

Bridge #06795

Structure #06795 conveys Hammer Brook beneath I-395 in Norwich. Its single pipe is oval in profile, measuring 7'11" wide and 5'7" tall. The pipe is 213' long and there is 10 vertical feet of overburden fill between it and the roadbed.

Recent inspections by CTDOT's Bridge Evaluation and Safety unit have determined that Bridge #06795 is in Serious condition due to the loss of its protective coating and heavy corrosion of its pipe liner. This has resulted in vertical deformations of the pipe that is measured up to five inches in some areas. At its western inlet, the bottom plate of the liner exhibits holes up to three feet long and three inches wide.

The soils surrounding the bridge are categorized as Udorthent-Urban Land Complex within the road right of way. Predictive models find this type of sediments to be of low archaeological sensitivity that would be unlikely to yield historic or cultural information. To the east and west of the right of way are Rippowam Fine Sandy Loam and Raypool Silt Loam soils, which are considered to have high archaeological potential. There are no known archaeological sites within a mile of the culvert.

Abutting the right of way of I-395 to the west is the Bean Hill Historic District.¹ This National Register District is characterized by its collection of 18th and 19th century buildings centered around the town green. Hammer Creek runs through two properties within the district. At 21 Huntington Avenue is a 1950 Cape style cottage that is categorized as 'non-contributing' in the Bean Hill NRHP Inventory form. The parcel identified as 29 Huntington Avenue is omitted from the Inventory form. According to Norwich town records, it contains a Ranch style single family residence that was constructed in 1976.

The houses on both parcels are located at the western end of their lots. They are separated from the culvert by over 400 feet of undeveloped land. Given their non-contributing status and the buffer distance they provide between the culvert and the historic district, the proposed rehabilitation of Bridge #06795 will not foreseeably impact the historic nature of the district.

Bridge #06796

Bridge #06796 conveys Byron Brook beneath I-395. It is a 6 foot diameter ACCMP that is 65 feet long and situated beneath 20 feet of overburden. It was installed in 1955 and does not appear to have undergone any significant alterations. The culvert is in Poor condition due to deterioration of its components and a backup of water within it caused by a beaver dam downstream.

Bridge #06796 is located 2.25 miles north of Bridge #06795 in an undeveloped area of Norwich. The sediments within this culvert's area of potential effect are classified as Charlton-Chatfield Complex soils, which have a moderate level of archaeological sensitivity. This is reduced by the steep (15-45%) slope of to the west of the culvert and "very rocky" condition of the soils. There are no known archaeological sites within a mile of the culvert.

¹ National Park Service, *Bean Hill Historic District (NRHP #82001006)*, listed on December 8, 1982.

Bridge #06797

Bridge #06797 is located 1200 feet northeast of Bridge #06796. It consists of an oval ACCMP pipe that is 6' wide, 3'8" tall, and 76 feet long. It conveys an unnamed brook beneath I-395, whose roadbed is 3 feet above the top of the pipe.

There are a variety of sediments surrounding this culvert, but all are characterized as being "very stony". There are no known archaeological sites within a mile of this culvert. Given the predicted low potential of the soils in the project area and the known soil disturbances caused by the construction of I-395, there is limited potential for impacting intact archaeological resources.

Determination

The work proposed under State Project #103-266 would normally be classified as a "Bridge/Culvert Related Projects" and "Interstate Related Projects". These types of Minor Transportation Projects are typically exempt from Section 106 review under Appendix B (*Screened Undertakings Not Requiring Connecticut CTSHPO Review*) of the Section 106 Programmatic Agreement². The proximity of Bridge #06795 to the Bean Hill Historic District does not allow for the application of this exemption.

It is the professional opinion of qualified staff from CTDOT's Office of Environmental Planning that the rehabilitation of this culvert will not foreseeably impact the overall historic character of the district. In accordance with the Section 106 Programmatic Agreement, CTDOT determines that the undertaking will have "No Historic Properties Affected". However, we request a further review of the plans when the project approaches final design to confirm this determination.

No further consultation with the Connecticut State Historic Preservation Officer (CTSPHO) is required. A copy of this determination will be included in the quarterly report of Minor Transportation Projects that is submitted to CTSHPO.

Because the undertaking is within the Quinebaug-Shetucket National Heritage Corridor, a copy of this letter will be sent to The Last Green Valley. As stewards of this resource, they will have thirty days to review and comment on this undertaking.



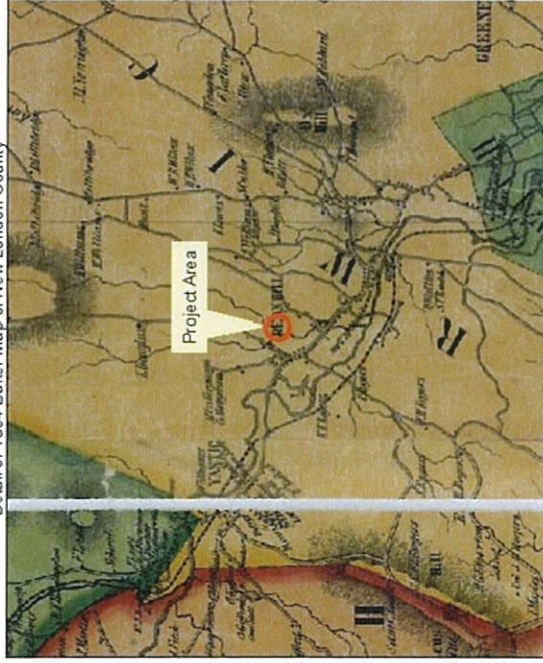
Mark McMillan
National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation

² *Programmatic Agreement among the Federal Highway Administration, the Connecticut Department of Transportation, the Connecticut State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Implementation of Minor Transportation Projects*, signed October 26, 2012. Accessible online at: www.ct.gov/culturalresources

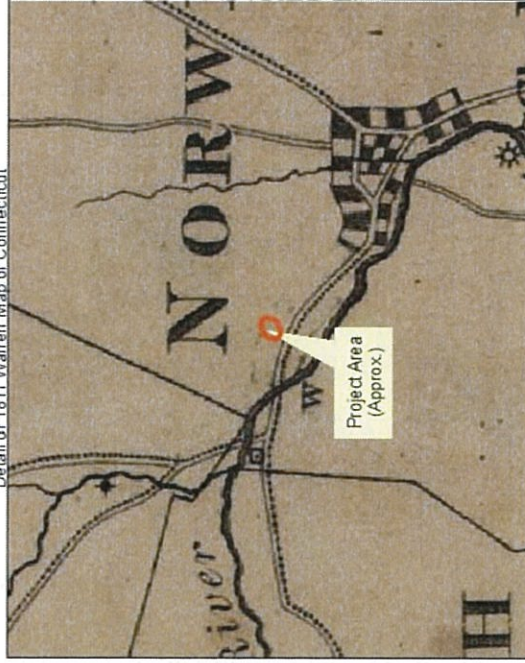
Detail of 2010 Aerial Photography



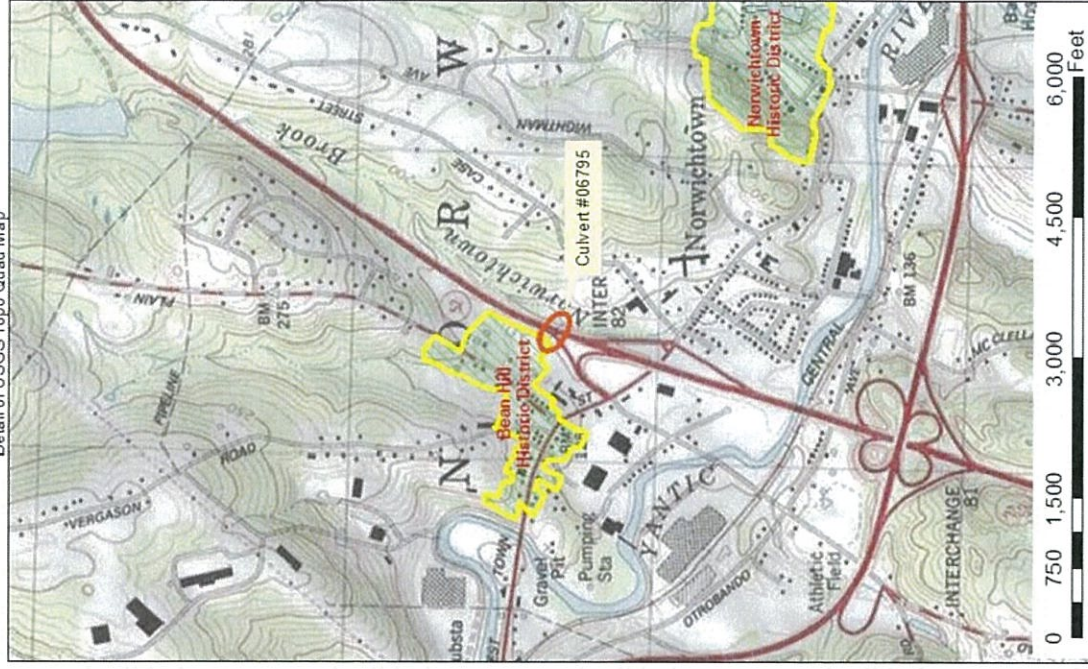
Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



Detail of USGS Topo Quad Map



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culvert #06795
Norwich

Predicted Archaeological
Soil Sensitivity

High	Moderate	Variable	Low	Poor	Unknown
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Historic District

Historic District	Cemetery / 4(f) Resource
-------------------	--------------------------

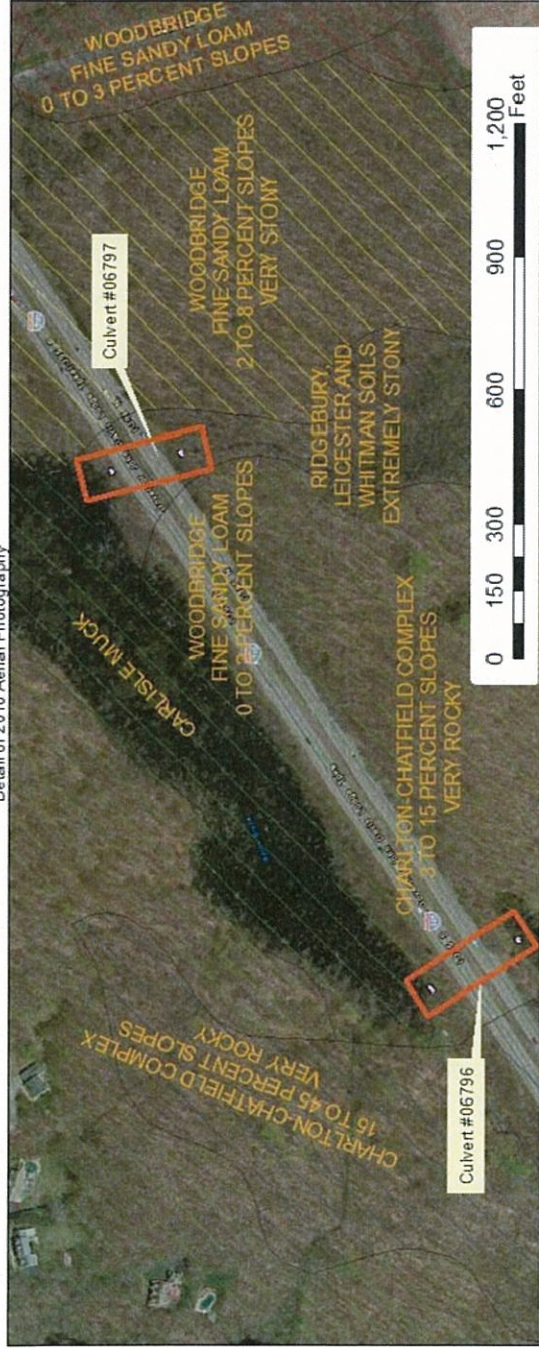
Approximate Location
of Archaeological Site

Historic	Pre-Contact	Unknown
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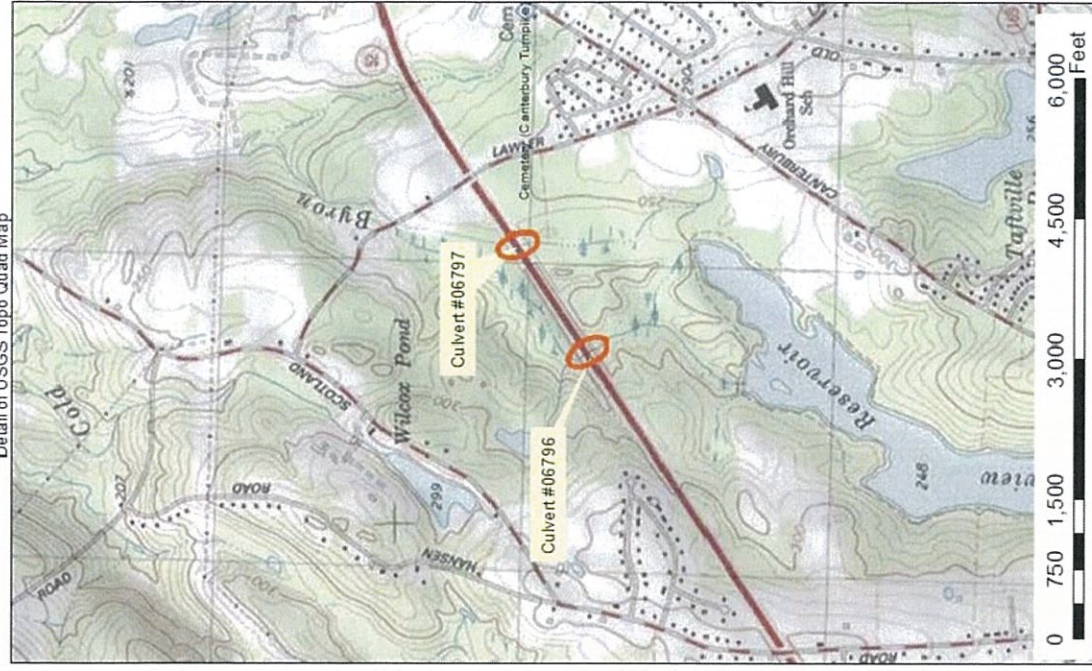


August 27, 2015

Detail of 2010 Aerial Photography



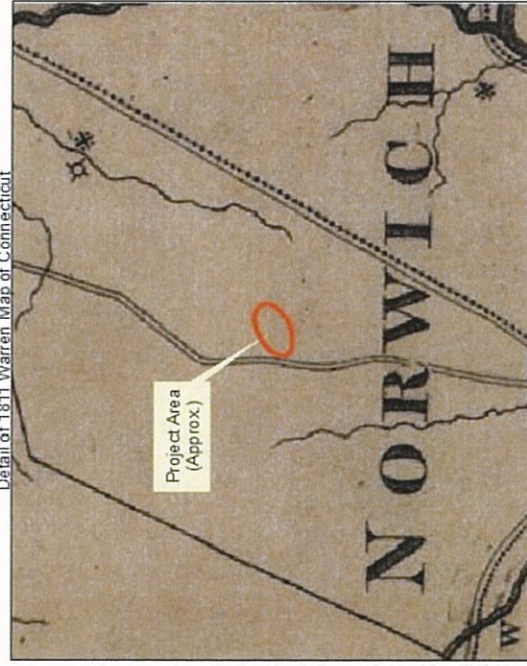
Detail of USGS Topo Quad Map



Detail of 1854 Baker Map of New London County



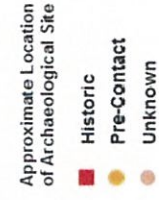
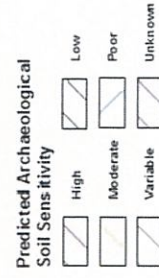
Detail of 1811 Warren Map of Connecticut



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culverts
#06796 and 06797
Norwich



August 27, 2015

From: McMillan, Mark J. <Mark.McMillan@ct.gov>
Sent: Thursday, March 01, 2018 11:33 AM
To: Naomi Hodges
Cc: Thomas Lopata; Kania, Dobieslaw A.; Cardinali, Andrew J; Don Wurst
Subject: RE: Project #103-266 Norwich (Culvert Rehabilitation on I-395) Historic Determination

Hello Naomi,

Thank you for sending this plans. I have reviewed them, specifically those that relate to **Culvert #06795**, which abuts the Bean Hill National Register Historic District. After considering the placement of the access road and construction activities shown, I confirm that the project remains within the existing road right of way and does not encroach on the Historic District. As such, the finding of **No Historic Properties Affected** previously documented remains valid.

I will save a copy of this email with project files. Unless you need additional information or documentation from me, this completes the **Section 106 review for this project**.

Thank you,

Mark

From: Naomi Hodges [<mailto:NHodges@cmeengineering.com>]
Sent: Thursday, March 01, 2018 11:20 AM
To: McMillan, Mark J.
Cc: Thomas Lopata; Kania, Dobieslaw A.; Cardinali, Andrew J; **Don Wurst**
Subject: Project #103-266 Norwich (Culvert Rehabilitation on I-395) Historic Determination

Hi Mark,

Within the CTDOT determination effect to historic properties received in October of 2015, it was requested to review 103-266 plans to confirm your finding of "No Historic Properties Affected".

It is the professional opinion of qualified staff from CTDOT's Office of Environmental Planning that the rehabilitation of this culvert will not foreseeably impact the overall historic character of the district. In accordance with the Section 106 Programmatic Agreement, CTDOT determines that the undertaking will have "No Historic Properties Affected". However, we request a further review of the plans when the project approaches final design to confirm this determination.

Now that the project is in the 30% design phase, plans are available. I have attached the most recent set of HWY plans of each of the culverts as well as the original Historic determination for your review. Let me know if you need any additional information to complete your review.

Thank you,
Naomi



Naomi C. Hodges | Environmental Scientist

nhodges@cmeengineering.com

101 East River Drive, 1st Floor · East Hartford, CT 06108
T 860.290.4100 ext. 1148 www.cmeengineering.com

From: Kania, Dobieslawa A. [<mailto:Dobieslawa.Kania@ct.gov>]
Sent: Tuesday, October 20, 2015 3:03 PM
To: Ricky Mears
Cc: Cardinali, Andrew J; Don Wurst
Subject: FW: Project #103-266 Norwich (Culvert Rehabilitation on I-395)

FYI.

Dobie

From: McMillan, Mark J.
Sent: Tuesday, October 20, 2015 11:58 AM
To: Kania, Dobieslawa A.
Subject: Project #103-266 Norwich (Culvert Rehabilitation on I-395)

Dobie,

Attached is a Determination of Effect (No Historic Properties Affected) letter for the 103-266 Norwich project. OEP has processed this request under the Programmatic Agreement and determined that it will have No Historic Properties Affected under Section 106 of the National Historic Preservation Act. No further consultation with the CTSHPO is necessary. This information has been sent to FHWA who will consult with the federally recognized tribes regarding this undertaking. A copy has also been forwarded to The Last Green Valley, who are stewards of the Quinebaug-Shetucket National Heritage Corridor. Both entities will have 30-60 days to review and comment. I will keep you informed as I hear from them.

Mark

Mark McMillan

National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, CT 06131
☎ (860) 594-2135
☎ (860) 594-3028 - Fax
✉ mark.mcmillan@ct.gov

Attachment H
Tribal Historic Preservation Office (THPO) Exemption

From: michelle.herrell@dot.gov
Sent: Tuesday, October 27, 2015 8:18 AM
To: McMillan, Mark J.
Subject: No Tribal Consultation Required FAPN TBD/SPN0103-0266, Culvert Rehab on I-395, Norwich

Hi Mark,

I have reviewed CTDOT's proposed project which involves rehabilitating culverts #06795, #06796, and #06797, which are installed beneath I-395 in Norwich, CT. The culverts are in need of major rehabilitation or replacement. As noted in your October 20, 2015 letter, the work would occur within previously disturbed existing road right-of-way. As per the THPO Section 106 Agreements with FHWA-CT Division, dated January 4, 2012 and May 14, 2013, this project would generally fall within the category of "resurfacing or repair of existing ramps or roadways within the previously disturbed right-of-way," with no historic properties affected.

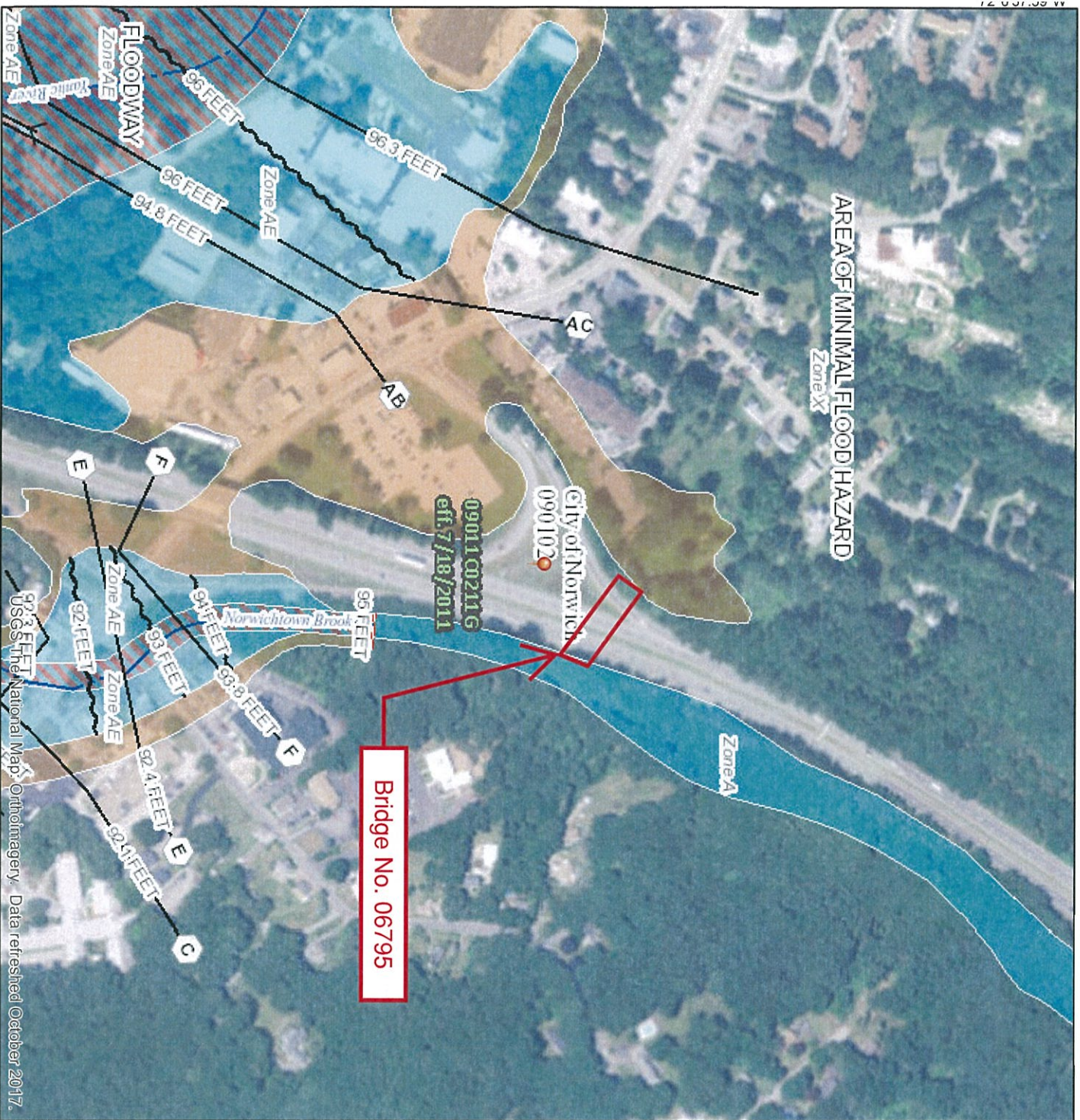
With this email, and taking all these items into consideration, the FHWA-CT Division has determined that tribal consultation would not be required for this project. Should any changes be made to the scope of work for this project that would involve additional ground disturbance beyond what is currently proposed, tribal consultation would have to be reconsidered.

Michelle Herrell
Environmental Protection Specialist
Federal Highway Administration | Connecticut Division Office
628-2 Hebron Avenue, Suite 303 | Glastonbury, CT 06033
P: (860) 494-7577 | F: (860) 659-6724
michelle.herrell@dot.gov

Attachment I
FEMA FIRMette and Inundation Maps

National Flood Hazard Layer FIRMette

41°33'34.24"N



0 250 500 1,000 1,500 2,000 Feet

41°33'37.32"N

72°6'0.14"W

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	<ul style="list-style-type: none"> Without Base Flood Elevation (BFE) Zone A, V, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
-----------------------------------	---

OTHER AREAS OF FLOOD HAZARD	<ul style="list-style-type: none"> 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile (Zone X) Future Conditions 1% Annual Chance Flood Hazard (Zone X) Area with Reduced Flood Risk due to Levee, See Notes, Zone X Area with Flood Risk due to Levee (Zone D)
------------------------------------	--

OTHER AREAS	<ul style="list-style-type: none"> NO SCREEN Area of Minimal Flood Hazard (Zone X) Effective LOMFRs Area of Undetermined Flood Hazard (Zone B)
GENERAL STRUCTURES	<ul style="list-style-type: none"> Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall

OTHER FEATURES	<ul style="list-style-type: none"> 20.2 Cross Sections with 1% Annual Chance 17.5 Water Surface Elevation Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary Coastal Transect Baseline Profile Baseline Hydrographic Feature
-----------------------	--

MAP PANELS	<ul style="list-style-type: none"> Digital Data Available No Digital Data Available Unmapped
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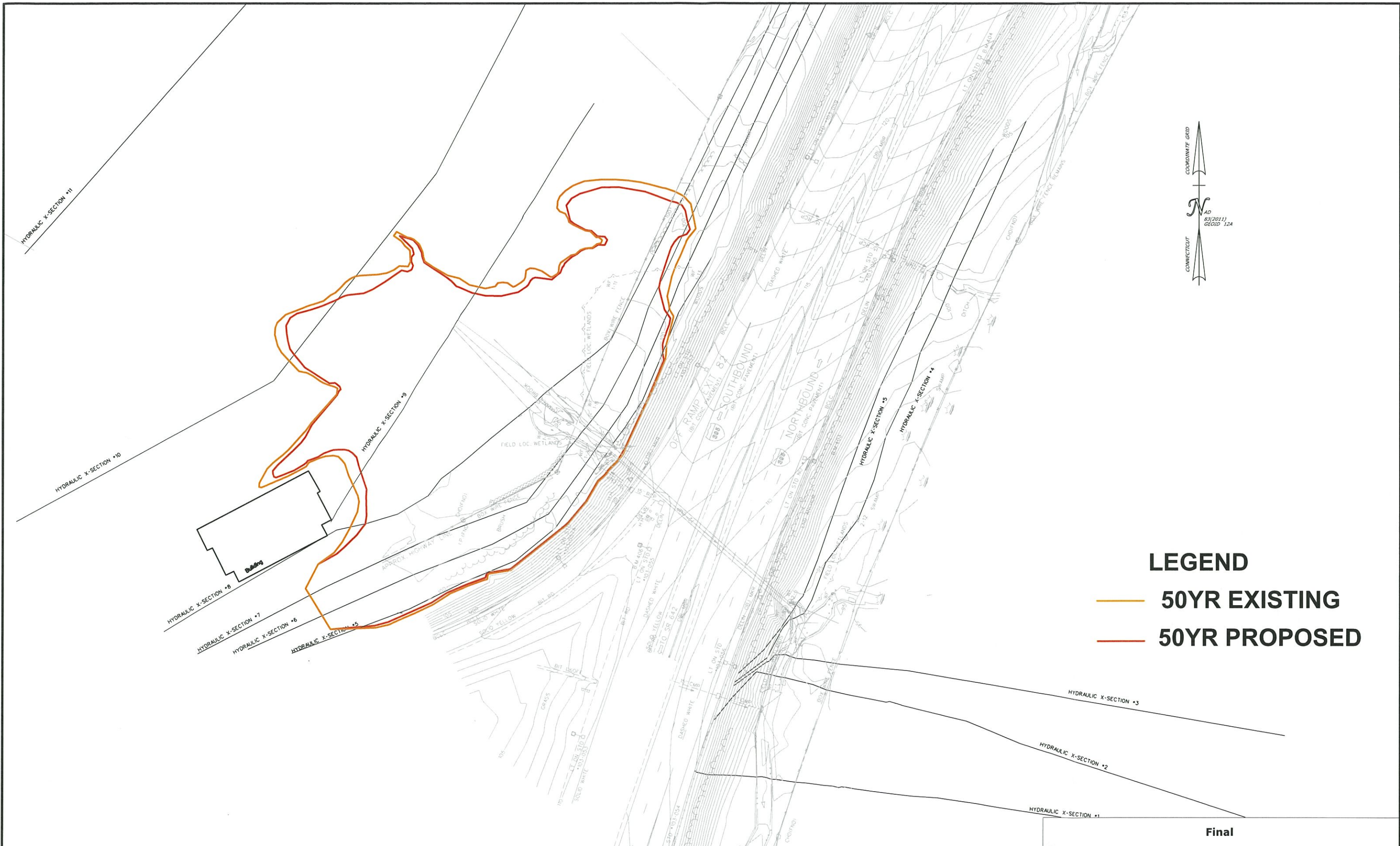
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/12/2018 at 10:07:08 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmoderized areas cannot be used for regulatory purposes.

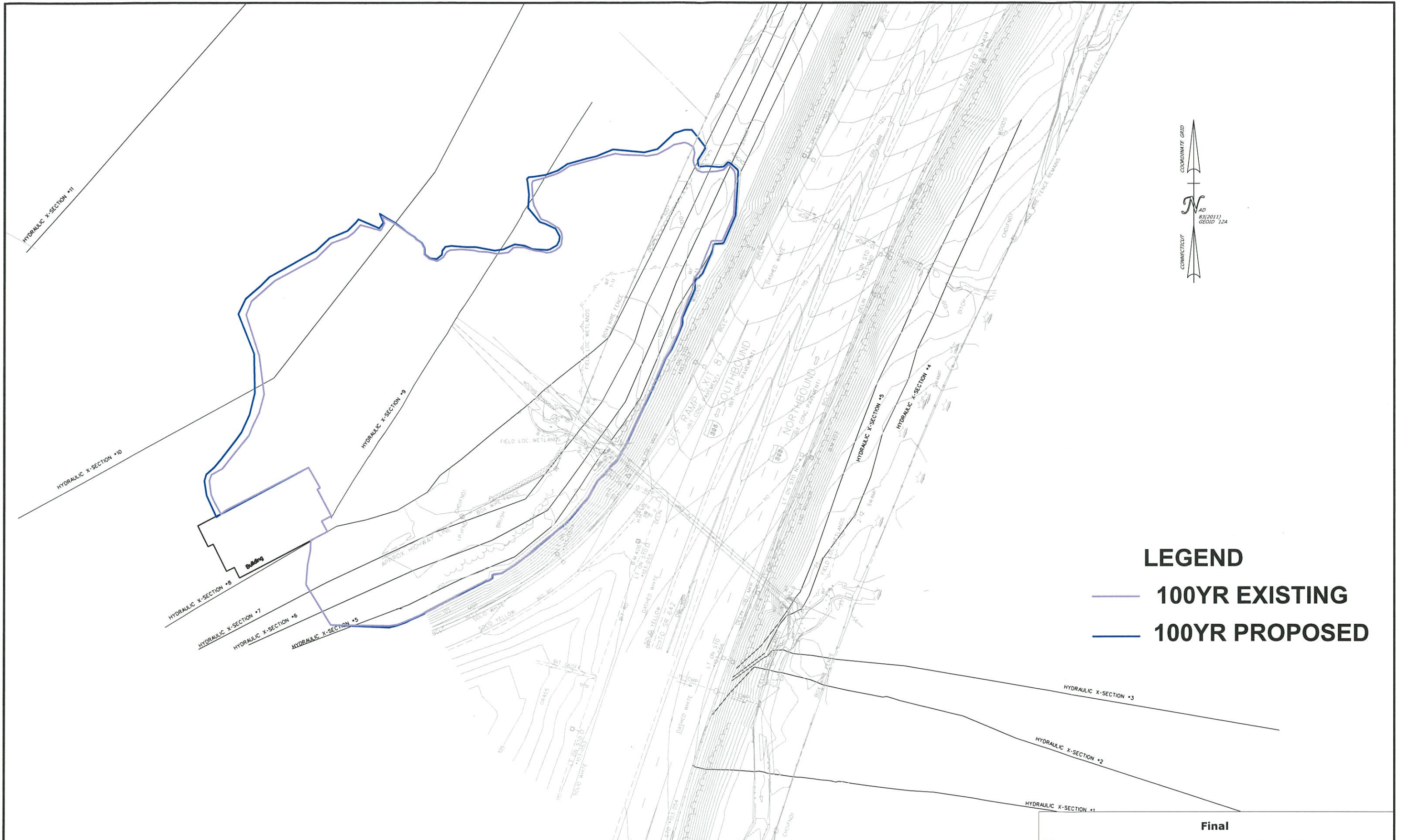


LEGEND

— 50YR EXISTING

— 50YR PROPOSED

REVISIONS REV. DATE REVISION DESCRIPTION SHEET NO.		THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: JMM CHECKED BY:	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: CME ASSOCIATES, INC. 33 Wilbur Cross Way, Mansfield, CT 06268 101 East River Drive, East Hartford, CT 06108 1 Tara Blvd, Nashua, NH 03062 888-291-3227 www.cmeengineering.com	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06795 I-395 over Hammer brook	TOWN: Norwich	PROJECT NO. 103-266 DRAWING NO. IN-50YR SHEET NO. 1
Plotted Date: 12/19/2018 SCALE IN FEET 0 40 80 SCALE 1"=40'		Filename: ...06795 Inundation Mapping.SETUP.dgn		Final		DRAWING TITLE: INUNDATION MAPPING 50-YR EVENT		



LEGEND

- 100YR EXISTING
- 100YR PROPOSED

Final

REV.	DATE	REVISION DESCRIPTION	SHEET NO.
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Plotted Date: 12/19/2018

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.


DESIGNER/DRAFTER:
JMM

CHECKED BY:


SCALE IN FEET

0 40 80

SCALE 1" = 40'


STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION

SIGNATURE/BLOCK:


CME ASSOCIATES, INC.
 33 Wilbur Cross Way, Mansfield, CT 06268
 101 East River Drive, East Hartford, CT 06108
 1 Tara Blvd, Nashua, NH 03062
 888-291-3227 | www.cmeengineering.com

PROJECT TITLE:

**REHABILITATION OF
BRIDGE NO. 06795
I-395 over Hammer brook**

TOWN: **Norwich**

DRAWING TITLE:
**INUNDATION MAPPING
100-YR EVENT**

PROJECT NO.: **103-266**

DRAWING NO.: **IN-100YR**

SHEET NO.: **1**

Attachment J
Interagency Coordination Meeting Notes



DEEP / DOT REGULATORY COORDINATION Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. **Bridge No. 06795-**

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCM) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes

2. **Bridge No. 06796-**

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. **Bridge No. 06797-**

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.

**INTERDEPARTMENTAL
MESSAGE**

STATE OF CONNECTICUT

To	NAME, TITLE Central Permit Processing Unit, 1 st Floor	DATE June 26, 2019
	AGENCY, ADDRESS Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT. 06106	
From	NAME, TITLE Kimberly C. Lesay, Transportation Assistant Planning Director	TELEPHONE 860-594-2931
	AGENCY, ADDRESS Department of Transportation, 2800 Berlin Turnpike, Newington, CT. 06131-7546	

Subject: **State Project No. 103-266**
Rehabilitation of Bridge No. 06796
Interstate 395 over Byron Brook
City of Norwich, CT

Attached are one original and three hard copies of the request for the Connecticut Department of Energy and Environmental Protection Programmatic General Permit Addendum to Army Corps of Engineers General Permit associated with the above referenced project.

Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at (860) 594-2157.

Attachments

CT Dept of Energy & Environmental Protection
Central Permit Processing Unit

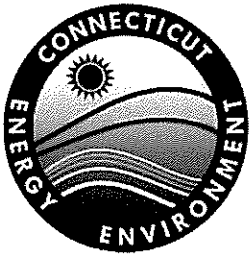
JUN 28 2019

RECEIVED BY

B.C

Naomi C. Hodges /nch

bcc: Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin
Kimberly C. Lesay
Andrew H. Davis – Chris Samorajczyk – Alexander T. Finch
District 2 Construction – Robert Obey – Eileen Ego
Donald P. Wurst – Aaron J. Foster (CME)



Connecticut Department of Energy & Environmental Protection

CPPU USE ONLY

App #: _____

Doc #: _____

Check #: _____

Permit Application Transmittal Form

Please complete this transmittal form in accordance with the instructions in order to ensure the proper handling of your application(s) and the associated fee(s). Print legibly or type.

Part I: Applicant Information:

- **If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, applicant's name shall be stated **exactly** as it is registered with the Secretary of State.*
- *If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

Applicant: **Connecticut Department of Transportation**

Mailing Address: **2800 Berlin Turnpike**

City/Town: **Newington** State: **CT** Zip Code: **06131-7546**

Business Phone: **860-594-2000** ext.:

Contact Person: **Kimberly C. Lesay** Phone: **860-594-2931** ext.

E-Mail: **kimberly.lesay@ct.gov**

Applicant (check one): individual *business entity federal agency state agency municipality tribal

*If a business entity, list type (e.g., corporation, limited partnership, etc.):

Check if any co-applicants. If so, attach additional sheet(s) with the required information as supplied above.

Please provide the following information to be used for *billing purposes only*, if different:

Company/Individual Name:

Mailing Address:

City/Town: State: Zip Code:

Contact Person: Phone: ext.

Part II: Project Information

Brief Description of Project: *(Example: Development of a 50 slip marina on Long Island Sound)*

The slip-line repair of Bridge No. 06796 with a 54 inch interior diameter corrugated high-density polyethylene pipe.

Location (City/Town): **Norwich**

Other Project Related Permits (*not* included with this form):

Permit Description	Issuing Authority	Submittal Date	Issuance Date	Denial Date	Permit #
Section 404 PCN	USACE	Concurrently	Pending		
IWGP	CTDEEP	TBD			

Part III: Individual Permit Application and Fee Information

New, Mod. or Renew	Individual Permit Applications	Initial Fees	No. of Permits Applied For	Total Initial Fees	Original + Required Copies
	AIR EMISSIONS				
	New Source Review <input type="checkbox"/> Revision <input type="checkbox"/> minor mod	\$940.00			1 + 0
	Title V Operating Permits <input type="checkbox"/> Revision <input type="checkbox"/> minor mod <input type="checkbox"/> non-minor mod	none			1 + 0
	Title IV	none			1 + 0
	Clean Air Interstate Rule (CAIR)	none			1 + 0
	WATER DISCHARGES				
	To Groundwater	\$1300.00			1 + 1
	To Sanitary Sewer (POTW)	\$1300.00			1 + 1
	To Surface Water (NPDES)	\$1300.00			1 + 1
	WATER PLANNING AND MANAGEMENT				
	Dam Safety	none			1 + 2
	Domestic Sewage Treatment Works (For municipal and private sewage treatment facilities discharging to surface waters)	\$1300.00/ Mod = \$940			1 + 1
	Water Diversion (consumptive) and Registrations	★			1 + 5
	LAND AND WATER RESOURCES				
	Flood Management Certification	none			1 + 1
	Flood Management Certification Exemption	none			1 + 1
	Inland Wetlands and Watercourses (State Agencies Only)	none			1 + 5
	Inland 401 Water Quality Certification	none			1 + 5
	FERC- Hydropower Projects- 401 Water Quality Certification	none			
	Water Diversion (non-consumptive)	★			1 + 5
	Certificate of Permission	\$375.00			1 + 2
	Coastal 401 Water Quality Certification	none			1 + 2
	Structures and Dredging/and Fill/Tidal Wetlands	\$660.00			1 + 2
	WASTE MANAGEMENT				
	Aerial Pesticide Application	★			1 + 2
	Aquatic Pesticide Application	\$200.00			1 + 0
	CGS Section 22a-454 Waste Facilities	★			1 + 1
	Disruption of a Solid Waste Disposal Area	\$0			1 + 1
	Hazardous Waste Treatment, Storage and Disposal Facilities	★			1 + 1
	Marine Terminal License	\$100.00			1 + 0
	Stewardship	\$4000.00			1 + 1
	Solid Waste Facilities	★			1 + 1
	Waste Transportation	★			1 + 0
		Subtotal ➡	0	0	
	GENERAL PERMITS and AUTHORIZATIONS	Subtotals Page 3 & 4 ➡	1	0	
	Enter subtotals from Part IV, pages 3 - 6 of this form	Subtotals Page 5 ➡	0	0	
		Subtotals Page 6 ➡	0	0	
		TOTAL ➡	1	0	
	<input checked="" type="checkbox"/> Indicate whether municipal discount or state waiver applies.				100%
	Less Applicable Discount				
	AMOUNT REMITTED ➡				
Check # ➡	<input type="text"/>				Check or money order should be made payable to: "Department of Energy and Environmental Protection"

★ See fee schedule on individual application.

**Part IV: General Permit Registrations and Requests for Other Authorizations
Application and Fee Information**

✓	General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fees	Original + Required Copies
AIR EMISSIONS					
<input type="checkbox"/>	Limit Potential to Emit from Major Stationary Sources of Air Pollution	\$2760.00			1 + 0
<input type="checkbox"/>	Diagnostic and Therapeutic X-Ray Devices (Medical X-Ray) Registration	\$190.00/Xray device			1 + 0
<input type="checkbox"/>	Radioactive Materials and Industrial Device Registration (Ionizing Radiation)	\$200.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/>	License Revocation Request	\$0			★★
<input type="checkbox"/>	Other, (please specify):				
WATER DISCHARGES					
Categorical Industry User to a POTW					
<input type="checkbox"/>	Discharges ≥ 10,000 gpd	\$6250.00			1 + 0
<input type="checkbox"/>	Discharges < 10,000 gpd	\$3125.00			
Comprehensive Discharges to Surface Water and Groundwater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
<input type="checkbox"/>	Domestic Sewage	\$625.00			1 + 0
<input type="checkbox"/>	Food Service Establishment Wastewater	No Registration			
Groundwater Remediation Wastewater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
Miscellaneous Discharges of Sewer Compatible Wastewater					
<input type="checkbox"/>	Registration Only	\$500.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1000.00			
<input type="checkbox"/>	Nitrogen Discharges	No Registration			
<input type="checkbox"/>	Point Source Discharges from Application of Pesticides	\$200.00			1 + 0
<input type="checkbox"/>	Stormwater Associated with Commercial Activities	\$300.00			1 + 0
Stormwater Associated with Industrial Activities					
<input type="checkbox"/>	No Exposure Certification	\$250.00			1 + 0
<input type="checkbox"/>	<50 employees—see general permit for additional requirements	\$500.00			
<input type="checkbox"/>	>50 employees—see general permit for additional requirements	\$1000.00			
<input type="checkbox"/>	Stormwater & Dewatering Wastewaters-Construction Activities	★			1 + 0
<input type="checkbox"/>	Stormwater from Small Municipal Separate Storm Sewer Systems (MS4)	\$625.00			1 + 0
<input type="checkbox"/>	Stormwater from DOT Separate Storm Sewer Systems (DOT MS4)	\$0			1 + 0
<input type="checkbox"/>	Subsurface Sewage Disposal Systems Serving Existing Facilities	★★			1 + 0
<input type="checkbox"/>	Swimming Pool Wastewater - Public Pools and Contractors	\$500.00			1 + 0
Vehicle Maintenance Wastewater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to POTW	\$1500.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to Surface Water	\$1500.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to Groundwater	\$1500.00			1 + 0
<input type="checkbox"/>	Other, (please specify):				
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal	0	0	

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.

(Contact numbers are provided in the instructions)

Part IV: General Permit Registrations and Requests for Other Authorizations (continued)

<input checked="" type="checkbox"/> General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fee	Original + Required Copies
AQUIFER PROTECTION PROGRAM				
<input type="checkbox"/> Registration for Regulated Activities	\$625.00			1 + 0
<input type="checkbox"/> Permit Application to Add a Regulated Activity	\$1250.00			1 + 0
<input type="checkbox"/> Exemption Application from Registration	\$1250.00			1 + 0
WATER PLANNING AND MANAGEMENT				
<input type="checkbox"/> Dam Safety Repair and Alteration: Non Filing	No Registration			
<input type="checkbox"/> Dam Safety Repair and Alteration: Filing – No PE	\$100.00			1 + 0
<input type="checkbox"/> Dam Safety Repair and Alteration: Filing – PE	\$200.00			1 + 0
<input type="checkbox"/> Dam Safety Repair and Alteration: Approval of Filing	\$250.00			1 + 0
<input type="checkbox"/> Diversion of Remediation Groundwater	No Registration			
<input type="checkbox"/> Diversion of Water for Consumptive Use: Reauthorization Categories	\$2500.00			1 + 0
<input type="checkbox"/> Diversion of Water for Consumptive Use: Authorization Required	\$2500.00			1 + 4
<input type="checkbox"/> Diversion of Water for Consumptive Use: Filing Only	\$1500.00			1 + 1
<input type="checkbox"/> Water Resource Construction Activities	★			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/> Notice of High Hazard Dam or a Significant Hazard Dam	\$0			1 + 0
<input type="checkbox"/> Other, (please specify):				
LAND AND WATER RESOURCES				
Minor Coastal Structures				
<input type="checkbox"/> 4/40 Docks/Access Stairs	\$700.00			1 + 1
<input type="checkbox"/> Beach Grading	No Registration			
<input type="checkbox"/> Buoys or Markers	No Registration			
<input type="checkbox"/> Experimental Activities/Scientific Monitoring Devices	No Registration			
<input type="checkbox"/> Harbor Moorings	No Registration			
<input type="checkbox"/> Non-harbor Moorings	\$250.00			1 + 1
<input type="checkbox"/> Osprey Platforms and Perch Poles	No Registration			
<input type="checkbox"/> Pump-out Facilities	No Registration			
<input type="checkbox"/> Swim Floats	No Registration			
Coastal Maintenance				
<input type="checkbox"/> Backflow Prevention Structure	No Registration			
<input type="checkbox"/> Beach Grading/Raking	No Registration			
<input type="checkbox"/> Catch Basin Cleaning	No Registration			
<input type="checkbox"/> Coastal Remedial Activities Required by Order	\$700.00			1 + 1
<input type="checkbox"/> Coastal Restoration	No Registration			
<input type="checkbox"/> DEEP Boat Launch Infrastructures	No Registration			
<input type="checkbox"/> DOT Infrastructures	No Registration			
<input type="checkbox"/> Marina and Mooring Field Reconfiguration	\$700.00			1 + 1
<input type="checkbox"/> Minor Seawall Repair	No Registration			
<input type="checkbox"/> Placement of Cultch	No Registration			
<input type="checkbox"/> Reconstruction of Legally Existing Structure/Obstruction/Encroachment	\$300.00			1 + 1
<input type="checkbox"/> Removal of Derelict Structures	No Registration			
<input type="checkbox"/> Residential Flood Hazard Mitigation	\$100.00			1 + 1
<input type="checkbox"/> Temporary Access of Construction Vehicles/Equipment	No Registration			
<input checked="" type="checkbox"/> Programmatic General Permit	★	1	0	1 + 1
<input type="checkbox"/> Emergency/Temporary Authorization				
<input type="checkbox"/> Other, (please specify):				
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal ➔	1	0

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.
(Contact numbers are provided in the instructions)

Part IV: General Permit Registrations and Requests for Other Authorizations (continued)

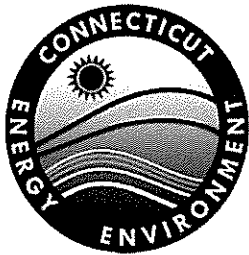
<input checked="" type="checkbox"/> General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fee	Original + Required Copies
WASTE MANAGEMENT				
<input type="checkbox"/> Addition of Grass Clippings at Registered Leaf Composting Facilities	\$500.00			1 + 0
<input type="checkbox"/> Beneficial Use Determination	★			1 + 0
<input type="checkbox"/> Collection and Storage of Post Consumer Paint	\$0			1 + 0
<input type="checkbox"/> Connecticut Solid Waste Demonstration Project	\$1000.00			1 + 0
Construct and Operate a Commercial Facility for the Management of Recyclable Materials and Certain Solid Wastes (Commercial GP)	Initial/Mod Fee			
<input type="checkbox"/> Asbestos Containing Materials	\$1,250.00/\$ 625			1 + 0
<input type="checkbox"/> Ash Residue	\$1,250.00/\$ 625			1 + 0
<input type="checkbox"/> Clean Wood: Tier III	\$500.00/\$250			1 + 0
<input type="checkbox"/> Clean Wood: Tier II	\$250.00/\$125			1 + 0
<input type="checkbox"/> Construction and Demolition Waste: Tier III	\$1,250.00/\$625			1 + 0
<input type="checkbox"/> Construction and Demolition Waste: Tier II	\$500.00/\$250			1 + 0
<input type="checkbox"/> Non-RCRA Hazardous Waste/Compatible Solid Wastes	\$1,250.00/\$625			1 + 0
<input type="checkbox"/> Recyclables	\$500.00/\$250			1 + 0
<input type="checkbox"/> Universal Wastes/Compatible Solid Wastes	\$1,250.00/\$625			1 + 0
Contaminated Soil and/or Staging Management (Staging/Transfer)				
<input type="checkbox"/> New Registrations	\$250.00			1 + 0
<input type="checkbox"/> New Approval of Registrations	\$1500.00			1 + 0
<input type="checkbox"/> Renewal of Registrations	\$250.00			1 + 0
<input type="checkbox"/> Renewal of Approval of Registrations	\$750.00			1 + 0
<input type="checkbox"/> Disassembling Used Electronics	\$2000.00			1 + 0
<input type="checkbox"/> Leaf Composting Facility	\$0			1 + 1
<input type="checkbox"/> Municipal Transfer Station	\$800.00			1 + 1
<input type="checkbox"/> One Day Collection of Certain Wastes and Household Hazardous Waste	\$1000.00			1 + 0
<input type="checkbox"/> Sheet Leaf Composting Notification	\$0			★★
Special Waste Authorization				
<input type="checkbox"/> Landfill or RRF Disposal	\$660.00			1 + 0
<input type="checkbox"/> Asbestos Disposal	\$300.00			
<input type="checkbox"/> homeowner	\$0			
<input type="checkbox"/> Storage and Processing of Asphalt Roofing Shingle Waste	\$2500.00			1 + 0
<input type="checkbox"/> Storage and Processing of Scrap Tires for Beneficial Use	\$1250.00			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/> Other, (please specify):				
REMEDIATION				
<input type="checkbox"/> In Situ Groundwater Remediation: Enhance Aerobic Biodegradation	★			1 + 2
<input type="checkbox"/> In Situ Groundwater Remediation: Chemical Oxidation	\$500.00			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★			★★
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal →	0	0

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.
(Contact numbers are provided in the instructions)

Affirmative Action, Equal Employment Opportunity and Americans with Disabilities

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act (ADA). Please contact us at (860) 418-5910 or deep.accommodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint.



Connecticut Department of
Energy & Environmental Protection
Bureau of Water Protection & Land Reuse
Inland Water Resources Division

**Connecticut Addendum
Army Corps of Engineers
General Permit State of Connecticut
(CT GP)**

Print or type unless otherwise noted.

Part I: Application Description

DEEP/CPPU USE ONLY

App #: _____

Doc #: _____

Check #: _____

Program: **Programmatic General Permit**

NAE #: _____

DEEP #: _____

Determinations: Eligible Category 2
 Eligible Category 1
 Individual Permit

Town where site is located: Norwich, CT

Brief Description of Project: **The slip-line repair of Bridge No. 06796 with a 54 inch interior diameter corrugated high-density polyethylene pipe.**

Part II: Fee Information

There is no fee required at this time. The Department of Energy and Environmental Protection (DEEP) may require an application fee to be submitted with this addendum at a later date.

Part III: Applicant Information

- *If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, registrant's name shall be stated exactly as it is registered with the Secretary of State. This information can be accessed at CONCORD.*
- If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

1. Applicant Name: **Connecticut Department of Transportation**

Mailing Address: **2800 Berlin Turnpike**

City/Town: **Newington** State: **CT** Zip Code: **06131-7546**

Business Phone: **860-594-2931** ext. _____ Fax: _____

Contact Person: **Kimberly Lesay** Title: **Transportation Asst. Planning Director**

*E-Mail: **Kimberly.Lesay@ct.gov**

**By providing this e-mail address you are agreeing to receive official correspondence from the department, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.*

Part III: Applicant Information (continued)

- a) Registrant Type (check one): individual *business entity federal agency
 state agency municipality tribal
 *If a business entity:
 i) check type: corporation limited liability company limited partnership
 limited liability partnership statutory trust Other: _____
 ii) provide Secretary of the State business ID #: _____ This information can be accessed at CONCORD
 iii) Check here if you are **NOT** registered with the SOTS.
 Check here if any co-applicants. If so, attach additional sheet(s) with the required information as requested above.

- b) Applicant's interest in property at which the proposed activity is to be located:
 site owner option holder lessee developer
 easement holder operator other (specify): _____
 Check here if there are co-applicants. If so, label and attach additional sheet(s) to this sheet with the required information.

2. List primary contact for departmental correspondence and inquiries, if different than the applicant.

Name:
 Mailing Address:
 City/Town: State: Zip Code:
 Business Phone: ext. Fax:
 Contact Person: Title:
 E-Mail:

*By providing this e-mail address you are agreeing to receive official correspondence from the department, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.

3. Property Owner, if different than the applicant:

Name:
 Mailing Address:
 City/Town: State: Zip Code:
 Business Phone: ext. Fax:
 Contact Person: Title:
 E-Mail:

Part III: Applicant Information (continued)

4. List any engineer(s) or other consultant(s) employed or retained to assist in preparing the application or in designing or constructing the activity.

Name: **CME Associates, Inc.**

Mailing Address: **101 East River Drive**

City/Town: **East Hartford**

State: **CT**

Zip Code: **06108**

Business Phone: **860-290-4100**

ext.

Fax:

Contact Person: **Naomi Hodges**

Title: **Environmental Scientist**

E-Mail: **nhodges@cmeengineering.com**

Service Provided: **Liaison Engineering Services, Environmental Services**

Check here if additional sheets are necessary, and label and attach them to this sheet.

Part IV: Site/Project Information

1. SITE NAME AND LOCATION

Is the name of the site the same as the name of the applicant? Yes No

Name of Site : **Bridge No. 06796**

Street Address or Description of Location: **Interstate 395 over Byron Brook**

City/Town: **Norwich**

State: **CT**

Zip Code: **06360**

Latitude and longitude of the exact location of the proposed activity in degrees, minutes, and seconds or in decimal degrees: Latitude: **41.578 N** Longitude: **72.076 W**

Method of determination (check one):

GPS USGS Map Other (please specify): **Google Earth**

If a USGS Map was used, provide the quadrangle name:

2. **COASTAL BOUNDARY:** Is the activity which is the subject of this application located within the coastal boundary as delineated on DEEP approved coastal boundary maps? Yes No

If yes, and this application is for a new authorization or a modification of an existing authorization where the physical footprint of the subject activity is modified, you must submit a [Coastal Consistency Review Form](#) (DEP-APP-004) with this completed application.

Information on the coastal boundary is available at the local town hall or on the "Coastal Boundary Map" available at DEEP Maps and Publications (860-424-3555).

3. **ENDANGERED OR THREATENED SPECIES:** Is the project site located within an area identified as a habitat for endangered, threatened or special concern species as identified on the "State and Federal Listed Species and Natural Communities Map"? Yes No Date of Map: **Dec 2018**

If yes, complete and submit a [Request for NDDB State Listed Species Review Form](#) (DEP-APP-007) to the address specified on the form. **Please note NDDB review generally takes 4 to 6 weeks and may require additional documentation from the applicant.**

The CT NDDB response **must** be submitted with this completed application.

For more information visit the DEEP website at www.ct.gov/dep/nddbrequests or call the NDDB at 860-424-3011.

4. List any engineer(s), or other consultant(s) employed or retained to assist in preparing the application and designing or constructing the activity.

Name: Louis Berger

Mailing Address: 2500 Westchester Avenue

City/Town: Purchase

State: NY

Zip Code: 10577

Business Phone: (914) 967 – 5800

Ext.

Contact Person: Robert Lin

Title: Project Manager

E-mail: rlin@louisberger.com

Service Provided: Design Permit Plans

Part IV: Project Information (continued)

4. AQUIFER PROTECTION AREAS: Is the site located within a town required to establish Aquifer Protection Areas, as defined in section 22a-354a through 354bb of the General Statutes (CGS)?

Yes No To view the applicable list of towns and maps visit the DEEP website at www.ct.gov/deep/aquiferprotection

If yes, is the site within an area identified on a Level A map? Yes No

If yes, is the site within an area identified on a Level B map? Yes No

If your site is on a Level A map, check the DEEP website, [Business and Industry Information](#) to determine if your activity is required to be registered under the Aquifer Protection Area Program.

If your site is on a Level B map, no action is required at this time, however you may be required to register under the Aquifer Protection Area Program in the future when the area is delineated as Level A.

5. CONSERVATION OR PRESERVATION RESTRICTION: Is the property subject to a conservation or preservation restriction? Yes No

If Yes, proof of written notice of this registration to the holder of such restriction or a letter from the holder of such restriction verifying that this registration is in compliance with the terms of the restriction, must be submitted with this completed form.

6. Total area (in acres) within property boundaries: **0.60 acres**

7. Project Category: (please check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Industrial Site Development | <input type="checkbox"/> Condo/Apartment Complex |
| <input type="checkbox"/> Commercial Site Development | <input type="checkbox"/> Stream Restoration/Enhancement |
| <input type="checkbox"/> Pond/Lake Dredging | <input type="checkbox"/> Multiple Lot Residential Development |
| <input type="checkbox"/> Fish/Wildlife Management (Government Agency) | <input type="checkbox"/> Public Water Supply |
| <input type="checkbox"/> Golf Course Development | <input type="checkbox"/> Mine/Quarry |
| <input type="checkbox"/> Individual Residential | <input checked="" type="checkbox"/> Other (Describe below): |

Rehabilitation of State Bridge/Culvert

Part V: Environmental Information

1. Wetland Impact

a. Direct Impact

(Fill includes permanent & temporary): **3,750 sf** **0.09 acres**

b. Secondary/Indirect Impact: **0 sf** **0 acres**

c. **Total Impact:** **3,750 sf** **0.09 acres**

2. Waters/Waterways/Watercourses Impact

a. Direct Impact

(Fill includes permanent & temporary): **280 lf** **2,300 sf**

b. Secondary/Indirect Impact: **0 lf** **0 sf**

c. **Total Impact:** **280 lf** **2,300 sf**

Part V: Environmental Information (continued)

3. Do the following special wetland types occur on site?				
Special Wetland	Yes	No	Total Area of Resource (SF)	Area of Resource Impacted (SF)
Vernal Pool	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Fen	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Bog	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Cedar Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Spruce Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Calcareous Seepage Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
4. Channel Relocation/Restoration/Stabilization				
Does the project include alterations to a perennial watercourse(s)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
If Yes, indicate all design features included in your project from the list below:				
Design Features	Yes	No		
Avoidance of barriers to fish movement	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Formation of pools and riffles	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Provisions for areas of sheltered flow (e.g., boulders, low check dams)	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Preservation of stream bank vegetation and establishment of new vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Use of clean natural bed materials of a suitable size	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Indicate Design Flow for bank-full flow: 5 cfs				
Indicate Frequency Recurrence (year): 2				
Indicate Design Velocity for bank-full flow: 1 fps				
Indicate Frequency Recurrence (year): 2				
5. Floodplains	Yes	No		
Is there a FEMA mapped floodplain for floodway on the site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Are any excavations or permanent fill/structures proposed within the floodplain?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Are any excavations or permanent fill/structures proposed within the floodway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Are any temporary stockpiles of fill or materials proposed within the floodplain?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Are any increases in the 100 year water surface elevation proposed? If Yes, indicate maximum increase in feet: 1.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Are any flooding increases proposed that would extend off the subject property? If Yes, attach an explanation to this sheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
If applicable, include with this form, hydraulic calculations including tabulated summary of results that demonstrate no adverse impacts of any fill in a floodplain and which are in accordance with the guidance document entitled, "Hydraulic Analysis Guidance Document" www.ct.gov/dep/lib/dep/Permits_and_Licenses/Land_Use_Permits/Inland_Water_Permits/iwrdrhydraulicguidance.pdf				

Part VI: Hydraulic and Drainage Structures (You are required to complete a separate sheet for each structure)

1. Identify the type of structure: (Check one below that applies)

- Culvert
 Detention/Retention Basin
 Infiltration Basin/Structure
 Drainage Outfall
 Drainage Swale
 Bridge
 Dam
 Dike
 Weir
 Outlet Control Structure
 Pipe/Conduit/Aqueduct
 Other:

2. How is the structure labeled on the site plans and in reports? **Bridge No. 06796**

3. Where is the structure located on the site plans? **Approx. Sta 10+00 and 20+00**

4. For bridge/culvert structures, what is the **openness ratio?** **0.023** meters
 (The openness ratio is the X-sectional area of structure opening/ length of the structure parallel to the stream.)
[www.nae.usace.army.mil/reg/Openness_Ratio_\(OR\)_Spreadsheet.pdf](http://www.nae.usace.army.mil/reg/Openness_Ratio_(OR)_Spreadsheet.pdf))

5. What is the size of the contributing watershed to the structure? **534.5** Acres **0.84** Square Miles

6. Is the structure located within a **FEMA flood zone?** No Yes If yes, indicate the type of zone: Floodway Flood Plain

7. Provide the following information as appropriate for the structure identified above.

Water Surface Elevation (feet) (Immediately upstream of structure)

		Storm Event Frequency							
		10-yr		25-yr		50-yr		100-yr	
Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
	Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)
228.4	+0.3	229.0	+0.9	229.9	+1.0	230.6	+1.1	231.3	+1.5

Aerial Extent of Inundation (square feet) (Maximum)

		Storm Event Frequency							
		10-yr		25-yr		50-yr		100-yr	
Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
	Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)

Duration of Inundation (hours)

		Storm Event Frequency				Storm Event Frequency			
		25-yr		100-yr		25-yr		100-yr	
Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
	Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)

Discharge Velocity (feet/second)

		Storm Event Frequency				Storm Event Frequency			
		25-yr		100-yr		25-yr		100-yr	
Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
	Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)

Flow Volume (cubic feet/second)

		Storm Event Frequency				Storm Event Frequency			
		25-yr		100-yr		25-yr		100-yr	
Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
	Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)		Change (+/-)

Part VII: Supporting Documents

Please check the documents submitted as verification that *all* applicable attachments have been submitted with this application form. When submitting any supporting documents, please label the documents as indicated in this part and be sure to include the applicant's name.

Environmental Documentation	Report	Show on Plans
	√ If Included with this application	
Description of the proposed activities and the purpose.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of the functions and values of all wetlands and waters on-site or affected off-site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of direct and secondary impacts to the functions and values of wetlands and waters affected.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of mitigation/restoration and or creation of wetlands to replace the functions and values of impacted wetlands/watercourses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Design details for reconstruction/modification of existing stream crossings	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Biological field survey of the project area and any other information to identify the presence of endangered, threatened, or special concern species, including copies of any correspondence to and from the NDDDB (including a completed CT NDDDB Review Request Form, if applicable).	<input type="checkbox"/>	<input type="checkbox"/>
Culvert invert elevations for roadway crossings set at least 12 inches below the elevation of the natural stream bed for fish and aquatic passage?	<input type="checkbox"/>	<input type="checkbox"/>
Federal wetland delineation of the site shown on plans.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
State wetland delineation of the site shown on plans.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are there amphibian breeding pool(s) present on the project site or adjacent to the project site? If yes, project development plans incorporate recommendations presented in <i>"Best Development Practices, Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY"</i>	<input type="checkbox"/>	<input type="checkbox"/>
Report documenting vegetation, soils, and hydrology of wetlands on site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Incorporation of a permanently protected buffer zone adjacent to wetlands and waters.	<input type="checkbox"/>	<input type="checkbox"/>
Site plans drawn at a scale of 1":100' or larger showing the pre- and post- construction aerial extent of inundation of wetlands and waters for the 2-yr, 10-yr, 25-yr, 50-yr and 100-yr storm frequency events.	<input type="checkbox"/>	<input type="checkbox"/>

Part VI: Supporting Documents

Engineering Documentation	Report	Show on Plans
<i>All plans and calculations must be signed and sealed by a professional engineer (PE) licensed in the state of Connecticut</i>	√ If Included with this application	
Summary of all water handling proposed at the site, including plans and computations, as needed to show that temporary water handling will not cause erosion or flooding.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Erosion and Sediment control measures designed in accordance with the <i>2002 Connecticut Guidelines for Soil Erosion and Sediment Control</i> , including calculations as required for engineered measures. (www.ct.gov/dep/cwp/view.asp?a=2720&q=325660&depNav_GID1654)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Design details and calculations for each hydraulic and drainage structure demonstrating consistency with the standards contained within the Connecticut DOT Drainage Manual and 2004 Connecticut Storm Water Quality Manual.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FEMA floodway/floodplain boundaries within the project site plotted on the site plans and a copy of the FEMA map showing the site location.	<input type="checkbox"/>	<input type="checkbox"/>
Hydrologic calculations including pre- and post- drainage area maps and a tabulated summary of results that demonstrate no adverse increase in runoff rates or velocities as a result of the proposed activity at appropriate downstream points.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Part VII: Application Certification

The applicant *and* the individual(s) responsible for actually preparing the application must sign this part. An application will be considered incomplete unless all required signatures are provided. This includes consultants, professional engineers, surveyors, soil scientists, etc. If the applicant is the preparer, please mark N/A in the spaces provided for the preparer. By their signature, they certify that, to the best of their knowledge and belief, the information contained in this application, including all attachments, is true, accurate and complete.

The certification of this application package shall be signed as follows: 1) For an individual(s) or sole proprietorship: by the individual(s) or proprietor, respectively; 2) For a corporation: by a principal executive officer of at least the level of vice president, or his agent; 3) For a limited liability company (LLC): by a manager, if management of the LLC is vested in a manager(s) in accordance with the company's "Articles of Organization", or by a member of the LLC if no authority is vested in a manager(s); 4) For a partnership: by a general partner; 5) For a municipal, state, or federal agency or department: by either a principal executive officer, a ranking elected official, or by other representatives of such registrant authorized by law.

<p>"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief.</p> <p>I understand that a false statement in the submitted information may be punishable as a criminal offense, in accordance with section 22a-6 of the General Statutes, pursuant to section 53a-157b of the General Statutes, and in accordance with any other applicable statute.</p> <p>I certify that this application is on complete and accurate forms as prescribed by the commissioner without alteration of the text."</p>	
<p><i>W. J. Maziarz</i> Signature of Applicant</p>	<p><i>6/27/2019</i> Date</p>
<p>Thomas J. Maziarz Name of Applicant (print or type)</p>	<p>Bureau Chief, Policy and Planning Title (if applicable)</p>
<p><i>Naomi Hodges</i> Signature of Preparer (if different than above)</p>	<p>06/28/2019 Date</p>
<p>Naomi Hodges Name of Preparer (print or type)</p>	<p>Environmental Scientist Title (if applicable)</p>
<p><input type="checkbox"/> Check here if additional signatures are required. If so, please reproduce this sheet and attach signed copies to this sheet. You must include signatures of any person preparing any report or parts thereof required in this application (i.e., professional engineers, surveyors, soil scientists, consultants, etc.)</p>	

Note: Please submit **three** copies of this completed Addendum Form, a completed Army Corps Application Form (ENG Form 4345), and **all** Supporting Documents (including full scale plans, 1" = 40') to:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Please do **not** mail or directly deliver this completed application and supporting documents to the DEEP's Inland Water Resources Division.

Attachments

- Attachment A: Executive Summary
- Attachment B: Project Location Maps
- Attachment C: Environmental Permit Plans
- Attachment D: Environmental Report, NRCS Soil Map, and ACOE Datasheets
- Attachment E: Hydraulic and Drainage Report (Submitted on CD)
- Attachment F: Project Area Photos
- Attachment G: Fisheries Approval
- Attachment H: Interagency Regulatory Coordination Meeting Notes
- Attachment I: US Army Corps of Engineers Application

Attachment A: Executive Summary

Existing Conditions:

Bridge No. 06796, a 72 inch diameter asphaltic coated corrugated metal pipe (ACCOMP) culvert, conveys Byron Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Byron Brook. The roadway for Bridge No. 06796 has a functional classification of "Urban Interstate". The total structure length of the bridge is 211 feet. The culvert is situated below the roadway, positioned underneath approximately 20 feet of fill. There are reinforced concrete headwalls and wingwalls at both ends of the culvert. The dimension of both headwalls is approximately 20.7 feet in length and 9.9 feet in height. Metal beam guiderails extend along the western portion of the roadway, from the approaches and continue over the culvert. The existing ACCOMP structure results in approximately 1.5 feet of upstream backwater above the natural profile and has adequate freeboard. The existing culvert is considered to be structurally deficient due to the presence of coating loss and perforation to the pipe and requires rehabilitation. The existing concrete headwalls and wingwalls also exhibit areas with deterioration. The proposed culvert rehabilitation is part of State Project No. 103-266 and is to be repaired and slip-lined in conjunction with Bridges No. 06795 and 06797, also located along I-395.

Byron Brook has a drainage area of 0.84 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map number 09011C0204G (Panel 204 of 554), New London County, Connecticut (effective date July 18, 2011), the area of the crossing is located within FEMA Flood Zone X, where areas are subject to inundation with 0.2% chance of flood.

Proposed Project:

In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed at the inlet and outlet. A temporary staging area will be constructed at the inlet. The project proposes the slip lining of the existing 72 inch diameter pipe culvert to be lined with a 54 inch interior diameter (59.4 inch outer diameter) high-density polyethylene (HDPE) pipe. The annular space between the existing and new pipe will be grouted with low pressure grout. The existing reinforced concrete headwalls and wing-walls will be repaired. Existing natural streambed material will be regraded at the inlet and outlet to raise the streambed to the new invert elevation. Subsequent to construction, all temporarily disturbed areas will be restored. The proposed roadway width, alignment and profile will match all existing conditions.

The slip lining repair will reduce the hydraulic opening by approximately 44%. The model results show that the reduction in the hydraulic opening results in increased water surface elevations upstream of the crossing. The proposed water surface elevations are not expected to adversely impact existing structures on properties adjacent to the site, as the land upstream is undeveloped. The increase in water surface elevation at the culvert inlet will not impact I-395 and maintains over 20.0 feet of freeboard in the modeled conditions for the 50-year design discharge. The project is scheduled to be constructed in the Spring of 2020. It is anticipated to be completed in one construction season.

The proposed project results in 1,550 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads. The project results in 1,050 square feet (0.02 acres) of permanent watercourse impacts. This number accounts for the slip-lining of the culvert and grading of the streambed at the inlet and outlet. Though this improvement is described as a permanent impact, the watercourse will remain. The project will not result in any permanent conversion of watercourse to upland. Temporary impacts include the area necessary for construction access and water handling and the proposed temporary staging area located at the culvert's inlet. Temporary impact to wetlands is 2,200 square feet (0.05 acres) and is 1,250 square feet (0.03 acres) of temporary impacts to the watercourse. The total wetland and watercourse impact is 6,050 square feet (0.14 acres).

Additional permits being sought include an ACOE Section 404 Pre-Construction Notification under General Permit No. 19 Stream, River & Brook Crossings and CTDEEP General Permit for Water Resources Construction Activities.

Attachment B: Project Location Maps

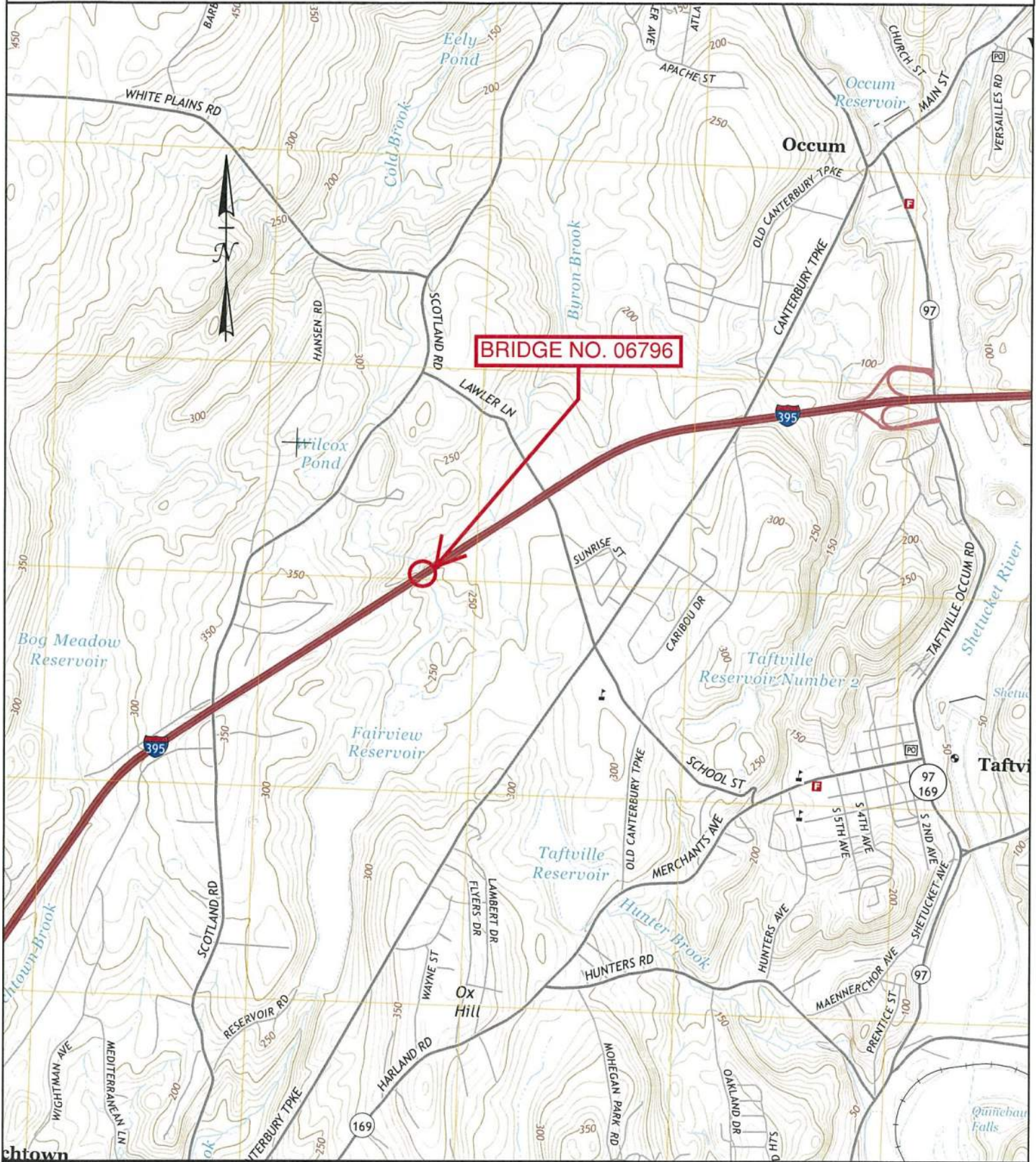


Engineers
Designers
Consultants
Planners
Scientists
1900 East Main Street
Farmington, CT 06030
Tel: 860.633.4100 • www.cmeinc.com

USGS QUADRANGLE MAP

BRIDGE NO. 06796 IN NORWICH, CT

INTERSTATE 395 OVER BYRON BROOK



BRIDGE NO. 06796



USGS MAP #72
NORWICH



Created: 2019

1 INCH = 2,000 FEET





CONSTRUCTION MANAGEMENT
 ENGINEERING
 CORPORATION

DETAILED AERIAL MAP BRIDGE NO. 06796 IN NORWICH, CT INTERSTATE 395 OVER BYRON BROOK



CTDEEP, USGS, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENTP, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



CTECO AERIAL
 MAP
 NORWICH,
 CONNECTICUT



Created: 2019

1 INCH = 500 FEET



Attachment C: Environmental Permit Plans

Attachment D: Environmental Report, NRCS Soil Map, and ACOE Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06796 Carrying Byron Brook under Interstate 395
Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06796 in the city of Norwich, Connecticut. Bridge No. 06796 is a 72 inch diameter asphaltic coated corrugated metal pipe (ACCM) culvert that conveys Byron Brook under Interstate 395 (I-395). The bridge was originally built in 1956 to allow I-395 to pass over Byron Brook. The total structure is approximately 211 feet long. The culvert is situated below the roadway, underneath approximately 20 feet of fill. The existing culvert is considered to be structurally deficient due to the presence of coating loss and perforation to the pipe and requires rehabilitation. The existing concrete headwalls and wingwalls also exhibit areas with deterioration. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54 inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Project No. 103-266 also includes Bridge Nos. 06795 and 06797. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06795 and 06797 are being processed under separate permits.

Site Information

Byron Brook has a drainage area of 0.84 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The watershed is located in the northeastern portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural land, grasses, and water (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat area. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map number 09011C0204G (Panel 204 of 554), New London County, Connecticut (effective date July 18, 2011), the area of the crossing is located within FEMA Flood Zone X, where areas are subject to inundation with 0.2% chance of flood.

Study Area

Bridge No. 06796 is located on I-395 over Byron Brook, approximately 0.4 miles south of Bridge No. 00279 (Lawler Lane over I-395). Land in the vicinity of the site includes transportation (roadway), forest land, and scrub-shrub wetlands. A pond is located approximately 200 feet upstream of the inlet and is separated by fallen trees and large boulder deposits, which resulted in a shallow pool at the inlet. During the December 2013 state inspection, a beaver dam at the inlet was reported and was subsequently removed by the Department. According to the December 2015 state inspection report, the beaver dam appeared to have been reconstructed continuing to cause inundation. At the outlet, a pond is present, likely due to presence of another beaver dam 2,000 feet further downstream. This pond also appears to back up into the culvert and results in standing water throughout the entire length of the culvert.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are associated with the watercourse that flows through Bridge No. 06796 near the inlet and outlet. Byron Brook flows southeast to northwest and ultimately discharges to a swamp area beyond the state right-of-way. The watercourse of Byron Brook is classified as riverine (R5UBH), permanently flooded perennial stream with unconsolidated bottom. The channel width is mostly straight without a well-defined channel bank. The primary streambed material is silt and sand with deposits of boulders and cobbles. Byron Brook flows through a secondary deciduous forest dominated by red maples and oak trees. Wetlands within the project area are impacted by beaver activity and has caused ponding. At the inlet, there is no mapped wetland within the area, however, there are wetland soils present consistent with those found downstream of the structure. At the outlet, there is a 0.84 acre Freshwater Forested/Shrub Wetland (PFO1E). Immediately located to the east of the outlet's wetland system is a 12.90-acre Freshwater Pond (PABH). This pond is permanently flooded and consists of wetlands and deepwater habitats. The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

Wetlands within the area have a partial tree canopy dominated by Red Maple (*Acer rubrum*) and Northern Red Oak (*Quercus rubra*). The vegetation bordering the ponded area at the inlet include Northern Lady Fern (*Athyrium angustum*) and a *Carex* spp. At the outlet, the dominate wetland species bordering the ponded area is Broadleaf Cattail (*Typha latifolia*) and Sensitive fern (*Onoclea sensibilis*). The area adjacent to the roadway includes trees and saplings of the facultative upland species Northern Red Oak, Eastern Red Cedar (*Juniperus virginiana*), Red Maple, and Black Oak (*Quercus Velutina*). Other species present include Japanese Barberry (*Berberis thunbergii*), Virginia-Creeper (*Parthenocissus quinquefolia*) and Asiatic bittersweet (*Celastrus orbiculatus*).

Soils

Wetland soils present within the project area include areas of mucky mineral and organic material. These soils found within the project area mapped by the Natural Resource Conservation Service (NRCS) predominantly includes Charlton-Chatfield complex with varying percent slopes and is characteristically very rocky. Soils encompassing the culvert inlet and outlet is mapped as Charlton-Chatfield complex (Map #73C). Further north past the culvert outlet is mapped as Catden and Freetown soils (Map #18). Charlton-Chatfield complex (Map #73E) is located east of the project area. The soils associated with I-395 include highway fill material and can be classified as Udorthents-Urban land complex (Map # 306) though not mapped on the NRCS map, these soils were confirmed by wetland delineation.

Functions and Values

The primary wetland functions and values of Byron Brook and wetlands in the project area are fisheries and wildlife habitat, flood flow alteration, and sediment/nutrient retention. The stream channel functions within the culvert are limited to fish and wildlife passage, and flood flow alteration. The field environmental assessment was limited to observations made during wetland delineation. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest. There is a heavy presence of beaver activity within the project area. The proposed project will have very limited effects on wetland function and values in the project area as it pertains to wildlife habitat. The two critical issues with culvert slip lining are alteration of flood flows and impacts to fish passage. This project is designed to minimize changes to the existing conditions and prevent long-term impacts to both flows and fish passage. The design process for this project included hydraulic modeling of the proposed culvert slip lining. The slip lining repair requires

inserting a smaller 54-inch interior diameter corrugated HDPE pipe within the existing culvert. The hydraulic modeling analysis show that the reduction in the hydraulic opening results in an increase of the 50-year water surface elevations upstream of the crossing. The slight increase in water surface elevation at the culvert inlet will remain primarily unchanged with respect to the existing conditions. The proposed water surface elevations are not expected to adversely impact existing structures or properties adjacent to the project site as the land upstream of the structure inlet is largely undeveloped. The hydraulic modeling shows that the proposed culvert maintains approximately 20.0 feet of freeboard in the modeled conditions. The velocities through the slip lined culvert will be slightly increased from the existing velocities through the existing culvert for the range of discharges evaluated. However, backwater from the pond is present at the culvert outlet due to beaver activity and the low slope of the culvert; therefore, no additional culvert outlet protection is proposed.

Short-term effects as a result of construction activities are minimized by:

- Utilizing an erosion and sedimentation control plan.
- Utilizing a water handling plan.
- Adherence to the time-of-year restriction for unconfined in stream work.
- Minimizing work area in the watercourse and wetlands.
- Limiting areas of disturbance in uplands.
- Restoration of temporarily disturbed areas.

Regulatory Impacts

To gain access to the structure to perform the proposed work, permanent access roads will be constructed at the inlet and outlet of Bridge No. 06796 to allow materials and heavy construction equipment to access the culvert. The construction of these access roads will require clearing and grubbing, invasive species control, as well as some permanent impacts to wetlands. A temporary staging area will be constructed along the access road at the inlet of the bridge. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction. To minimize traffic impacts on I-395, the workzone on I-395 will be contained to the shoulder of both the northbound and southbound lanes. Off-peak temporary shoulder and/or lane closures may be used for equipment or construction personnel to enter and exit the access roads, as required.

Construction Access and Water Handling

In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed at the inlet and outlet. A temporary staging area will be constructed at the inlet. The construction is anticipated to take place in one stage. In Stage 1, the sedimentation and erosion control measures will be established. A temporary water-handling bypass pipe will be installed within the existing culvert and temporary water-handling-cofferdam surrounding the inlet and outlet will be installed. Water will be confined to the temporary bypass pipe for work to be performed in the dry. During this step, the interior of the culvert will be power-washed and voids filled. Water from the power washing operations shall be completely contained and pumped to a settling basin. Subsequent to the power-washing, the temporary water-handling-cofferdam and bypass pipe will be removed for the slip-lining to occur in wet conditions. It is anticipated that the contractor will insert the new pipe from either the inlet or outlet access area; however, if heavy construction equipment within the watercourse is necessary, the contractor is required to temporarily utilize timber mats for channel bottom protection. Once the new 54 inch HDPE pipe is installed, the temporary bypass pipe will be relocated into the new pipe and water-handling-cofferdams reinstalled to perform the proposed grouting of the annular space between the existing pipe and the

proposed pipe , repairs to the headwalls and wingwalls, as well as the regrading of the existing natural streambed material at the inlet and outlet to bring the streambed to the new invert elevation. Once construction is complete the temporary materials, water-handling-cofferdam and bypass pipe will be removed to restore flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatering wastewater located within the cofferdam to a temporary sedimentation basin located in upland areas. Any unconfined instream activities will be limited to June 1st to September 30th. Any wetland impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. All disturbed areas will be restored at the completion of construction. A native planting plan has been included in the permit plans on PMT-07. Sedimentation and erosion control measures are to be removed upon permanent stabilization.

Slip-lining

The project proposes to use a 54 inch interior diameter corrugated HDPE pipe to slip-line the existing culvert. The annular space between the existing and proposed pipes is to be filled with low pressure grout. The slip-lining will result in a very minor change in existing conditions or wetland functions and values. The greatest concern for slip-lining is reducing hydraulic capacity and altering flooding and hydraulic conditions at the culvert. The hydraulic modeling analysis of the culvert was conducted and found that the 50-year water surface elevation will increase by approximately 1.1 feet and will maintain adequate freeboard. The culvert rehabilitation will not result in changes to the hydraulic conditions that will significantly impact flow velocities. The project meets the design criteria stipulated in the CTDOT Drainage Manual.

Fish Passage

The project includes feasible elements designed to minimize design features to fisheries while minimizing channel connectivity impacts from the slip-lining repair. Any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. CTDEEP Fisheries concurred that the proposed project complies with their initial stipulations for the project site. Fisheries design elements include:

- Regrading of salvaged natural streambed material at the inlet and outlet to raise the streambed to the new culvert invert elevation, ensuring that the proposed lining does not create a barrier to fish movement.
- Utilization of an HDPE pipe with interior corrugations to add roughness within the culvert.
- The restoration of disturbed areas.
- Plantings to provide shade for the watercourse.
- Adherence to the time of year restriction.

Proposed Impacts

The proposed project results in 1,550 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads. The project results in 1,050 square feet (0.02 acres) of permanent watercourse impacts. This number accounts for the slip-lining of the culvert and grading of the streambed at the inlet and outlet. Though this improvement is described as a permanent impact, the watercourse will remain. The project will not result in any permanent conversion of watercourse to upland. Temporary impacts include the area necessary for construction access and water handling and the proposed temporary staging area located at the culvert's inlet. Temporary impact to wetlands is 2,200 square feet (0.05 acres) and is 1,250 square feet (0.03 acres) of temporary impacts to the

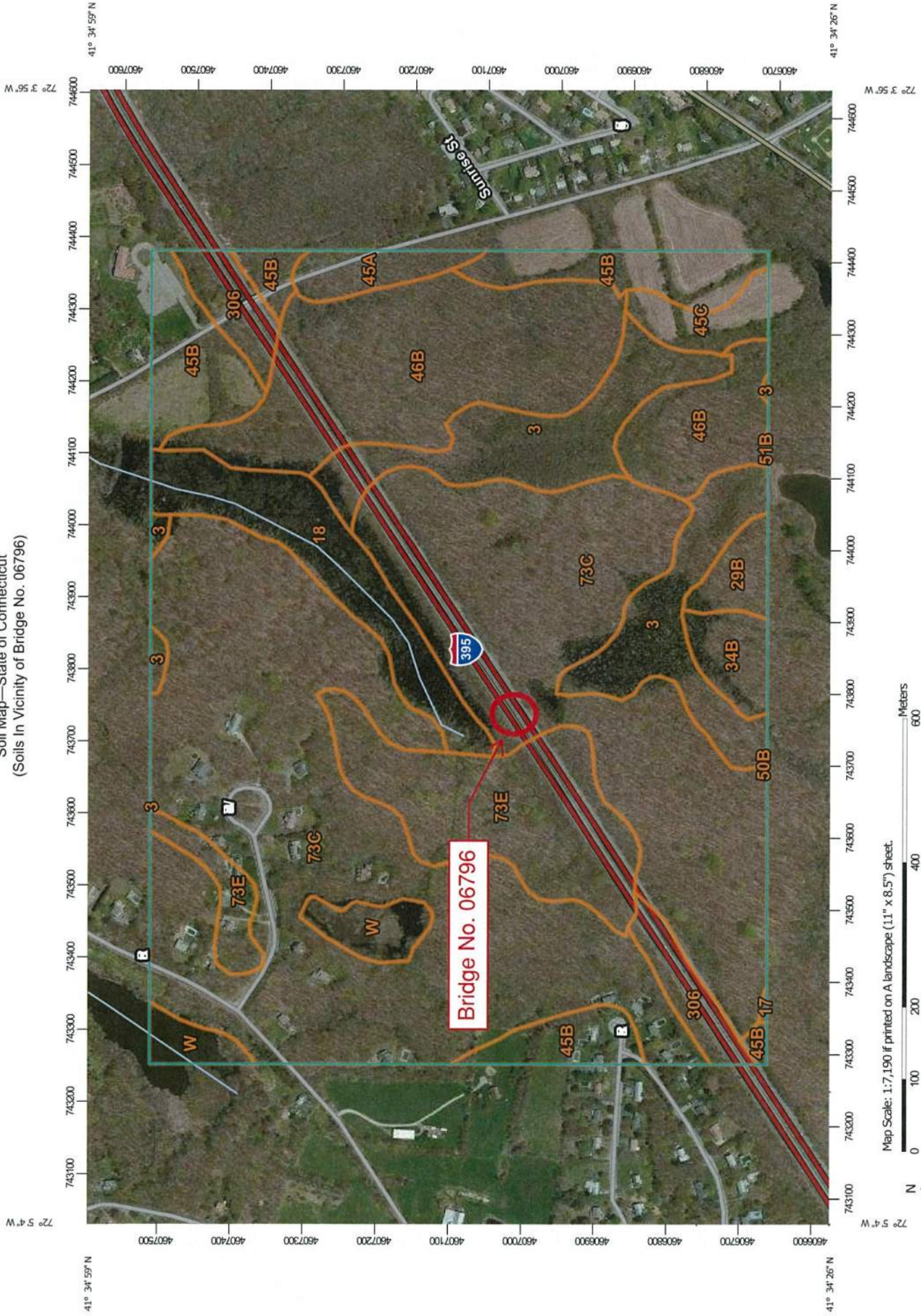
watercourse. The total wetland and watercourse impact is 6,050 square feet (0.14 acres). Impacts are described within the table below:

Bridge No. 06796 Wetland and Watercourse Impact Table			
	Wetland	Watercourses	Total
Temporary	2,200 sqft (0.05 ac)	1,250 sqft (0.03 ac)	3,450 sqft (0.08 ac)
Permanent	1,550 sqft (0.04 ac)	1,050 sqft (0.02 ac)	2,600 sqft (0.06 ac)
Total	3,750 sqft (0.09 ac)	2,300 sqft (0.05 ac)	6,050 sqft (0.14 ac)










































Minimization and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing existing streambed material at the inlet and outlet of the culvert to grade the streambed to the new invert elevation. There will be continuous flow of water at the project culvert during construction, and any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed access roads and staging areas associated with the roads. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. A planting plan has been included in PMT-07 of the permit plans. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
(Soils In Vicinity of Bridge No. 06796)



MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
 Special Point Features	 Special Line Features
 Blowout	 Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	 Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	 Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	21.7	9.1%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	0.1	0.0%
18	Catden and Freetown soils, 0 to 2 percent slopes	11.4	4.8%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	2.5	1.0%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	3.2	1.3%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	3.0	1.3%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	16.8	7.1%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	3.1	1.3%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	32.7	13.7%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	0.0	0.0%
51B	Sutton fine sandy loam, 2 to 8 percent slopes, very stony	0.1	0.0%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	113.1	47.5%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	19.4	8.2%
306	Udorthents-Urban land complex	6.3	2.6%
W	Water	4.5	1.9%
Totals for Area of Interest		237.9	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06796 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): concave Slope (%): 4
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>15</u> =Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____ =Total Cover		
Herb Stratum (Plot size: <u>50 ft</u>)			
1. <u>Onoclea sensibilis</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>
2. <u>Typha latifolia</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>25</u> =Total Cover		
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. <u>Berberis thunbergii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>2</u> =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>20</u>	x 1 = <u>20</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>15</u>	x 3 = <u>45</u>
FACU species <u>2</u>	x 4 = <u>8</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>42</u> (A)	<u>83</u> (B)
Prevalence Index = B/A = <u>1.98</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	2.5YR 3/2	95	7.5YR 4/4	5	C	M	Mucky Loam/Clay	
2-18	7.5YR 4/2	80	10YR 6/4	10	C	M	Mucky Loam/Clay	
			5YR 4/6	5	C	M		
			10YR 6/6	5	C	M		Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Dark Surface (S7)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	
Type: _____	
Depth (inches): _____	
	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06796 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required: check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
--	---

Field Observations: Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>x</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>x</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>x</u>
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>
2. <u>Quercus rubra</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
3. <u>Quercus velutina</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>22</u> =Total Cover		
Sapling/Shrub Stratum (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____ =Total Cover		
Herb Stratum (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	_____ =Total Cover		
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. <u>Berberis thunbergii</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Celastrus orbiculatus</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>15</u> =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>15</u>	x 3 = <u>45</u>
FACU species <u>7</u>	x 4 = <u>28</u>
UPL species <u>15</u>	x 5 = <u>75</u>
Column Totals: <u>37</u> (A)	<u>148</u> (B)
Prevalence Index = B/A = <u>4.00</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	7.5YR 2.5/2	95	7.5YR 3/4	5	C	M	Loamy/Clayey	
3-12	7.5YR 3/4	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed): Type: _____ Depth (inches): _____</p>	<p>Hydric Soil Present? Yes ____ No <u>X</u></p>
--	--

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Attachment E: Hydraulic and Drainage Report (Submitted on CD)

Attachment F: Project Area Photos



Aerial Photo of Bridge No. 06796, Bing Images



Inlet headwall, Bridge No. 06796



Culvert inlet and vicinity, area upstream was flooded due to a beaver impoundment



Stream channel and beaver impoundment approximately 175 ft upstream of project culvert



Beaver impounded wetland
upstream of culvert inlet



Culvert outlet headwall,
Bridge No. 06796

Ponded area downstream of
culvert outlet, Bridge No. 06796



Attachment G: Fisheries Approval

Attachment H: Interagency Regulatory Coordination Meeting Notes



DEEP / DOT REGULATORY COORDINATION Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. Bridge No. 06795-

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCOMP) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes

2. **Bridge No. 06796-**

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. **Bridge No. 06797-**

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.

Attachment I: US Army Corps of Engineers Application



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

Phone: (860) 594-2157

860-594-2931

June 26, 2019

Ms. Susan Lee
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Subject: State Project No. 103-266
Bridge 06796: Interstate 395 over Byron Brook
City of Norwich

Dear Ms. Lee:

Enclosed please find the Section 404 permit application for the General Permit 19 – Stream, River and Brook Crossings for your review and approval. An application for a 401 Water Quality Certification (via the Connecticut Addendum) was previously submitted to the Connecticut Department of Energy and Environmental Protection under a separate cover letter for processing. Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at 860-594-2157.

Very truly yours,

A handwritten signature in blue ink that reads "Kimberly C. Lesay".

Kimberly C. Lesay
Transportation Assistant Planning Director
Bureau of Policy and Planning

Attachments
cc: Nathan Margason – USEPA

Naomi C. Hodges/nch

bcc: Kimberly C. Lesay

Andrew H. Davis – Chris Samorajczyk – Alexander T. Finch

Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin

Robert E. Obey – Eileen Ego (District 2)

Don Wurst – Aaron Foster (CME)

Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

Information to Determine 4(d) Rule Compliance:

	YES	NO
1. Does the project occur wholly outside of the WNS Zone ¹ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Have you contacted the appropriate agency ² to determine if your project is near known hibernacula or maternity roost trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Could the project disturb hibernating NLEBs in a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Could the project alter the entrance or interior environment of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

You are eligible to use this form if you have answered yes to question #1 or yes to question #2 and no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

Agency: FHWA – Connecticut Division

Applicant³ (Name, Email, Phone No.):

Connecticut Department of Transportation
 Amanda M. Saul, Office of Environmental Planning
DOT.NLEB@ct.gov, (860)594-2939

Project Name: CTDOT0103-0266

Project Location (include coordinates if known): I-395 Norwich (coordinates listed below) at three locations

Basic Project Description (provide narrative below or attach additional information):

This project involves the rehabilitation of three culverts under I-395 in the town of Norwich, Bridge 06795 over Hammer Brook (41.556303, -72.104585), Bridge 06796 over Byron Brook (41.577787, -72.076136), and Bridge 06797 over unnamed brook (41.583895, -72.061892).

¹ <http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>

² See <http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html>

³ If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

General Project Information	YES	NO
Does the project occur within 0.25 miles of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project occur within 150 feet of a known maternity roost tree?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project include forest conversion ⁴ ? (if yes, report acreage below)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Estimated total acres of forest conversion	1.5 ac	
If known, estimated acres ⁵ of forest conversion from April 1 to October 31		
If known, estimated acres of forest conversion from June 1 to July 31 ⁶		
Does the project include timber harvest? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of timber harvest		
If known, estimated acres of timber harvest from April 1 to October 31		
If known, estimated acres of timber harvest from June 1 to July 31		
Does the project include prescribed fire? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of prescribed fire		
If known, estimated acres of prescribed fire from April 1 to October 31		
If known, estimated acres of prescribed fire from June 1 to July 31		
Does the project install new wind turbines? (if yes, report capacity in MW below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated wind capacity (MW)		

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: Amanda M. Saul

Digitally signed by Amanda M. Saul
 DN: cn=Amanda M. Saul, o=Connecticut
 Department of Transportation, ou=Office of
 Environmental Planning,
 email=amanda.saul@ct.gov, c=US
 Date: 2019.03.15 09:14:22 -04'00'

Date Submitted: 3/15/2019

⁴ Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).

⁵ If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.

⁶ If the activity includes tree clearing in June and July, also include those acreage in April to October.

U.S. Army Corps of Engineers (USACE)
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
 33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -
 OMB No. 0710-0003
 Expires: 01-08-2018*

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at . Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website:

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
--------------------	----------------------	------------------	------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - Connecticut Department of Transportation E-mail Address - kimberly.lesay@ct.gov	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- 2800 Berlin Turnpike City - Newington State - CT Zip - 06131 Country - USA	9. AGENT'S ADDRESS: Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax 860-594-2931 860-594-3028	10. AGENTS PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT

DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) Repair of culvert 06796 carrying Byron Brook beneath I-395 located in Norwich, Connecticut	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Byron Brook	14. PROJECT STREET ADDRESS (if applicable) Address N/A on Interstate-395
15. LOCATION OF PROJECT Latitude: °N 41°34'40.09" Longitude: °W 72° 4'33.94"	City - Norwich State- CT Zip- 06360
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID N/A Municipality Section - Township - Range -	

17. DIRECTIONS TO THE SITE

The project site is Interstate 395 over Byron Brook in Norwich, CT. Directions from the US Army Corps of Engineers New England District Main Office include: MA-2A E to I-95 S. Then take exit 25 to I-90 W. Take exit 10 toward MA-12 N, and keep right at the fork to merge onto I-395 S. The culvert located approximately 0.42 miles south (along I-395) of the Lawler Lane overpass, and approximately 0.72 miles north (along I-395) of the Scotland Road overpass.

18. Nature of Activity (Description of project, include all features)

Please See Attached.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of this project is to address the structural deficiencies identified in inspection. Bridge No. 06796 is considered to be structurally deficient due to presence of perforations. The pipe structure is in poor condition and exhibits spotty areas of asphalt coating loss below the waterline, with heavy laminar rust and minor section loss. Also, there is a 3 foot long x 6 inch high perforation in steel at outlet below waterline with backfill material spilling through. This project also has the presence of a beaver dam downstream, which has backed water up into the cell. The purpose is to address the structural deficiencies while minimizing impacts on the existing conditions.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

The project requires impacts to the channel and surrounding wetlands for the repair of the existing culvert. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54 inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Salvaged natural streambed material will be used to grade the streambed to the new invert elevation. The construction of permanent access roads is required to access the culvert. These access roads will have some temporary and permanent impacts to the adjacent wetlands. All temporarily disturbed areas will be revegetated after the completion of construction. A planting has been included in the Environmental Permit Plan Set under PMT-07.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type	Type	Type
Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards

See Attached.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See Attached.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

The project limits disturbance to the channel of Byron Brook at the existing bridge and at the inlet and outlet of the culvert. See attached description for additional information.

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- Carolina I. Dabdoub, 29 Wales Road

City - Rocky Point State - NY Zip - 11778

b. Address- Bryon Brook Country Club LLC, 649 Route 25A, Suite 1

City - Norwich State - CT Zip - 06360

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CTDEEP	PGP Addendum		Concurrently		
CTDEEP	Water Res. Const. GP		Post PCN Approval		

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

W. H. Holl, Director, for Thomas Maziarz 6/27/2019
 SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ACOE Block 18: Nature of Activity

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06796 Culvert Carrying Byron Brook under Interstate 395
Norwich, Connecticut

Bridge No. 06796, a 72 inch diameter asphaltic coated corrugated metal pipe (ACCOMP) culvert, conveys Byron Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Byron Brook. The roadway for Bridge No. 06796 has a functional classification of "Urban Interstate". The total structure length of the bridge is 211 feet. The culvert is situated below the roadway, positioned underneath approximately 20 feet of fill. There are reinforced concrete headwalls and wingwalls at both ends of the culvert. The dimension of both headwalls is approximately 20.7 feet in length and 9.9 feet in height. The dimension of the wingwalls at the inlet and outlet is approximately 5.77 feet in length and 6.1 feet in height. Metal beam guiderails extend along the western portion of the roadway, from the approaches and continue over the culvert. The existing ACCOMP structure results in approximately 1.5 feet of upstream backwater above the natural profile and has adequate freeboard. The existing culvert is considered to be structurally deficient due to the presence of coating loss and perforation to the pipe and requires rehabilitation. The existing concrete headwalls and wingwalls also exhibit areas with deterioration. The proposed culvert rehabilitation is part of State Project No. 103-266 and is to be repaired in conjunction with Bridges No. 06795 and 06797, also located along I-395.

Byron Brook has a drainage area of 0.84 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The watershed is located in the northeastern portion of Norwich and can be characterized as largely forested along with developed area, forested wetland area, agricultural land, grasses, and water (CLEAR Land Use 2015). Byron Brook flows southeast to northwest and ultimately discharges to a swamp area beyond the state right-of-way. The watercourse of Byron Brook a permanently flooded perennial stream with unconsolidated bottom. Wetlands within the project area are impacted by beaver activity and has caused ponding.

The project proposes the slip lining of the existing 72 inch diameter pipe culvert to be lined with a 54 inch interior diameter (59.4 inch outer diameter) high-density polyethylene (HDPE) pipe. The annular space between the existing and new pipe will be grouted with low pressure grout. The existing reinforced concrete headwalls and wing-walls will be repaired. The proposed dimensions of the headwalls and wingwalls will remain the same as existing conditions. Existing natural streambed material will be regraded at the inlet and outlet to raise the streambed to the new invert elevation. Subsequent to construction, all temporarily disturbed areas will be restored. The proposed roadway width, alignment and profile will match all existing conditions. The slip lining repair will reduce the hydraulic opening by approximately 44%. The model results show that the reduction in the hydraulic opening results in increased water surface elevations upstream of the crossing. The proposed water surface elevations are not expected to adversely impact existing structures on properties adjacent to the site, as the land upstream is undeveloped. The increase in water surface elevation at the culvert inlet will not impact I-395 and maintains over 20.0 feet of freeboard in the modeled conditions for the 50-year design discharge. The project is scheduled to be constructed in the Spring of 2020. It is anticipated to be completed in one construction season.

Construction Sequencing:

In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed at the inlet and outlet. A temporary staging area will be constructed at the inlet. The construction is anticipated to take place in one stage. In Stage 1, the sedimentation and erosion control measures will be established. A temporary water-handling bypass pipe will be installed within the existing culvert and temporary water-handling-cofferdam surrounding the inlet and outlet will be installed. Water will be confined to the temporary bypass pipe for work to be performed in the dry. During this step, the interior of the culvert will be power-washed and voids filled. Water from the power washing operations shall be completely contained and pumped to a settling basin. Subsequent to the power-washing, the temporary water-handling-cofferdam and bypass pipe will be removed for the slip-lining to occur in wet conditions. It is anticipated that the contractor will insert the new pipe from either the inlet or outlet access area; however, if heavy construction equipment within the watercourse is necessary, the contractor is required to temporarily utilize timber mats for channel bottom protection. Once the new 54 inch HDPE pipe is installed, the temporary bypass pipe will be relocated into the new pipe and water-handling-cofferdams reinstalled to perform the proposed grouting of the annular space between the existing pipe and the proposed pipe, repairs to the headwalls and wingwalls, as well as the regrading of the existing natural streambed material at the inlet and outlet to bring the streambed to the new invert elevation. Once construction is complete the temporary materials, water-handling-cofferdam and bypass pipe will be removed to restore flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatering wastewater located within the cofferdam to a temporary sedimentation basin located in upland areas. Any unconfined instream activities will be limited to June 1st to September 30th. Any wetland impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. All disturbed areas will be restored at the completion of construction. A native planting plan has been included in the permit plans on PMT-07. Sedimentation and erosion control measures are to be removed upon permanent stabilization.

Additional permits being sought includes a State of Connecticut Addendum to the Army Corps of Engineers General Permit and CTDEEP General Permit for Water Resources Construction Activities.

ACOE Block 21: Types of Material Being Discharged and Amount of Each Type in Cubic Yards

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06796 Culvert Carrying Byron Brook under Interstate 395
Norwich, Connecticut

Type of Material	Amount Discharged	Comment
Embankment Fill	14 CY	For the construction of the access roads.
Streambed Material	10 CY	To grade the streambed to the new culvert invert elevation at the inlet and outlet.
Slip-Lining Grout	90 CY	To fill the annular space between the existing AACMP and the new HDPE pipe.
54-inch I.D. HDPE Slip-Lining	2 CY	Slip-lining pipe.
Processed Aggregate	70 CY	For the construction of access road.

ACOE Block 22: Surface Area in Acres of Wetlands or Other Waters Filled

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
 Rehabilitation of Bridge 06796 Carrying Byron Brook under Interstate 395
 Norwich, Connecticut

The proposed project results in 1,550 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads. The project results in 1,050 square feet (0.02 acres) of permanent watercourse impacts. This number accounts for the slip-lining of the culvert and grading of the streambed at the inlet and outlet. Though this improvement is described as a permanent impact, the watercourse will remain. The project will not result in any permanent conversion of watercourse to upland. Temporary impacts include the area necessary for construction access and water handling and the proposed temporary staging area located at the culvert's inlet. Temporary impact to wetlands is 2,200 square feet (0.05 acres) and is 1,250 square feet (0.03 acres) of temporary impacts to the watercourse. The total wetland and watercourse impact is 6,050 square feet (0.14 acres). Impacts are described within the table below:

Bridge No. 06796 Wetland and Watercourse Impact Table			
	Wetland	Watercourses	Total
Temporary	2,200 sqft (0.05 ac)	1,250 sqft (0.03 ac)	3,450 sqft (0.08 ac)
Permanent	1,550 sqft (0.04 ac)	1,050 sqft (0.02 ac)	2,600 sqft (0.06 ac)
Total	3,750 sqft (0.09 ac)	2,300 sqft (0.05 ac)	6,050 sqft (0.14 ac)

ACOE Block 23: Description of Avoidance, Minimization, and Compensation

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06796 Culvert Carrying Byron Brook under Interstate 395
Norwich, Connecticut

The project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing existing streambed material at the inlet and outlet of the culvert to grade the streambed to the new invert elevation. There will be continuous flow of water at the project culvert during construction, and any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed access roads and staging areas associated with the roads. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. A planting plan has been included in the permit plans on PMT-07. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Attachments

Attachment A: Location Maps

- USGS Map
- Aerial Map

Attachment B: Site Permit Plans

Attachment C: Site Photos

Attachment D: Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

Attachment E: Northern Long-Eared Bat Consultation

Attachment F: Fisheries Sign-off

Attachment G: State Historic Preservation Office (SHPO) Exemption

Attachment H: Tribal Historic Preservation Office (THPO) Exemption

Attachment I: Interagency Coordination Meeting Notes

Attachment A

Location Maps

- USGS Map
- Aerial Map

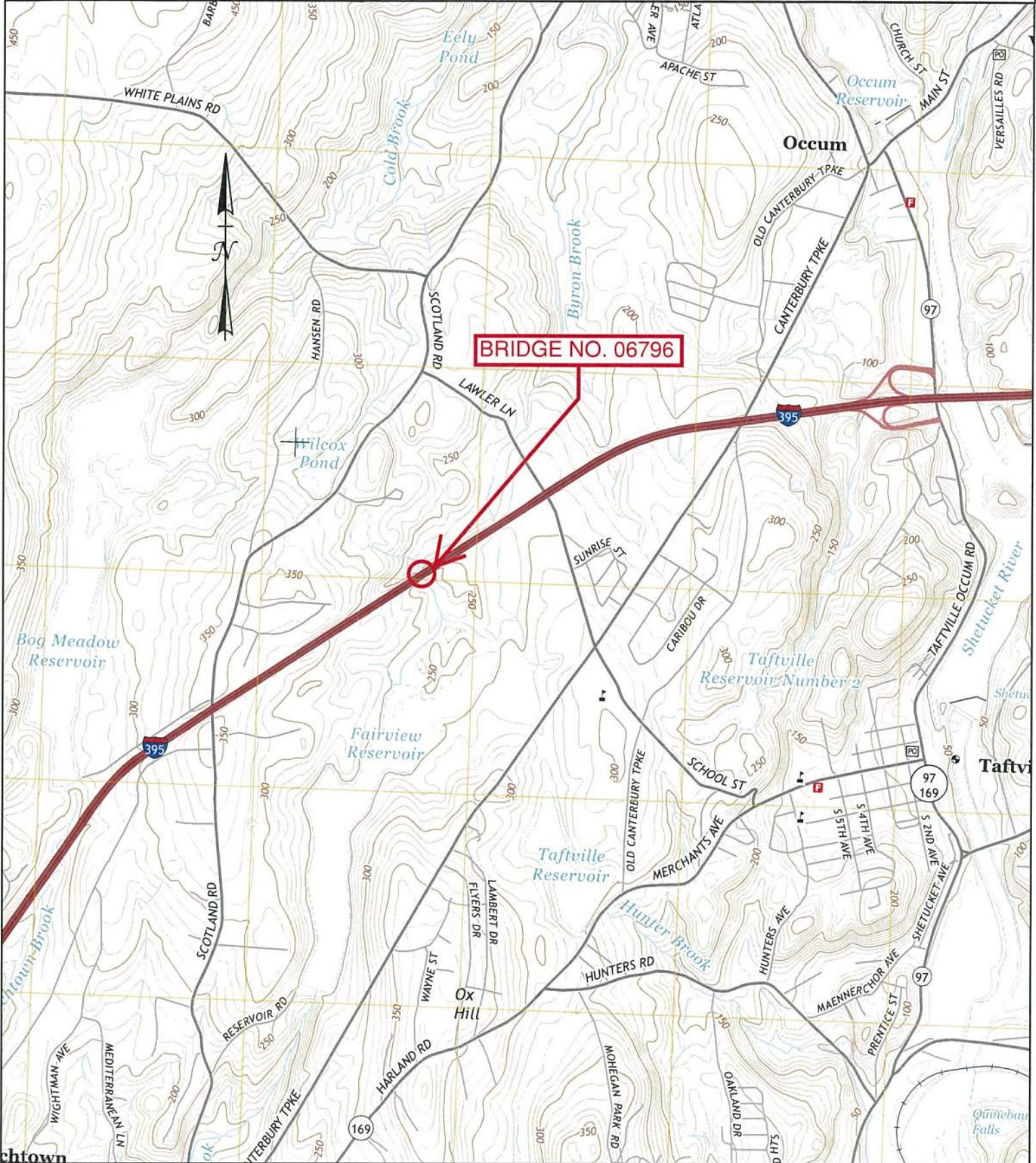


Engineers
Designers
Consultants
Planners
Scientists
401 East River Street • Floor 4 • East Hartford, CT 06108
T 860 234 4100 • www.cmeengineering.com

USGS QUADRANGLE MAP

BRIDGE NO. 06796 IN NORWICH, CT

INTERSTATE 395 OVER BYRON BROOK



USGS MAP #72
NORWICH



Created: 2019

1 INCH = 2,000 FEET





CONSTRUCTION MANAGEMENT ENGINEERS
 1000 WEST STREET, SUITE 200
 NORWICH, CT 06250
 TEL: 860.881.1111
 WWW.CME-CT.COM

DETAILED AERIAL MAP

BRIDGE NO. 06796 IN NORWICH, CT

INTERSTATE 395 OVER BYRON BROOK



CTDEEP, USGS, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENTP, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



CTECO AERIAL
 MAP
 NORWICH,
 CONNECTICUT



Created: 2019

1 INCH = 500 FEET



Attachment B
Site Permit Plans

Attachment C
Site Photos







Ponded area downstream of
culvert outlet, Bridge No. 06796



Attachment D

Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06796 Carrying Byron Brook under Interstate 395
Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06796 in the city of Norwich, Connecticut. Bridge No. 06796 is a 72 inch diameter asphaltic coated corrugated metal pipe (ACCOMP) culvert that conveys Byron Brook under Interstate 395 (I-395). The bridge was originally built in 1956 to allow I-395 to pass over Byron Brook. The total structure is approximately 211 feet long. The culvert is situated below the roadway, underneath approximately 20 feet of fill. The existing culvert is considered to be structurally deficient due to the presence of coating loss and perforation to the pipe and requires rehabilitation. The existing concrete headwalls and wingwalls also exhibit areas with deterioration. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54 inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Project No. 103-266 also includes Bridge Nos. 06795 and 06797. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06795 and 06797 are being processed under separate permits.

Site Information

Byron Brook has a drainage area of 0.84 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The watershed is located in the northeastern portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural land, grasses, and water (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat area. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map number 09011C0204G (Panel 204 of 554), New London County, Connecticut (effective date July 18, 2011), the area of the crossing is located within FEMA Flood Zone X, where areas are subject to inundation with 0.2% chance of flood.

Study Area

Bridge No. 06796 is located on I-395 over Byron Brook, approximately 0.4 miles south of Bridge No. 00279 (Lawler Lane over I-395). Land in the vicinity of the site includes transportation (roadway), forest land, and scrub-shrub wetlands. A pond is located approximately 200 feet upstream of the inlet and is separated by fallen trees and large boulder deposits, which resulted in a shallow pool at the inlet. During the December 2013 state inspection, a beaver dam at the inlet was reported and was subsequently removed by the Department. According to the December 2015 state inspection report, the beaver dam appeared to have been reconstructed continuing to cause inundation. At the outlet, a pond is present, likely due to presence of another beaver dam 2,000 feet further downstream. This pond also appears to back up into the culvert and results in standing water throughout the entire length of the culvert.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are associated with the watercourse that flows through Bridge No. 06796 near the inlet and outlet. Byron Brook flows southeast to northwest and ultimately discharges to a swamp area beyond the state right-of-way. The watercourse of Byron Brook is classified as riverine (R5UBH), permanently flooded perennial stream with unconsolidated bottom. The channel width is mostly straight without a well-defined channel bank. The primary streambed material is silt and sand with deposits of boulders and cobbles. Byron Brook flows through a secondary deciduous forest dominated by red maples and oak trees. Wetlands within the project area are impacted by beaver activity and has caused ponding. At the inlet, there is no mapped wetland within the area, however, there are wetland soils present consistent with those found downstream of the structure. At the outlet, there is a 0.84 acre Freshwater Forested/Shrub Wetland (PFO1E). Immediately located to the east of the outlet's wetland system is a 12.90-acre Freshwater Pond (PABH). This pond is permanently flooded and consists of wetlands and deepwater habitats. The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

Wetlands within the area have a partial tree canopy dominated by Red Maple (*Acer rubrum*) and Northern Red Oak (*Quercus rubra*). The vegetation bordering the ponded area at the inlet include Northern Lady Fern (*Athyrium angustum*) and a *Carex* spp. At the outlet, the dominate wetland species bordering the ponded area is Broadleaf Cattail (*Typha latifolia*) and Sensitive fern (*Onoclea sensibilis*). The area adjacent to the roadway includes trees and saplings of the facultative upland species Northern Red Oak, Eastern Red Cedar (*Juniperus virginiana*), Red Maple, and Black Oak (*Quercus Velutina*). Other species present include Japanese Barberry (*Berberis thunbergii*), Virginia-Creeper (*Parthenocissus quinquefolia*) and Asiatic bittersweet (*Celastrus orbiculatus*).

Soils

Wetland soils present within the project area include areas of mucky mineral and organic material. These soils found within the project area mapped by the Natural Resource Conservation Service (NRCS) predominantly includes Charlton-Chatfield complex with varying percent slopes and is characteristically very rocky. Soils encompassing the culvert inlet and outlet is mapped as Charlton-Chatfield complex (Map #73C). Further north past the culvert outlet is mapped as Catden and Freetown soils (Map #18). Charlton-Chatfield complex (Map #73E) is located east of the project area. The soils associated with I-395 include highway fill material and can be classified as Udorthents-Urban land complex (Map # 306) though not mapped on the NRCS map, these soils were confirmed by wetland delineation.

Functions and Values

The primary wetland functions and values of Byron Brook and wetlands in the project area are fisheries and wildlife habitat, flood flow alteration, and sediment/nutrient retention. The stream channel functions within the culvert are limited to fish and wildlife passage, and flood flow alteration. The field environmental assessment was limited to observations made during wetland delineation. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest. There is a heavy presence of beaver activity within the project area. The proposed project will have very limited effects on wetland function and values in the project area as it pertains to wildlife habitat. The two critical issues with culvert slip lining are alteration of flood flows and impacts to fish passage. This project is designed to minimize changes to the existing conditions and prevent long-term impacts to both flows and fish passage. The design process for this project included hydraulic modeling of the proposed culvert slip lining. The slip lining repair requires

inserting a smaller 54-inch interior diameter corrugated HDPE pipe within the existing culvert. The hydraulic modeling analysis show that the reduction in the hydraulic opening results in an increase of the 50-year water surface elevations upstream of the crossing. The slight increase in water surface elevation at the culvert inlet will remain primarily unchanged with respect to the existing conditions. The proposed water surface elevations are not expected to adversely impact existing structures or properties adjacent to the project site as the land upstream of the structure inlet is largely undeveloped. The hydraulic modeling shows that the proposed culvert maintains approximately 20.0 feet of freeboard in the modeled conditions. The velocities through the slip lined culvert will be slightly increased from the existing velocities through the existing culvert for the range of discharges evaluated. However, backwater from the pond is present at the culvert outlet due to beaver activity and the low slope of the culvert; therefore, no additional culvert outlet protection is proposed.

Short-term effects as a result of construction activities are minimized by:

- Utilizing an erosion and sedimentation control plan.
- Utilizing a water handling plan.
- Adherence to the time-of-year restriction for unconfined in stream work.
- Minimizing work area in the watercourse and wetlands.
- Limiting areas of disturbance in uplands.
- Restoration of temporarily disturbed areas.

Regulatory Impacts

To gain access to the structure to perform the proposed work, permanent access roads will be constructed at the inlet and outlet of Bridge No. 06796 to allow materials and heavy construction equipment to access the culvert. The construction of these access roads will require clearing and grubbing, invasive species control, as well as some permanent impacts to wetlands. A temporary staging area will be constructed along the access road at the inlet of the bridge. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction. To minimize traffic impacts on I-395, the workzone on I-395 will be contained to the shoulder of both the northbound and southbound lanes. Off-peak temporary shoulder and/or lane closures may be used for equipment or construction personnel to enter and exit the access roads, as required.

Construction Access and Water Handling

In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed at the inlet and outlet. A temporary staging area will be constructed at the inlet. The construction is anticipated to take place in one stage. In Stage 1, the sedimentation and erosion control measures will be established. A temporary water-handling bypass pipe will be installed within the existing culvert and temporary water-handling-cofferdam surrounding the inlet and outlet will be installed. Water will be confined to the temporary bypass pipe for work to be performed in the dry. During this step, the interior of the culvert will be power-washed and voids filled. Water from the power washing operations shall be completely contained and pumped to a settling basin. Subsequent to the power-washing, the temporary water-handling-cofferdam and bypass pipe will be removed for the slip-lining to occur in wet conditions. It is anticipated that the contractor will insert the new pipe from either the inlet or outlet access area; however, if heavy construction equipment within the watercourse is necessary, the contractor is required to temporarily utilize timber mats for channel bottom protection. Once the new 54 inch HDPE pipe is installed, the temporary bypass pipe will be relocated into the new pipe and water-handling-cofferdams reinstalled to perform the proposed grouting of the annular space between the existing pipe and the

proposed pipe , repairs to the headwalls and wingwalls, as well as the regrading of the existing natural streambed material at the inlet and outlet to bring the streambed to the new invert elevation. Once construction is complete the temporary materials, water-handling-cofferdam and bypass pipe will be removed to restore flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatering wastewater located within the cofferdam to a temporary sedimentation basin located in upland areas. Any unconfined instream activities will be limited to June 1st to September 30th. Any wetland impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. All disturbed areas will be restored at the completion of construction. A native planting plan has been included in the permit plans on PMT-07. Sedimentation and erosion control measures are to be removed upon permanent stabilization.

Slip-lining

The project proposes to use a 54 inch interior diameter corrugated HDPE pipe to slip-line the existing culvert. The annular space between the existing and proposed pipes is to be filled with low pressure grout. The slip-lining will result in a very minor change in existing conditions or wetland functions and values. The greatest concern for slip-lining is reducing hydraulic capacity and altering flooding and hydraulic conditions at the culvert. The hydraulic modeling analysis of the culvert was conducted and found that the 50-year water surface elevation will increase by approximately 1.1 feet and will maintain adequate freeboard. The culvert rehabilitation will not result in changes to the hydraulic conditions that will significantly impact flow velocities. The project meets the design criteria stipulated in the CTDOT Drainage Manual.

Fish Passage

The project includes feasible elements designed to minimize design features to fisheries while minimizing channel connectivity impacts from the slip-lining repair. Any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. CTDEEP Fisheries concurred that the proposed project complies with their initial stipulations for the project site. Fisheries design elements include:

- Regrading of salvaged natural streambed material at the inlet and outlet to raise the streambed to the new culvert invert elevation, ensuring that the proposed lining does not create a barrier to fish movement.
- Utilization of an HDPE pipe with interior corrugations to add roughness within the culvert.
- The restoration of disturbed areas.
- Plantings to provide shade for the watercourse.
- Adherence to the time of year restriction.

Proposed Impacts

The proposed project results in 1,550 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads. The project results in 1,050 square feet (0.02 acres) of permanent watercourse impacts. This number accounts for the slip-lining of the culvert and grading of the streambed at the inlet and outlet. Though this improvement is described as a permanent impact, the watercourse will remain. The project will not result in any permanent conversion of watercourse to upland. Temporary impacts include the area necessary for construction access and water handling and the proposed temporary staging area located at the culvert's inlet. Temporary impact to wetlands is 2,200 square feet (0.05 acres) and is 1,250 square feet (0.03 acres) of temporary impacts to the

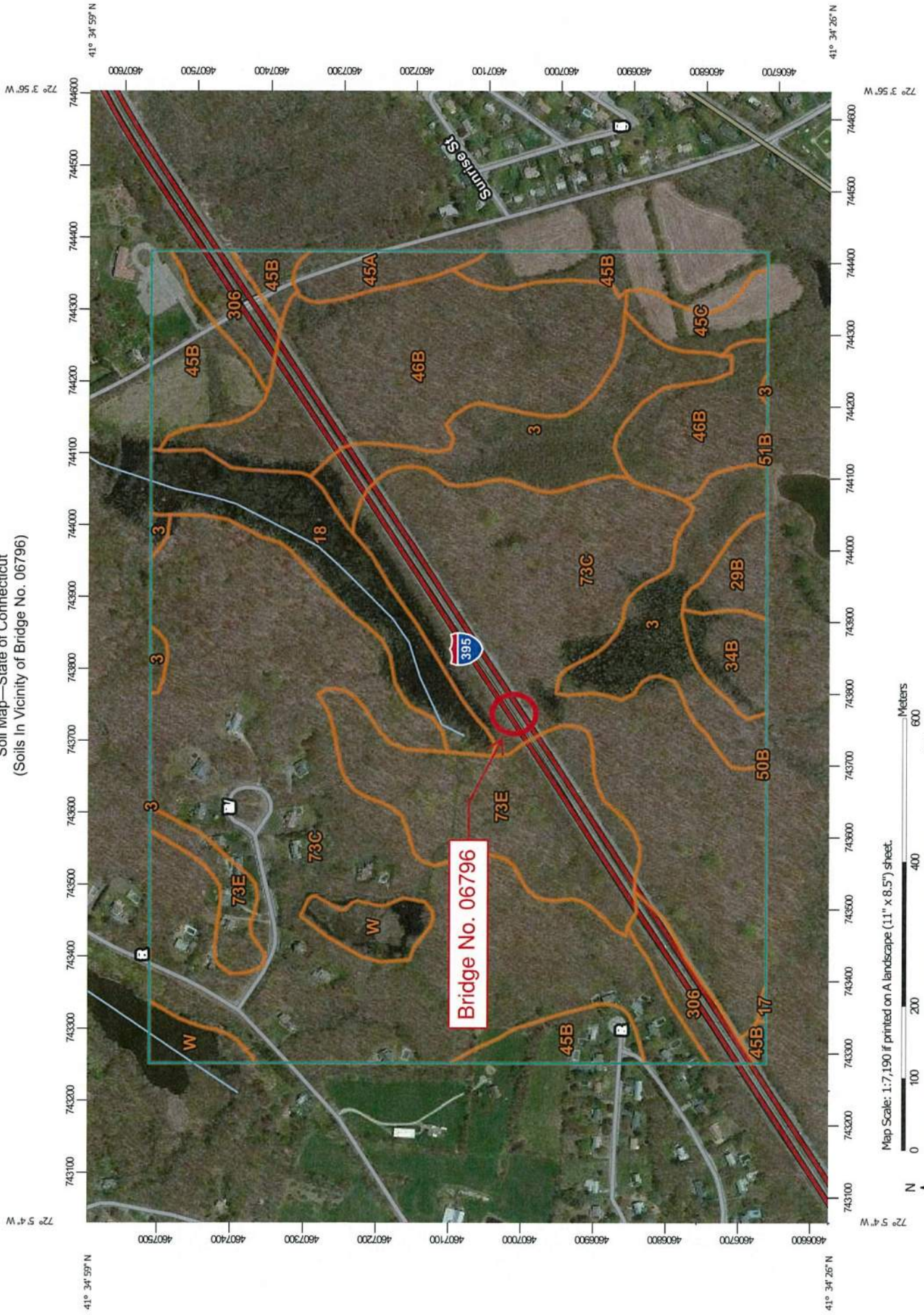
watercourse. The total wetland and watercourse impact is 6,050 square feet (0.14 acres). Impacts are described within the table below:

Bridge No. 06796 Wetland and Watercourse Impact Table			
	Wetland	Watercourses	Total
Temporary	2,200 sqft (0.05 ac)	1,250 sqft (0.03 ac)	3,450 sqft (0.08 ac)
Permanent	1,550 sqft (0.04 ac)	1,050 sqft (0.02 ac)	2,600 sqft (0.06 ac)
Total	3,750 sqft (0.09 ac)	2,300 sqft (0.05 ac)	6,050 sqft (0.14 ac)







































Minimization and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing existing streambed material at the inlet and outlet of the culvert to grade the streambed to the new invert elevation. There will be continuous flow of water at the project culvert during construction, and any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed access roads and staging areas associated with the roads. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. A planting plan has been included in PMT-07 of the permit plans. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
(Soils In Vicinity of Bridge No. 06796)



MAP LEGEND

 Area of Interest (AOI)	 Soil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
 Special Point Features	 Special Line Features
 Blowout	Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	21.7	9.1%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	0.1	0.0%
18	Catden and Freetown soils, 0 to 2 percent slopes	11.4	4.8%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	2.5	1.0%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	3.2	1.3%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	3.0	1.3%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	16.8	7.1%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	3.1	1.3%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	32.7	13.7%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	0.0	0.0%
51B	Sutton fine sandy loam, 2 to 8 percent slopes, very stony	0.1	0.0%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	113.1	47.5%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	19.4	8.2%
306	Udorthents-Urban land complex	6.3	2.6%
W	Water	4.5	1.9%
Totals for Area of Interest		237.9	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06796 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): concave Slope (%): 4
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:	Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____	
Water Table Present? Yes _____ No _____ Depth (inches): _____	
Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Acer rubrum</i></u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>15</u>	<u>=Total Cover</u>	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	<u>=Total Cover</u>	
Herb Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Onoclea sensibilis</i></u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>
2. <u><i>Typha latifolia</i></u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>25</u>	<u>=Total Cover</u>	
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Berberis thunbergii</i></u>	<u>2</u>	<u>No</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>2</u>	<u>=Total Cover</u>	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
 Total Number of Dominant Species Across All Strata: 3 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>20</u>	x 1 = <u>20</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>15</u>	x 3 = <u>45</u>
FACU species <u>2</u>	x 4 = <u>8</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>42</u> (A)	<u>83</u> (B)
Prevalence Index = B/A = <u>1.98</u>	

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	2.5YR 3/2	95	7.5YR 4/4	5	C	M	Mucky Loam/Clay	
2-18	7.5YR 4/2	80	10YR 6/4	10	C	M	Mucky Loam/Clay	
			5YR 4/6	5	C	M		
			10YR 6/6	5	C	M		Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Dark Surface (S7)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____	Depth (inches): _____	

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06796 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
--	---

Field Observations: Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>x</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>x</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>x</u>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

Tree Stratum (Plot size: <u>50 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Acer rubrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>
2.	<u>Quercus rubra</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
3.	<u>Quercus velutina</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		<u>22</u>	<u>=Total Cover</u>	
Sapling/Shrub Stratum (Plot size: <u>50 ft</u>)				
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		_____	<u>=Total Cover</u>	
Herb Stratum (Plot size: <u>50 ft</u>)				
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
11.	_____	_____	_____	_____
12.	_____	_____	_____	_____
		_____	<u>=Total Cover</u>	
Woody Vine Stratum (Plot size: <u>50 ft</u>)				
1.	<u>Berberis thunbergii</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>
2.	<u>Celastrus orbiculatus</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
		<u>15</u>	<u>=Total Cover</u>	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>15</u>	x 3 = <u>45</u>
FACU species <u>7</u>	x 4 = <u>28</u>
UPL species <u>15</u>	x 5 = <u>75</u>
Column Totals: <u>37</u> (A)	<u>148</u> (B)
Prevalence Index = B/A = <u>4.00</u>	

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is $\leq 3.0^1$
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	7.5YR 2.5/2	95	7.5YR 3/4	5	C	M	Loamy/Clayey	
3-12	7.5YR 3/4	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Dark Surface (S7)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):		Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type:	<input type="text"/>	
Depth (inches):	<input type="text"/>	

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Attachment E
Northern Long-Eared Bat Consultation

Attachment F
Fisheries Sign-Off

Attachment G
State Historic Preservation Office (SHPO) Exemption



STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Determination of Effect to Historic Properties

Author: Mark McMillan Date: October 20, 2015

Project: State No.: 103-266
F.A.P. No.: TBD
Project Title: Rehabilitation of Culverts #06795, 06796, and 06797
Town: Norwich

Determination of Effect: No Historic Properties Affected

Project Description

Using federal and state funds, the Connecticut Department of Transportation (CTDOT) proposes to rehabilitate three structurally deficient culverts in Norwich. All three are single-bore asphaltic coated corrugated metal pipes installed beneath I-395. They have been listed on the Bridge Program List 28 for structures requiring major rehabilitation or replacement. The undertaking is currently in its concept level of development and a Rehabilitation Study is underway.

The range of alternatives being considered includes relining the existing pipes to replacing the structures entirely. It is possible that the rehabilitation of each culvert will be different from the other, depending on their individual conditions. No widening or other modifications to the existing configuration of I-395 is included as part of this work. Construction is anticipated to being in Spring, 2018.

Technical Review of Project

The specific conditions of each culvert vary, but each is a single cell asphalt-coated corrugated metal pipe (ACCMP) with reinforced concrete headwalls. All three culverts are categorized as Not Eligible for the National Register of Historic Places the statewide bridge inventory database maintained by CTDOT. Staff from the Office of Environmental Planning concur with this assessment.

Bridge #06795

Structure #06795 conveys Hammer Brook beneath I-395 in Norwich. Its single pipe is oval in profile, measuring 7'11" wide and 5'7" tall. The pipe is 213' long and there is 10 vertical feet of overburden fill between it and the roadbed.

Recent inspections by CTDOT's Bridge Evaluation and Safety unit have determined that Bridge #06795 is in Serious condition due to the loss of its protective coating and heavy corrosion of its pipe liner. This has resulted in vertical deformations of the pipe that is measured up to five inches in some areas. At its western inlet, the bottom plate of the liner exhibits holes up to three feet long and three inches wide.

The soils surrounding the bridge are categorized as Udorthent-Urban Land Complex within the road right of way. Predictive models find this type of sediments to be of low archaeological sensitivity that would be unlikely to yield historic or cultural information. To the east and west of the right of way are Rippowam Fine Sandy Loam and Raypool Silt Loam soils, which are considered to have high archaeological potential. There are no known archaeological sites within a mile of the culvert.

Abutting the right of way of I-395 to the west is the Bean Hill Historic District.¹ This National Register District is characterized by its collection of 18th and 19th century buildings centered around the town green. Hammer Creek runs through two properties within the district. At 21 Huntington Avenue is a 1950 Cape style cottage that is categorized as 'non-contributing' in the Bean Hill NRHP Inventory form. The parcel identified as 29 Huntington Avenue is omitted from the Inventory form. According to Norwich town records, it contains a Ranch style single family residence that was constructed in 1976.

The houses on both parcels are located at the western end of their lots. They are separated from the culvert by over 400 feet of undeveloped land. Given their non-contributing status and the buffer distance they provide between the culvert and the historic district, the proposed rehabilitation of Bridge #06795 will not foreseeably impact the historic nature of the district.

Bridge #06796

Bridge #06796 conveys Byron Brook beneath I-395. It is a 6 foot diameter ACCMP that is 65 feet long and situated beneath 20 feet of overburden. It was installed in 1955 and does not appear to have undergone any significant alterations. The culvert is in Poor condition due to deterioration of its components and a backup of water within it caused by a beaver dam downstream.

Bridge #06796 is located 2.25 miles north of Bridge #06795 in an undeveloped area of Norwich. The sediments within this culvert's area of potential effect are classified as Charlton-Chatfield Complex soils, which have a moderate level of archaeological sensitivity. This is reduced by the steep (15-45%) slope of to the west of the culvert and "very rocky" condition of the soils. There are no known archaeological sites within a mile of the culvert.

¹ National Park Service, *Bean Hill Historic District (NRHP #82001006)*, listed on December 8, 1982.

Bridge #06797

Bridge #06797 is located 1200 feet northeast of Bridge #06796. It consists of an oval ACCMP pipe that is 6' wide, 3'8" tall, and 76 feet long. It conveys an unnamed brook beneath I-395, whose roadbed is 3 feet above the top of the pipe.

There are a variety of sediments surrounding this culvert, but all are characterized as being "very stony". There are no known archaeological sites within a mile of this culvert. Given the predicted low potential of the soils in the project area and the known soil disturbances caused by the construction of I-395, there is limited potential for impacting intact archaeological resources.

Determination

The work proposed under State Project #103-266 would normally be classified as a "Bridge/Culvert Related Projects" and "Interstate Related Projects". These types of Minor Transportation Projects are typically exempt from Section 106 review under Appendix B (*Screened Undertakings Not Requiring Connecticut CTSHPO Review*) of the Section 106 Programmatic Agreement². The proximity of Bridge #06795 to the Bean Hill Historic District does not allow for the application of this exemption.

It is the professional opinion of qualified staff from CTDOT's Office of Environmental Planning that the rehabilitation of this culvert will not foreseeably impact the overall historic character of the district. In accordance with the Section 106 Programmatic Agreement, CTDOT determines that the undertaking will have "No Historic Properties Affected". However, we request a further review of the plans when the project approaches final design to confirm this determination.

No further consultation with the Connecticut State Historic Preservation Officer (CTSPHO) is required. A copy of this determination will be included in the quarterly report of Minor Transportation Projects that is submitted to CTSHPO.

Because the undertaking is within the Quinebaug-Shetucket National Heritage Corridor, a copy of this letter will be sent to The Last Green Valley. As stewards of this resource, they will have thirty days to review and comment on this undertaking.



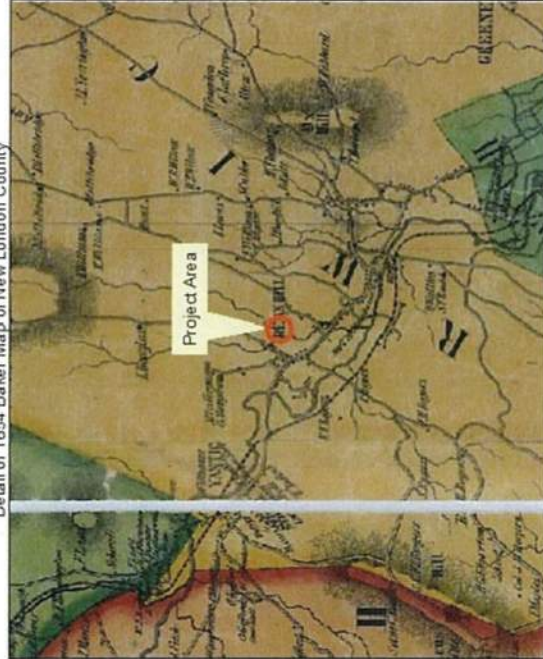
Mark McMillan
National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation

² *Programmatic Agreement among the Federal Highway Administration, the Connecticut Department of Transportation, the Connecticut State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Implementation of Minor Transportation Projects*, signed October 26, 2012. Accessible online at: www.ct.gov/culturalresources

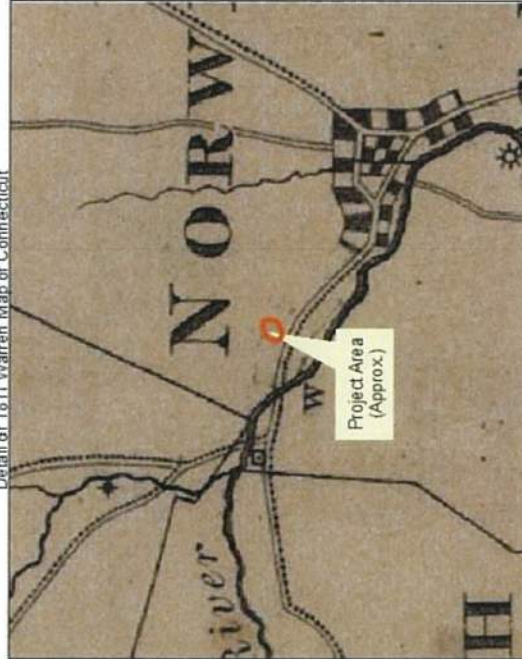
Detail of 2010 Aerial Photography



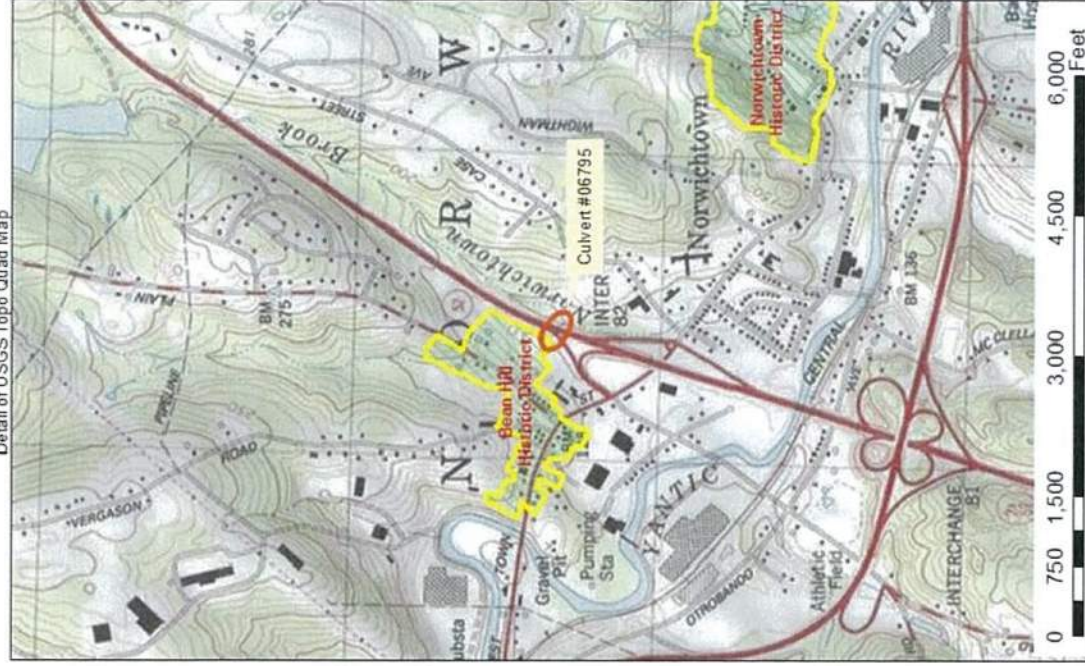
Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



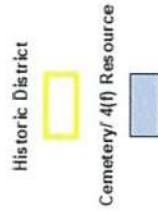
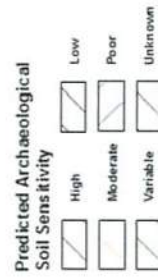
Detail of USGS Topo Quad Map



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

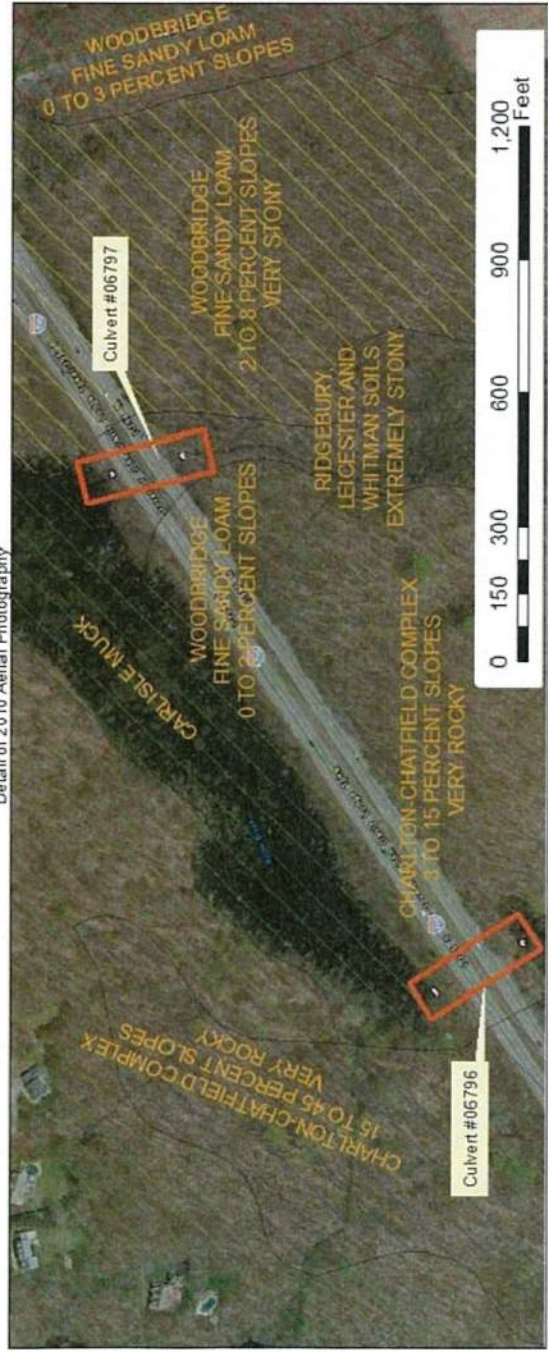
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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culvert #06795
Norwich



August 27, 2015

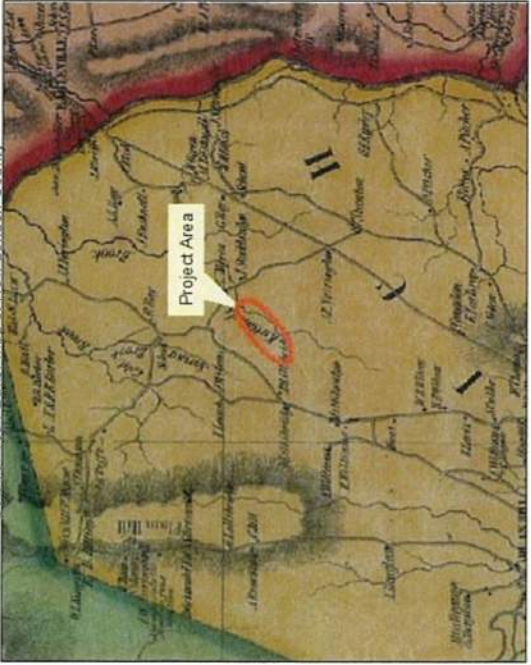
Detail of 2010 Aerial Photography



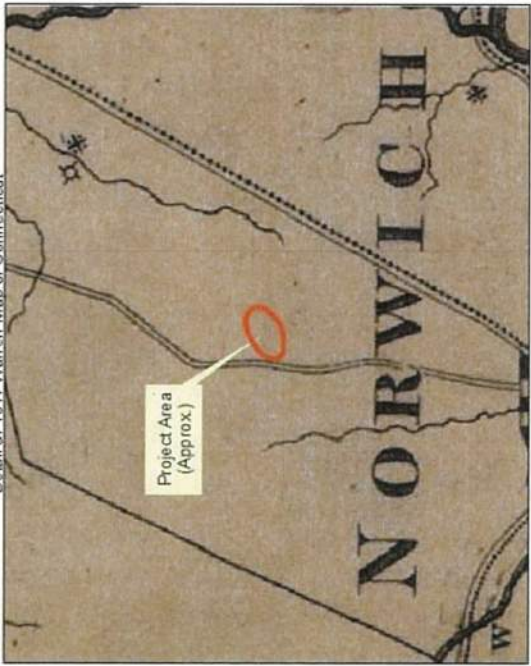
Detail of USGS Topo Quad Map



Detail of 1854 Baker Map of New London County



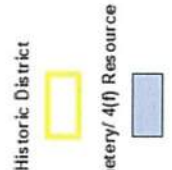
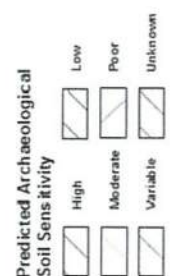
Detail of 1811 Warren Map of Connecticut



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culverts
#06796 and 06797
Norwich



Attachment H
Tribal Historic Preservation Office (THPO) Exemption

From: michelle.herrell@dot.gov
Sent: Tuesday, October 27, 2015 8:18 AM
To: McMillan, Mark J.
Subject: No Tribal Consultation Required FAPN TBD/SPN0103-0266, Culvert Rehab on I-395, Norwich

Hi Mark,

I have reviewed CTDOT's proposed project which involves rehabilitating culverts #06795, #06796, and #06797, which are installed beneath I-395 in Norwich, CT. The culverts are in need of major rehabilitation or replacement. As noted in your October 20, 2015 letter, the work would occur within previously disturbed existing road right-of-way. As per the THPO Section 106 Agreements with FHWA-CT Division, dated January 4, 2012 and May 14, 2013, this project would generally fall within the category of "resurfacing or repair of existing ramps or roadways within the previously disturbed right-of-way," with no historic properties affected.

With this email, and taking all these items into consideration, the FHWA-CT Division has determined that tribal consultation would not be required for this project. Should any changes be made to the scope of work for this project that would involve additional ground disturbance beyond what is currently proposed, tribal consultation would have to be reconsidered.

Michelle Herrell
Environmental Protection Specialist
Federal Highway Administration | Connecticut Division Office
628-2 Hebron Avenue, Suite 303 | Glastonbury, CT 06033
P: (860) 494-7577 | F: (860) 659-6724
michelle.herrell@dot.gov

Attachment I
Interagency Coordination Meeting Notes



DEEP / DOT REGULATORY COORDINATION Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. Bridge No. 06795-

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCOMP) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

**DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes**

2. Bridge No. 06796-

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. Bridge No. 06797-

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.

**INTERDEPARTMENTAL
MESSAGE**

STATE OF CONNECTICUT

To	NAME, TITLE Central Permit Processing Unit, 1 st Floor	DATE July 31, 2019
	AGENCY, ADDRESS Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT. 06106	
From	NAME, TITLE Kimberly C. Lesay, Transportation Assistant Planning Director	TELEPHONE 860-594-2931
	AGENCY, ADDRESS Department of Transportation, 2800 Berlin Turnpike, Newington, CT. 06131-7546	

Subject: **State Project No. 103-266**
Rehabilitation of Bridge No. 06797
Interstate 395 over Unnamed Brook
City of Norwich, CT

Attached are one original and three hard copies of the request for the Connecticut Department of Energy and Environmental Protection Programmatic General Permit Addendum to Army Corps of Engineers General Permit associated with the above referenced project.

Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at (860) 594-2157.

Attachments

CT Dept of Energy & Environmental Protection
Central Permit Processing Unit

AUG 02 2019

RECEIVED BY _____

CT Dept of Energy & Environmental Protection
Central Permit Processing Unit

AUG 02 2019

RECEIVED BY B.C.

Naomi C. Hodges /nch

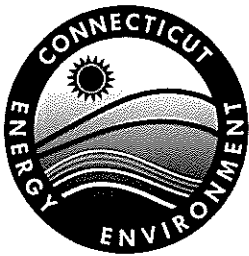
bcc: Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin

Kimberly C. Lesay

Andrew H. Davis – Christopher W. Samorajczyk – Alexander T. Finch

District 2 Construction – Robert Obey – Eileen Ego

Donald P. Wurst – Aaron J. Foster (CME)



**Connecticut Department of
Energy & Environmental Protection**

CPPU USE ONLY	
App #:	_____
Doc #:	_____
Check #:	_____

Permit Application Transmittal Form

Please complete this transmittal form in accordance with the instructions in order to ensure the proper handling of your application(s) and the associated fee(s). Print legibly or type.

Part I: Applicant Information:

- **If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, applicant's name shall be stated exactly as it is registered with the Secretary of State.*
- *If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

Applicant: Connecticut Department of Transportation	
Mailing Address: 2800 Berlin Turnpike	
City/Town: Newington	State: CT Zip Code: 06131-7546
Business Phone: 860-594-2000	ext.:
Contact Person: Kimberly C. Lesay	Phone: 860-594-2931 ext.
E-Mail: kimberly.lesay@ct.gov	
Applicant (check one): <input type="checkbox"/> individual <input type="checkbox"/> *business entity <input type="checkbox"/> federal agency <input checked="" type="checkbox"/> state agency <input type="checkbox"/> municipality <input type="checkbox"/> tribal	
*If a business entity, list type (e.g., corporation, limited partnership, etc.):	
<input type="checkbox"/> Check if any co-applicants. If so, attach additional sheet(s) with the required information as supplied above.	
Please provide the following information to be used for <i>billing purposes only</i> , if different:	
Company/Individual Name:	
Mailing Address:	
City/Town:	State: Zip Code:
Contact Person:	Phone: ext. I

Part II: Project Information

Brief Description of Project: <i>(Example: Development of a 50 slip marina on Long Island Sound)</i>					
The full replacement of Bridge No. 06797 with a 5ft. x 5ft. pre-cast concrete box culvert approx. 35ft. west of the existing structure. The existing bridge will be filled with flowable fill, and the stream realigned to the new culvert.					
Location (City/Town): Norwich					
Other Project Related Permits (<i>not</i> included with this form):					
Permit Description	Issuing Authority	Submittal Date	Issuance Date	Denial Date	Permit #
Section 404 PCN	USACE	Concurrently	Pending		
IWGP	CTDEEP	TBD			

Part III: Individual Permit Application and Fee Information

New, Mod. or Renew	Individual Permit Applications	Initial Fees	No. of Permits Applied For	Total Initial Fees	Original + Required Copies
	AIR EMISSIONS				
	New Source Review <input type="checkbox"/> Revision <input type="checkbox"/> minor mod	\$940.00			1 + 0
	Title V Operating Permits <input type="checkbox"/> Revision <input type="checkbox"/> minor mod <input type="checkbox"/> non-minor mod	none			1 + 0
	Title IV	none			1 + 0
	Clean Air Interstate Rule (CAIR)	none			1 + 0
	WATER DISCHARGES				
	To Groundwater	\$1300.00			1 + 1
	To Sanitary Sewer (POTW)	\$1300.00			1 + 1
	To Surface Water (NPDES)	\$1300.00			1 + 1
	WATER PLANNING AND MANAGEMENT				
	Dam Safety	none			1 + 2
	Domestic Sewage Treatment Works (For municipal and private sewage treatment facilities discharging to surface waters)	\$1300.00/ Mod = \$940			1 + 1
	Water Diversion (consumptive) and Registrations	★			1 + 5
	LAND AND WATER RESOURCES				
	Flood Management Certification	none			1 + 1
	Flood Management Certification Exemption	none			1 + 1
	Inland Wetlands and Watercourses (State Agencies Only)	none			1 + 5
	Inland 401 Water Quality Certification	none			1 + 5
	FERC- Hydropower Projects- 401 Water Quality Certification	none			
	Water Diversion (non-consumptive)	★			1 + 5
	Certificate of Permission	\$375.00			1 + 2
	Coastal 401 Water Quality Certification	none			1 + 2
	Structures and Dredging/and Fill/Tidal Wetlands	\$660.00			1 + 2
	WASTE MANAGEMENT				
	Aerial Pesticide Application	★			1 + 2
	Aquatic Pesticide Application	\$200.00			1 + 0
	CGS Section 22a-454 Waste Facilities	★			1 + 1
	Disruption of a Solid Waste Disposal Area	\$0			1 + 1
	Hazardous Waste Treatment, Storage and Disposal Facilities	★			1 + 1
	Marine Terminal License	\$100.00			1 + 0
	Stewardship	\$4000.00			1 + 1
	Solid Waste Facilities	★			1 + 1
	Waste Transportation	★			1 + 0
		Subtotal ➡			
	GENERAL PERMITS and AUTHORIZATIONS	Subtotals Page 3 & 4 ➡	1	0	
	Enter subtotals from Part IV, pages 3 - 6 of this form	Subtotals Page 5 ➡			
		Subtotals Page 6 ➡			
		TOTAL ➡	1	0	
	<input checked="" type="checkbox"/> Indicate whether municipal discount or state waiver applies.	➡		100%	
	Less Applicable Discount				
		AMOUNT REMITTED ➡			
Check # ➡	<input type="text"/>				Check or money order should be made payable to: "Department of Energy and Environmental Protection"

★ See fee schedule on individual application.

**Part IV: General Permit Registrations and Requests for Other Authorizations
Application and Fee Information**

✓	General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fees	Original + Required Copies
AIR EMISSIONS					
<input type="checkbox"/>	Limit Potential to Emit from Major Stationary Sources of Air Pollution	\$2760.00			1 + 0
<input type="checkbox"/>	Diagnostic and Therapeutic X-Ray Devices (Medical X-Ray) Registration	\$190.00/Xray device			1 + 0
<input type="checkbox"/>	Radioactive Materials and Industrial Device Registration (Ionizing Radiation)	\$200.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/>	License Revocation Request	\$0			★★
<input type="checkbox"/>	Other, (please specify):				
WATER DISCHARGES					
Categorical Industry User to a POTW					
<input type="checkbox"/>	Discharges ≥ 10,000 gpd	\$6250.00			1 + 0
<input type="checkbox"/>	Discharges < 10,000 gpd	\$3125.00			
Comprehensive Discharges to Surface Water and Groundwater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
<input type="checkbox"/>	Domestic Sewage	\$625.00			1 + 0
<input type="checkbox"/>	Food Service Establishment Wastewater		No Registration		
Groundwater Remediation Wastewater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
Miscellaneous Discharges of Sewer Compatible Wastewater					
<input type="checkbox"/>	Registration Only	\$500.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1000.00			
<input type="checkbox"/>	Nitrogen Discharges		No Registration		
<input type="checkbox"/>	Point Source Discharges from Application of Pesticides	\$200.00			1 + 0
<input type="checkbox"/>	Stormwater Associated with Commercial Activities	\$300.00			1 + 0
Stormwater Associated with Industrial Activities					
<input type="checkbox"/>	No Exposure Certification	\$250.00			1 + 0
<input type="checkbox"/>	<50 employees—see general permit for additional requirements	\$500.00			
<input type="checkbox"/>	>50 employees—see general permit for additional requirements	\$1000.00			
<input type="checkbox"/>	Stormwater & Dewatering Wastewaters-Construction Activities	★			1 + 0
<input type="checkbox"/>	Stormwater from Small Municipal Separate Storm Sewer Systems (MS4)	\$625.00			1 + 0
<input type="checkbox"/>	Stormwater from DOT Separate Storm Sewer Systems (DOT MS4)	\$0			1 + 0
<input type="checkbox"/>	Subsurface Sewage Disposal Systems Serving Existing Facilities	★★			1 + 0
<input type="checkbox"/>	Swimming Pool Wastewater - Public Pools and Contractors	\$500.00			1 + 0
Vehicle Maintenance Wastewater					
<input type="checkbox"/>	Registration Only	\$625.00			1 + 0
<input type="checkbox"/>	Approval of Registration by DEEP	\$1250.00			
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to POTW	\$1500.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to Surface Water	\$1500.00			1 + 0
<input type="checkbox"/>	Emergency/Temporary Authorization - Discharge to Groundwater	\$1500.00			1 + 0
<input type="checkbox"/>	Other, (please specify):				
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal ➡			

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.

(Contact numbers are provided in the instructions)

Part IV: General Permit Registrations and Requests for Other Authorizations (continued)

<input checked="" type="checkbox"/> General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fee	Original + Required Copies
AQUIFER PROTECTION PROGRAM				
<input type="checkbox"/> Registration for Regulated Activities	\$625.00			1 + 0
<input type="checkbox"/> Permit Application to Add a Regulated Activity	\$1250.00			1 + 0
<input type="checkbox"/> Exemption Application from Registration	\$1250.00			1 + 0
WATER PLANNING AND MANAGEMENT				
<input type="checkbox"/> Dam Safety Repair and Alteration: Non Filing	No Registration			
<input type="checkbox"/> Dam Safety Repair and Alteration: Filing – No PE	\$100.00			1 + 0
<input type="checkbox"/> Dam Safety Repair and Alteration: Filing – PE	\$200.00			1 + 0
<input type="checkbox"/> Dam Safety Repair and Alteration: Approval of Filing	\$250.00			1 + 0
<input type="checkbox"/> Diversion of Remediation Groundwater	No Registration			
<input type="checkbox"/> Diversion of Water for Consumptive Use: Reauthorization Categories	\$2500.00			1 + 0
<input type="checkbox"/> Diversion of Water for Consumptive Use: Authorization Required	\$2500.00			1 + 4
<input type="checkbox"/> Diversion of Water for Consumptive Use: Filing Only	\$1500.00			1 + 1
<input type="checkbox"/> Water Resource Construction Activities	★			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/> Notice of High Hazard Dam or a Significant Hazard Dam	\$0			1 + 0
<input type="checkbox"/> Other, (please specify):				
LAND AND WATER RESOURCES				
Minor Coastal Structures				
<input type="checkbox"/> 4/40 Docks/Access Stairs	\$700.00			1 + 1
<input type="checkbox"/> Beach Grading	No Registration			
<input type="checkbox"/> Buoys or Markers	No Registration			
<input type="checkbox"/> Experimental Activities/Scientific Monitoring Devices	No Registration			
<input type="checkbox"/> Harbor Moorings	No Registration			
<input type="checkbox"/> Non-harbor Moorings	\$250.00			1 + 1
<input type="checkbox"/> Osprey Platforms and Perch Poles	No Registration			
<input type="checkbox"/> Pump-out Facilities	No Registration			
<input type="checkbox"/> Swim Floats	No Registration			
Coastal Maintenance				
<input type="checkbox"/> Backflow Prevention Structure	No Registration			
<input type="checkbox"/> Beach Grading/Raking	No Registration			
<input type="checkbox"/> Catch Basin Cleaning	No Registration			
<input type="checkbox"/> Coastal Remedial Activities Required by Order	\$700.00			1 + 1
<input type="checkbox"/> Coastal Restoration	No Registration			
<input type="checkbox"/> DEEP Boat Launch Infrastructures	No Registration			
<input type="checkbox"/> DOT Infrastructures	No Registration			
<input type="checkbox"/> Marina and Mooring Field Reconfiguration	\$700.00			1 + 1
<input type="checkbox"/> Minor Seawall Repair	No Registration			
<input type="checkbox"/> Placement of Cultch	No Registration			
<input type="checkbox"/> Reconstruction of Legally Existing Structure/Obstruction/Encroachment	\$300.00			1 + 1
<input type="checkbox"/> Removal of Derelict Structures	No Registration			
<input type="checkbox"/> Residential Flood Hazard Mitigation	\$100.00			1 + 1
<input type="checkbox"/> Temporary Access of Construction Vehicles/Equipment	No Registration			
<input checked="" type="checkbox"/> Programmatic General Permit	★	1	0	1 + 1
<input type="checkbox"/> Emergency/Temporary Authorization				
<input type="checkbox"/> Other, (please specify):				
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal ➔	1	0

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.
(Contact numbers are provided in the instructions)

Part IV: General Permit Registrations and Requests for Other Authorizations (continued)

<input checked="" type="checkbox"/> General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fee	Original + Required Copies
WASTE MANAGEMENT				
<input type="checkbox"/> Addition of Grass Clippings at Registered Leaf Composting Facilities	\$500.00			1 + 0
<input type="checkbox"/> Beneficial Use Determination	★			1 + 0
<input type="checkbox"/> Collection and Storage of Post Consumer Paint	\$0			1 + 0
<input type="checkbox"/> Connecticut Solid Waste Demonstration Project	\$1000.00			1 + 0
Construct and Operate a Commercial Facility for the Management of Recyclable Materials and Certain Solid Wastes (Commercial GP)				
<input type="checkbox"/> Asbestos Containing Materials	\$1,250.00/\$ 625			1 + 0
<input type="checkbox"/> Ash Residue	\$1,250.00/\$ 625			1 + 0
<input type="checkbox"/> Clean Wood: Tier III	\$500.00/\$250			1 + 0
<input type="checkbox"/> Clean Wood: Tier II	\$250.00/\$125			1 + 0
<input type="checkbox"/> Construction and Demolition Waste: Tier III	\$1,250.00/\$625			1 + 0
<input type="checkbox"/> Construction and Demolition Waste: Tier II	\$500.00/\$250			1 + 0
<input type="checkbox"/> Non-RCRA Hazardous Waste/Compatible Solid Wastes	\$1,250.00/\$625			1 + 0
<input type="checkbox"/> Recyclables	\$500.00/\$250			1 + 0
<input type="checkbox"/> Universal Wastes/Compatible Solid Wastes	\$1,250.00/\$625			1 + 0
Contaminated Soil and/or Staging Management (Staging/Transfer)				
<input type="checkbox"/> New Registrations	\$250.00			1 + 0
<input type="checkbox"/> New Approval of Registrations	\$1500.00			1 + 0
<input type="checkbox"/> Renewal of Registrations	\$250.00			1 + 0
<input type="checkbox"/> Renewal of Approval of Registrations	\$750.00			1 + 0
<input type="checkbox"/> Disassembling Used Electronics	\$2000.00			1 + 0
<input type="checkbox"/> Leaf Composting Facility	\$0			1 + 1
<input type="checkbox"/> Municipal Transfer Station	\$800.00			1 + 1
<input type="checkbox"/> One Day Collection of Certain Wastes and Household Hazardous Waste	\$1000.00			1 + 0
<input type="checkbox"/> Sheet Leaf Composting Notification	\$0			★★
Special Waste Authorization				
<input type="checkbox"/> Landfill or RRF Disposal	\$660.00			
<input type="checkbox"/> Asbestos Disposal	\$300.00			1 + 0
<input type="checkbox"/> homeowner	\$0			
<input type="checkbox"/> Storage and Processing of Asphalt Roofing Shingle Waste	\$2500.00			1 + 0
<input type="checkbox"/> Storage and Processing of Scrap Tires for Beneficial Use	\$1250.00			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★★			★★
<input type="checkbox"/> Other, (please specify):				
REMEDIATION				
<input type="checkbox"/> In Situ Groundwater Remediation: Enhance Aerobic Biodegradation	★			1 + 2
<input type="checkbox"/> In Situ Groundwater Remediation: Chemical Oxidation	\$500.00			1 + 0
<input type="checkbox"/> Emergency/Temporary Authorization	★			★★
Note: Carry subtotals over to Part III, page 2 of this form.		Subtotal →		

★ See fee schedule on registration/application.

★★ Contact the specific permit program for this information.

(Contact numbers are provided in the instructions)

Affirmative Action, Equal Employment Opportunity and Americans with Disabilities

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act (ADA). Please contact us at (860) 418-5910 or deep.accommodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint.



Connecticut Department of
 Energy & Environmental Protection
 Bureau of Water Protection & Land Reuse
 Inland Water Resources Division

**Connecticut Addendum
 Army Corps of Engineers
 General Permit State of Connecticut
 (CT GP)**

Print or type unless otherwise noted.

Part I: Application Description

DEEP/CPPU USE ONLY

App #: _____

Doc #: _____

Check #: _____

Program: **Programmatic General Permit**

NAE #: _____

DEEP #: _____

Determinations: Eligible Category 2
 Eligible Category 1
 Individual Permit

Town where site is located: Norwich, CT

Brief Description of Project: The full replacement of Bridge No. 06797 with a 5ft. x 5ft. pre-cast concrete box culvert approx. 35ft. west of the existing structure. The existing bridge will be filled with flowable fill, and the stream realigned to the new culvert.

Part II: Fee Information

There is no fee required at this time. The Department of Energy and Environmental Protection (DEEP) may require an application fee to be submitted with this addendum at a later date.

Part III: Applicant Information

- *If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, registrant's name shall be stated **exactly** as it is registered with the Secretary of State. This information can be accessed at CONCORD.*
- If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

1. Applicant Name: **Connecticut Department of Transportation**

Mailing Address: **2800 Berlin Turnpike**

City/Town: **Newington** State: **CT** Zip Code: **06131**

Business Phone: **860-594-2931** ext. Fax:

Contact Person: **Kimberly C. Lesay** Title: **Transportation Asst. Planing Director**

*E-Mail: **Kimberly.Lesay@ct.gov**

**By providing this e-mail address you are agreeing to receive official correspondence from the department, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.*

Part III: Applicant Information (continued)

- a) Registrant Type (check one): individual *business entity federal agency
 state agency municipality tribal
 *If a business entity:
 i) check type: corporation limited liability company limited partnership
 limited liability partnership statutory trust Other: _____
 ii) provide Secretary of the State business ID #: _____ This information can be accessed at CONCORD
 iii) Check here if you are **NOT** registered with the SOTS.
 Check here if any co-applicants. If so, attach additional sheet(s) with the required information as requested above.

- b) Applicant's interest in property at which the proposed activity is to be located:
 site owner option holder lessee developer
 easement holder operator other (specify): _____
 Check here if there are co-applicants. If so, label and attach additional sheet(s) to this sheet with the required information.

2. List primary contact for departmental correspondence and inquiries, if different than the applicant.

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.

Fax:

Contact Person:

Title:

E-Mail:

*By providing this e-mail address you are agreeing to receive official correspondence from the department, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.

3. Property Owner, if different than the applicant:

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.

Fax:

Contact Person:

Title:

E-Mail:

Part III: Applicant Information (continued)

4. List any engineer(s) or other consultant(s) employed or retained to assist in preparing the application or in designing or constructing the activity.

Name: **CME Associates, Inc.**

Mailing Address: **101 East River Drive**

City/Town: **East Hartford**

State: **CT**

Zip Code: **06108**

Business Phone: **860-290-4100**

ext. **1148**

Fax: **860-290-4114**

Contact Person: **Naomi Hodges**

Title: **Environmental Scientist**

E-Mail: **nhodges@cmeengineering.com**

Service Provided: **Liaison Engineering Services, Environmental Services**

Check here if additional sheets are necessary, and label and attach them to this sheet.

Part IV: Site/Project Information

1. SITE NAME AND LOCATION

Is the name of the site the same as the name of the applicant? Yes No

Name of Site : **Bridge No. 06797**

Street Address or Description of Location: **Interstate 395 (I-395) over Unnammed Brook**

City/Town: **Norwich**

State: **CT**

Zip Code: **06360**

Latitude and longitude of the exact location of the proposed activity in degrees, minutes, and seconds or in decimal degrees: Latitude: **41°35'2.01"N** Longitude: **72° 3'42.76"W**

Method of determination (check one):

GPS USGS Map Other (please specify): **Google Earth**

If a USGS Map was used, provide the quadrangle name:

2. **COASTAL BOUNDARY:** Is the activity which is the subject of this application located within the coastal boundary as delineated on DEEP approved coastal boundary maps? Yes No

If yes, and this application is for a new authorization or a modification of an existing authorization where the physical footprint of the subject activity is modified, you must submit a [Coastal Consistency Review Form](#) (DEP-APP-004) with this completed application.

Information on the coastal boundary is available at the local town hall or on the "Coastal Boundary Map" available at DEEP Maps and Publications (860-424-3555).

3. **ENDANGERED OR THREATENED SPECIES:** Is the project site located within an area identified as a habitat for endangered, threatened or special concern species as identified on the "State and Federal Listed Species and Natural Communities Map"? Yes No Date of Map: **Dec 2018**

If yes, complete and submit a [Request for NDDB State Listed Species Review Form](#) (DEP-APP-007) to the address specified on the form. **Please note NDDB review generally takes 4 to 6 weeks and may require additional documentation from the applicant.**

The CT NDDB response **must** be submitted with this completed application.

For more information visit the DEEP website at www.ct.gov/dep/nddbrequests or call the NDDB at 860-424-3011.

4. List any engineer(s), or other consultant(s) employed or retained to assist in preparing the application and designing or constructing the activity.

Name: Louis Berger

Mailing Address: 2500 Westchester Avenue

City/Town: Purchase

State: NY

Zip Code: 10577

Business Phone: (914) 967 – 5800

Ext.

Contact Person: Robert Lin

Title: Project Manager

E-mail: rlin@louisberger.com

Service Provided: Design Permit Plans

Part IV: Project Information (continued)

4. AQUIFER PROTECTION AREAS: Is the site located within a town required to establish Aquifer Protection Areas, as defined in section 22a-354a through 354bb of the General Statutes (CGS)?

Yes No To view the applicable list of towns and maps visit the DEEP website at www.ct.gov/deep/aquiferprotection

If yes, is the site within an area identified on a Level A map? Yes No

If yes, is the site within an area identified on a Level B map? Yes No

If your site is on a Level A map, check the DEEP website, [Business and Industry Information](#) to determine if your activity is required to be registered under the Aquifer Protection Area Program.

If your site is on a Level B map, no action is required at this time, however you may be required to register under the Aquifer Protection Area Program in the future when the area is delineated as Level A.

5. CONSERVATION OR PRESERVATION RESTRICTION: Is the property subject to a conservation or preservation restriction? Yes No

If Yes, proof of written notice of this registration to the holder of such restriction or a letter from the holder of such restriction verifying that this registration is in compliance with the terms of the restriction, must be submitted with this completed form.

6. Total area (in acres) within property boundaries: approx. 1.1 ac

7. Project Category: (please check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Industrial Site Development | <input type="checkbox"/> Condo/Apartment Complex |
| <input type="checkbox"/> Commercial Site Development | <input type="checkbox"/> Stream Restoration/Enhancement |
| <input type="checkbox"/> Pond/Lake Dredging | <input type="checkbox"/> Multiple Lot Residential Development |
| <input type="checkbox"/> Fish/Wildlife Management (Government Agency) | <input type="checkbox"/> Public Water Supply |
| <input type="checkbox"/> Golf Course Development | <input type="checkbox"/> Mine/Quarry |
| <input type="checkbox"/> Individual Residential | <input checked="" type="checkbox"/> Other (Describe below): |

Rehabilitation of State Bridge/Culvert

Part V: Environmental Information

1. Wetland Impact

a. Direct Impact

(Fill includes permanent & temporary): **3300 sf** **0.08 acres**

b. Secondary/Indirect Impact: **0 sf** **0 acres**

c. **Total Impact:** **3300 sf** **0.08 acres**

2. Waters/Waterways/Watercourses Impact

a. Direct Impact

(Fill includes permanent & temporary): **300 lf** **1400 sf**

b. Secondary/Indirect Impact: **0 lf** **0 sf**

c. **Total Impact:** **300 lf** **1400 sf**

Part V: Environmental Information (continued)

3. Do the following special wetland types occur on site?				
Special Wetland	Yes	No	Total Area of Resource (SF)	Area of Resource Impacted (SF)
Vernal Pool	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Fen	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Bog	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Cedar Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Spruce Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Calcareous Seepage Swamp	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
4. Channel Relocation/Restoration/Stabilization				
Does the project include alterations to a perennial watercourse(s)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
If Yes, indicate all design features included in your project from the list below:				
Design Features	Yes	No		
Avoidance of barriers to fish movement	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Formation of pools and riffles	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Provisions for areas of sheltered flow (e.g., boulders, low check dams)	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Preservation of stream bank vegetation and establishment of new vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Use of clean natural bed materials of a suitable size	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Indicate Design Flow for bank-full flow:		15 cfs		
Indicate Frequency Recurrence (year):		2		
Indicate Design Velocity for bank-full flow:		4 fps		
Indicate Frequency Recurrence (year):		2		
5. Floodplains			Yes	No
Is there a FEMA mapped floodplain for floodway on the site?			<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any excavations or permanent fill/structures proposed within the floodplain?			<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any excavations or permanent fill/structures proposed within the floodway?			<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any temporary stockpiles of fill or materials proposed within the floodplain?			<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any increases in the 100 year water surface elevation proposed? If Yes, indicate maximum increase in feet:			<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any flooding increases proposed that would extend off the subject property? If Yes, attach an explanation to this sheet.			<input type="checkbox"/>	<input checked="" type="checkbox"/>
If applicable, include with this form, hydraulic calculations including tabulated summary of results that demonstrate no adverse impacts of any fill in a floodplain and which are in accordance with the guidance document entitled, "Hydraulic Analysis Guidance Document" www.ct.gov/dep/lib/dep/Permits_and_Licenses/Land_Use_Permits/Inland_Water_Permits/iwrdrhydraulicguidance.pdf				

Part VI: Hydraulic and Drainage Structures (You are required to complete a separate sheet for each structure)

Sheet ____ of ____

- Identify the type of structure: (Check one below that applies)
 - Culvert Detention/Retention Basin Infiltration Basin/Structure Drainage Outfall Drainage Swale Bridge Dam
 - Dike Weir Outlet Control Structure Pipe/Conduit/Aqueduct Other:
- How is the structure labeled on the site plans and in reports? **Proposed 5 ft. x5 ft Precast Concrete Box Culvert**
- Where is the structure located on the site plans? **approx. Sta 51+00**
- For bridge/culvert structures, what is the **openness ratio?** **0.04** meters
 (The openness ratio is the X-sectional area of structure opening/ length of the structure parallel to the stream.)
[www.nae.usace.army.mil/reg/Openness_Ratio_\(OR\)_Spreadsheet.pdf](http://www.nae.usace.army.mil/reg/Openness_Ratio_(OR)_Spreadsheet.pdf)
- What is the size of the contributing watershed to the structure? **59** Acres **0.09** Square Miles
- Is the structure located within a **FEMA flood zone?** No Yes If yes, indicate the type of zone: Floodway Flood Plain
- Provide the following information as appropriate for the structure identified above.**

Water Surface Elevation (feet) (Immediately upstream of structure)

		2-yr		10-yr		25-yr		50-yr		100-yr				
		Storm Event Frequency												
Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)			
201.8	201.5	-0.3	202.9	202.6	-0.3	203.6	203.3	-0.3	204.3	204.0	-0.3	205.2	204.8	-0.4

Aerial Extent of Inundation (square feet) (Maximum)

		2-yr		10-yr		25-yr		50-yr		100-yr	
		Storm Event Frequency									
Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)

Duration of Inundation (hours)

Storm Event Frequency

Discharge Velocity (feet/second)

Storm Event Frequency

Flow Volume (cubic feet/second)

Storm Event Frequency

		2-yr		10-yr		25-yr		50-yr		100-yr	
		Storm Event Frequency									
Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)	Existing	Proposed	Change (+/-)

Part VII: Supporting Documents

Please check the documents submitted as verification that *all* applicable attachments have been submitted with this application form. When submitting any supporting documents, please label the documents as indicated in this part and be sure to include the applicant's name.

Environmental Documentation	Report	Show on Plans
	√ If Included with this application	
Description of the proposed activities and the purpose.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of the functions and values of all wetlands and waters on-site or affected off-site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of direct and secondary impacts to the functions and values of wetlands and waters affected.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evaluation of mitigation/restoration and or creation of wetlands to replace the functions and values of impacted wetlands/watercourses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Design details for reconstruction/modification of existing stream crossings	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Biological field survey of the project area and any other information to identify the presence of endangered, threatened, or special concern species, including copies of any correspondence to and from the NDDDB (including a completed CT NDDDB Review Request Form, if applicable).	<input type="checkbox"/>	<input type="checkbox"/>
Culvert invert elevations for roadway crossings set at least 12 inches below the elevation of the natural stream bed for fish and aquatic passage?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Federal wetland delineation of the site shown on plans.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
State wetland delineation of the site shown on plans.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are there amphibian breeding pool(s) present on the project site or adjacent to the project site? If yes, project development plans incorporate recommendations presented in <i>"Best Development Practices, Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY"</i>	<input type="checkbox"/>	<input type="checkbox"/>
Report documenting vegetation, soils, and hydrology of wetlands on site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Incorporation of a permanently protected buffer zone adjacent to wetlands and waters.	<input type="checkbox"/>	<input type="checkbox"/>
Site plans drawn at a scale of 1":100' or larger showing the pre- and post- construction aerial extent of inundation of wetlands and waters for the 2-yr, 10-yr, 25-yr, 50-yr and 100-yr storm frequency events.	<input type="checkbox"/>	<input type="checkbox"/>



Part VI: Supporting Documents

Engineering Documentation	Report	Show on Plans
<i>All plans and calculations must be signed and sealed by a professional engineer (PE) licensed in the state of Connecticut</i>	√ If Included with this application	
Summary of all water handling proposed at the site, including plans and computations, as needed to show that temporary water handling will not cause erosion or flooding.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Erosion and Sediment control measures designed in accordance with the <i>2002 Connecticut Guidelines for Soil Erosion and Sediment Control</i> , including calculations as required for engineered measures. (www.ct.gov/dep/cwp/view.asp?a=2720&q=325660&depNav_GID1654)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Design details and calculations for each hydraulic and drainage structure demonstrating consistency with the standards contained within the Connecticut DOT Drainage Manual and 2004 Connecticut Storm Water Quality Manual.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FEMA floodway/floodplain boundaries within the project site plotted on the site plans and a copy of the FEMA map showing the site location.	<input type="checkbox"/>	<input type="checkbox"/>
Hydrologic calculations including pre- and post- drainage area maps and a tabulated summary of results that demonstrate no adverse increase in runoff rates or velocities as a result of the proposed activity at appropriate downstream points.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Part VII: Application Certification

The applicant *and* the individual(s) responsible for actually preparing the application must sign this part. An application will be considered incomplete unless all required signatures are provided. This includes consultants, professional engineers, surveyors, soil scientists, etc. If the applicant is the preparer, please mark N/A in the spaces provided for the preparer. By their signature, they certify that, to the best of their knowledge and belief, the information contained in this application, including all attachments, is true, accurate and complete.

The certification of this application package shall be signed as follows: 1) For an individual(s) or sole proprietorship: by the individual(s) or proprietor, respectively; 2) For a corporation: by a principal executive officer of at least the level of vice president, or his agent; 3) For a limited liability company (LLC): by a manager, if management of the LLC is vested in a manager(s) in accordance with the company's "Articles of Organization", or by a member of the LLC if no authority is vested in a manager(s); 4) For a partnership: by a general partner; 5) For a municipal, state, or federal agency or department: by either a principal executive officer, a ranking elected official, or by other representatives of such registrant authorized by law.

<p>"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief.</p> <p>I understand that a false statement in the submitted information may be punishable as a criminal offense, in accordance with section 22a-6 of the General Statutes, pursuant to section 53a-157b of the General Statutes, and in accordance with any other applicable statute.</p> <p>I certify that this application is on complete and accurate forms as prescribed by the commissioner without alteration of the text."</p>	
 Signature of Applicant	8-1-2019 Date
Thomas J. Maziarz Name of Applicant (print or type)	Bureau Chief, Policy and Planning Title (if applicable)
 Signature of Preparer (if different than above)	07/03/2019 Date
Naomi Hodges Name of Preparer (print or type)	Environmental Scientist Title (if applicable)
<input type="checkbox"/> Check here if additional signatures are required. If so, please reproduce this sheet and attach signed copies to this sheet. You must include signatures of any person preparing any report or parts thereof required in this application (i.e., professional engineers, surveyors, soil scientists, consultants, etc.)	

Note: Please submit **three** copies of this completed Addendum Form, a completed Army Corps Application Form (ENG Form 4345), and **all** Supporting Documents (including full scale plans, 1" = 40') to:

CENTRAL PERMIT PROCESSING UNIT
 DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
 79 ELM STREET
 HARTFORD, CT 06106-5127

Please do **not** mail or directly deliver this completed application and supporting documents to the DEEP's Inland Water Resources Division.

Attachments

Attachment A: Executive Summary

Attachment B: Project Location Maps

Attachment C: Environmental Permit Plans

Attachment D: Environmental Report, NRCS Maps, and Datasheets

Attachment E: Hydraulic and Drainage Report (Submitted on CD)

Attachment F: Project Area Photos

Attachment G: Fisheries Approval

Attachment H: Interagency Regulatory Coordination Meeting Notes

Attachment I: US Army Corps of Engineers Application

Attachment A: Executive Summary

Existing Conditions:

Bridge No. 06797, a 72 inch span by 48 inch rise arched asphalt coated corrugated metal pipe (ACCMP) culvert, conveys an unnamed brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over the unnamed brook. The total structure length of the ACCMP is 139 feet long and the culvert is located under approximately 3 feet of fill. There are reinforced concrete headwalls and wingwalls at both ends of the culvert. This structure carries four lanes of traffic, including two northbound lanes and two southbound lanes, with a small grassy median located between both bounds. The existing culvert is considered to be in serious condition. It is structurally deficient due to the heavy laminar rust and minor section losses, and perforation to the pipe, which requires rehabilitation. The existing concrete headwalls, cut-off walls, and wingwalls also exhibit areas with deterioration. The existing ACCMP structure results in approximately 1.7 feet of backwater at the approach cross-section and is hydraulically inadequate due to insufficient freeboard.

The unnamed brook has a drainage area of 0.09 square mile. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The unnamed brook at Bridge No. 06797 is not included in the FEMA New London County Flood Insurance Study. This culvert replacement 35 feet to the west of the existing structure is part of State Project No. 103-266 and in conjunction with Bridge Nos. 06795 and 06796, also located along I-395.

Proposed Project:

The project proposes a replacement box culvert 35 feet to the west of the existing pipe arched culvert. The pre-cast concrete box culvert will be 5 feet wide by 5 feet high with a total length of 144 feet. The structure will be installed under both bounds of I-395. This replacement requires the realignment of the unnamed brook. U-Type concrete wingwalls will be constructed at both ends of the culvert to improve the flow of the newly aligned brook. Concrete cut-off and return walls will be installed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the box, reducing headwater. Once the new culvert is constructed, the existing culvert will be taken out of service and filled with controlled low strength material. In order to access the culvert to perform the proposed replacement, temporary lane closures will be required. The construction access will include the use of the existing roadway and proposed northern and southern permanent access shoulders adjacent to I-395. Natural streambed material will be installed at the inlet and outlet to grade the streambed to the new invert elevation. A minimum of one foot of natural streambed material will also be employed along the culvert invert. Subsequent to construction, any wetlands impacted by the work shall be restored utilizing a wetland seed mix and revegetated following construction, as appropriate. The proposed roadway width, alignment and profile will match all existing conditions.

The replacement culvert requires the realignment of the unnamed brook, construction of a new culvert, and the discontinuation of the existing culvert. The existing culvert is considered hydraulically inadequate. The new, proposed structure will be hydraulically adequate. The proposed water surface elevations are not expected to impact any existing structures on properties adjacent to the project site. The land upstream of the structure inlet is mostly forested with some residential development. Downstream of the structure outlet is agricultural land, grasses, and residential development. The slight decrease in water surface elevation at the culvert inlet should not have any adverse impacts. In the hydraulically modeled conditions for a 50-year storm, the freeboard is approximately 1.2 feet. The project

is scheduled to be constructed in Spring of 2020. It is anticipated to be completed in one construction season.

The replacement of Bridge No. 06797 results in 1,200 square feet (0.027 acres) of permanent wetland impacts. Permanent impacts are a result of the installation of the box culvert, and grading required within the wetland for the proposed stream alignment. Some grading impacts will also occur as a result of the construction of permanent access shoulders. The project results in 1,350 square feet (0.030 acres) of permanent watercourse impacts. This number accounts for the full closure of the existing bridge and new stream alignment as well as and the construction at the cut-off walls, and wingwalls. Though this is described as a permanent impact, the watercourse will remain, but will be redirected through the new, hydraulically adequate structure. Temporary impacts include the areas necessary for the water handling and access to the project culverts. Temporary impact to the wetlands is 2,100 square feet (0.048 acres) and to the watercourse is 100 square feet (0.002 acres). Secondary watercourse impacts are also proposed where the channel at the outlet will be abandoned due to the new stream alignment. This results in 400 square feet (0.009 acres) of impact. The total wetland and watercourse impact is 5,150 square feet (0.118 acres).

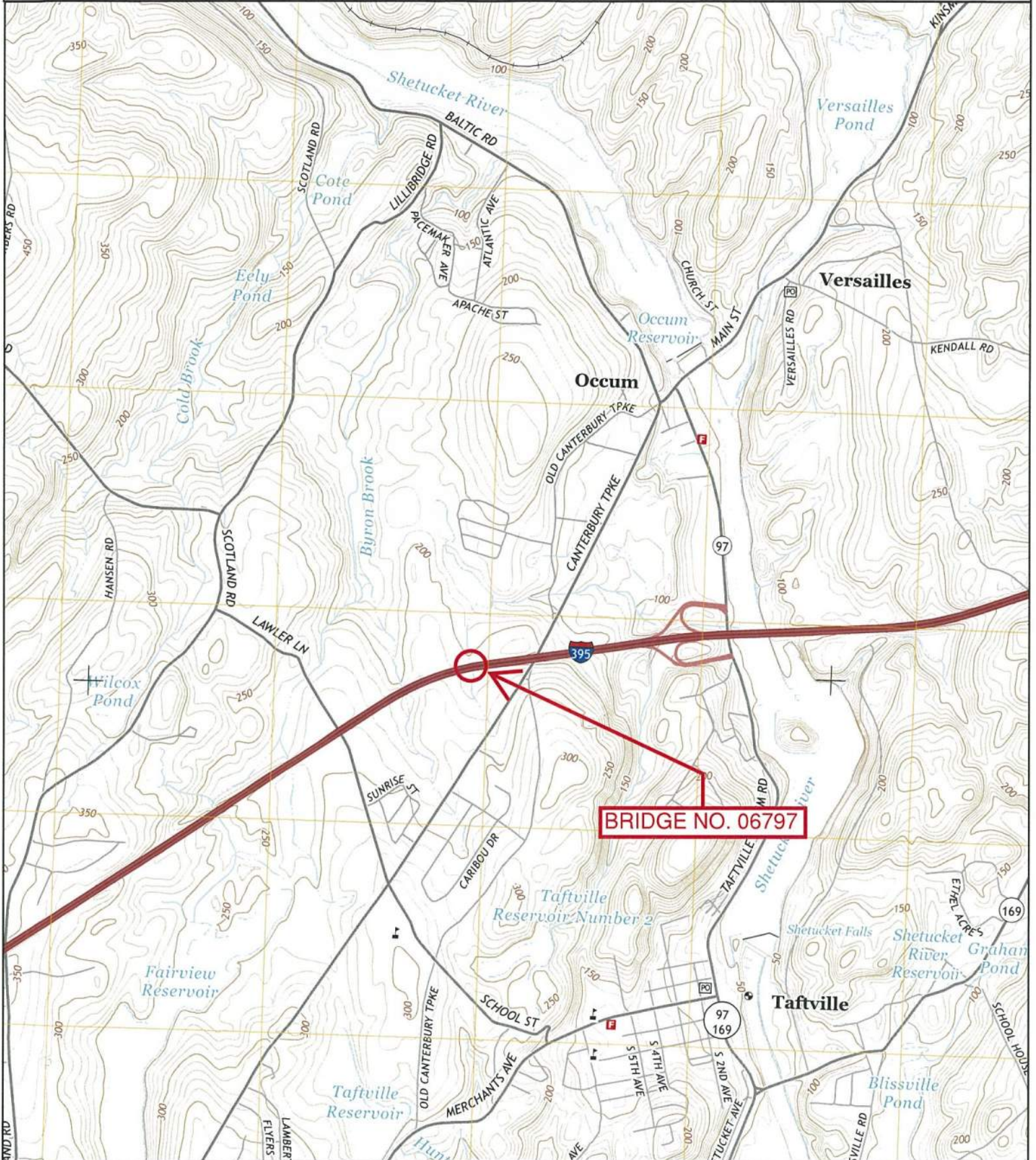
Additional permits being sought include an ACOE Section 404 Pre-Construction Notification under General Permit No. 19 Stream, River & Brook Crossings and CTDEEP General Permit for Water Resources Construction Activities.

Attachment B: Project Location Maps

USGS QUADRANGLE MAP

BRIDGE NO. 06797 IN NORWICH, CT

INTERSTATE 395 OVER UNNAMED BROOK



BRIDGE NO. 06797



USGS MAP #72
NORWICH



Created: 2019

1 INCH = 2,000 FEET





1000
1000
1000

DETAILED AERIAL MAP

BRIDGE NO. 06797 IN NORWICH, CT
INTERSTATE 395 OVER UNNAMED BROOK



CT-DEEP, USGS, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong-Kong), Esri Korea, Esri (Thailand), MISC, & OpenStreetMap contributors, and the GIS User Community



CTECO AERIAL
MAP
NORWICH,
CONNECTICUT

Created: 2019

1 INCH = 500 FEET



Attachment C: Environmental Permit Plans



CONNECTICUT DEPARTMENT OF TRANSPORTATION



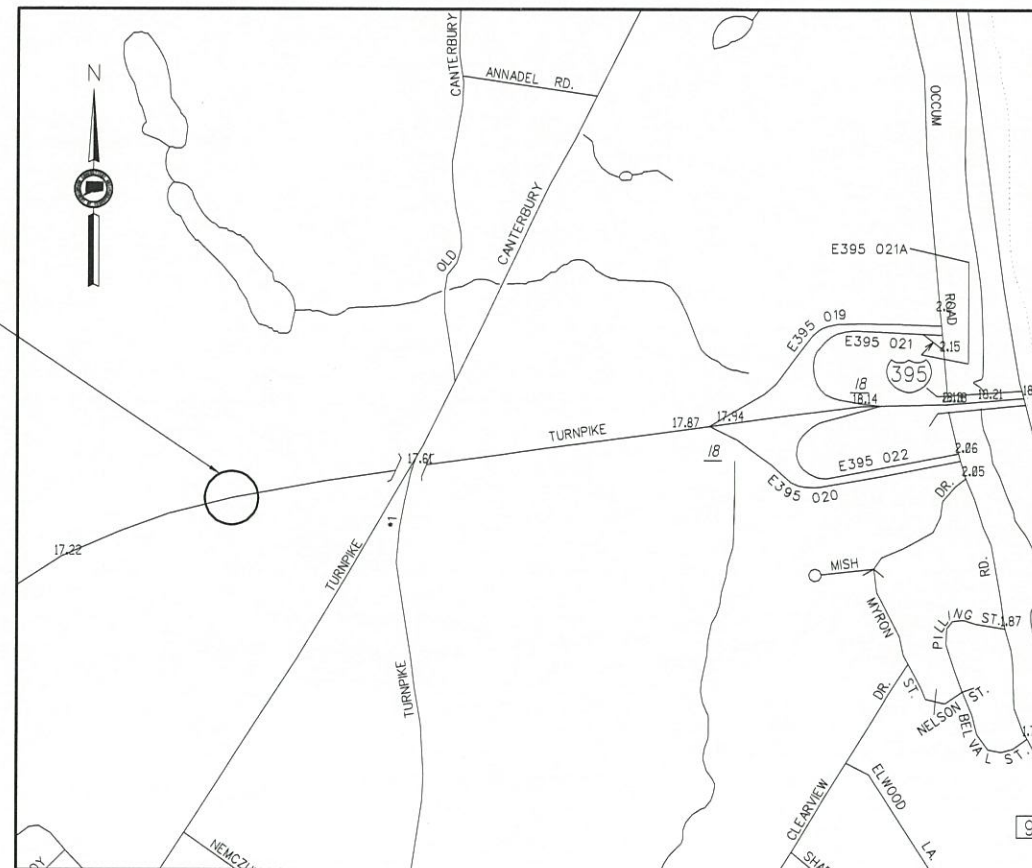
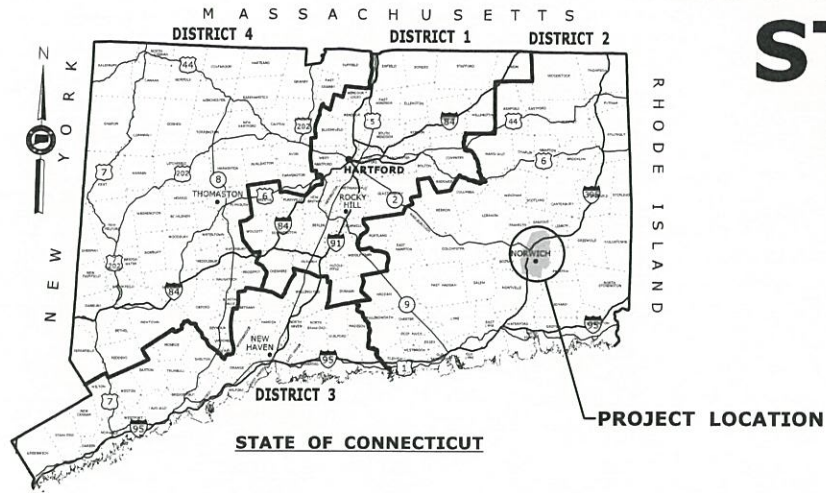
ENVIRONMENTAL PERMIT PLANS

STATE PROJECT NO. 103-266

REPLACEMENT OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK

(SITE No. 3)

IN THE CITY OF NORWICH



LOCATION PLAN

SCALE: 1" = 500'

BRIDGE NO. 06797
I-395 OVER
BYRON BROOK

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06797 TITLE SHEET
PMT-02	BR. NO. 06797 GENERAL SITE PLAN
PMT-03	BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06797 ELEV. & SECTION PLAN
PMT-05	BR. NO. 06797 STAGING AND WATER HANDLING PLAN
PMT-06	BR. NO. 06797 UPSTREAM GRADING PLAN
PMT-07	BR. NO. 06797 DOWNSTREAM GRADING PLAN
PMT-08	BR. NO. 06797 PERMIT PLANTING PLAN

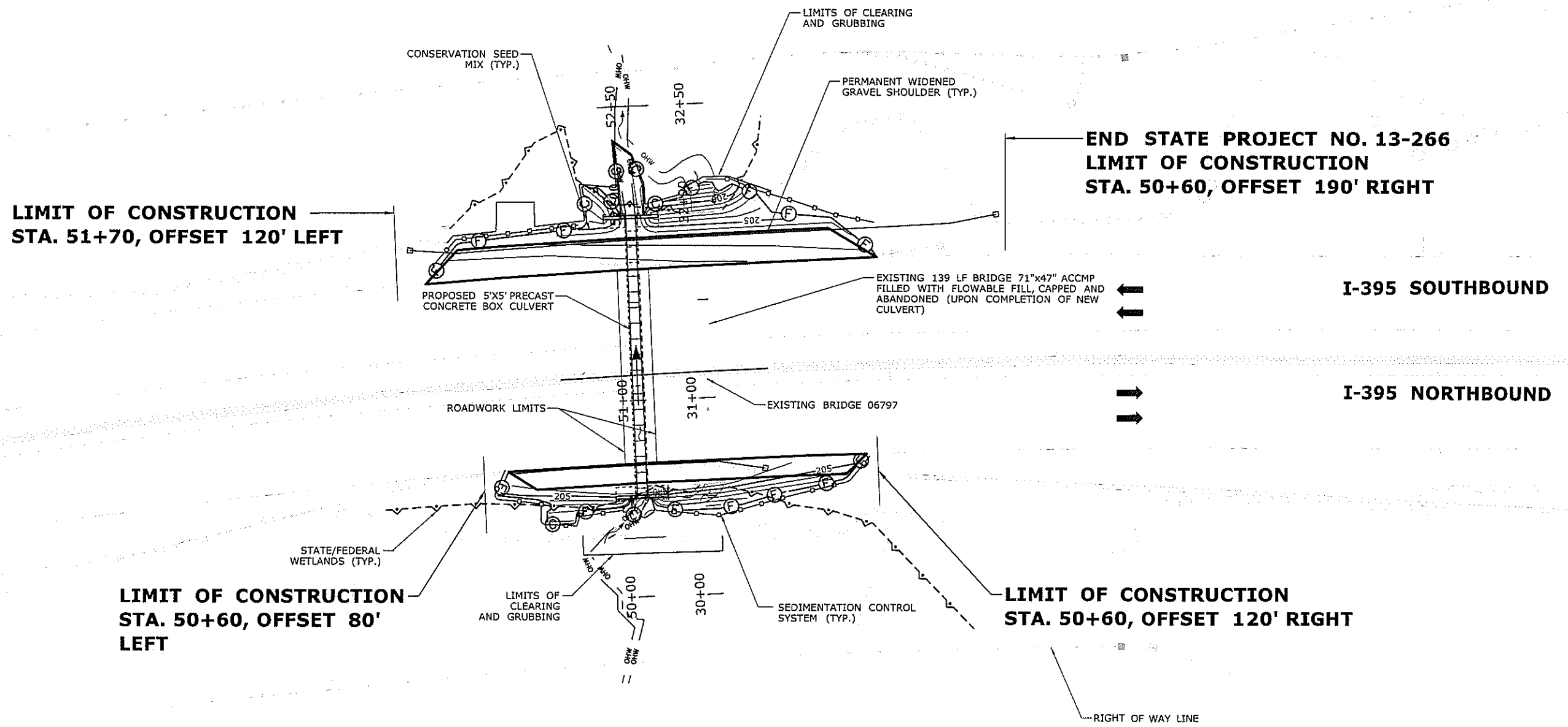
LOUIS BERGER US, Inc.
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Digitally signed
by Robert Lin
Date:
2019.07.01
10:44:55-04'00'

ENVIRONMENTAL PERMIT PLANS

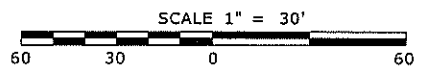
PLAN DATE 6/27/2019

REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/27/2019	DESIGNER/DRAFTER: JPM	CHECKED BY: -	SCALE AS NOTED	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	DRAWING TITLE: BR. NO. 06797 TITLE SHEET	PROJECT NO. 103-266 DRAWING NO. PMT-01 SHEET NO.
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LEGEND:

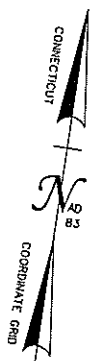
- OHW - ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- o - SEDIMENTATION CONTROL SYSTEM (SCS)



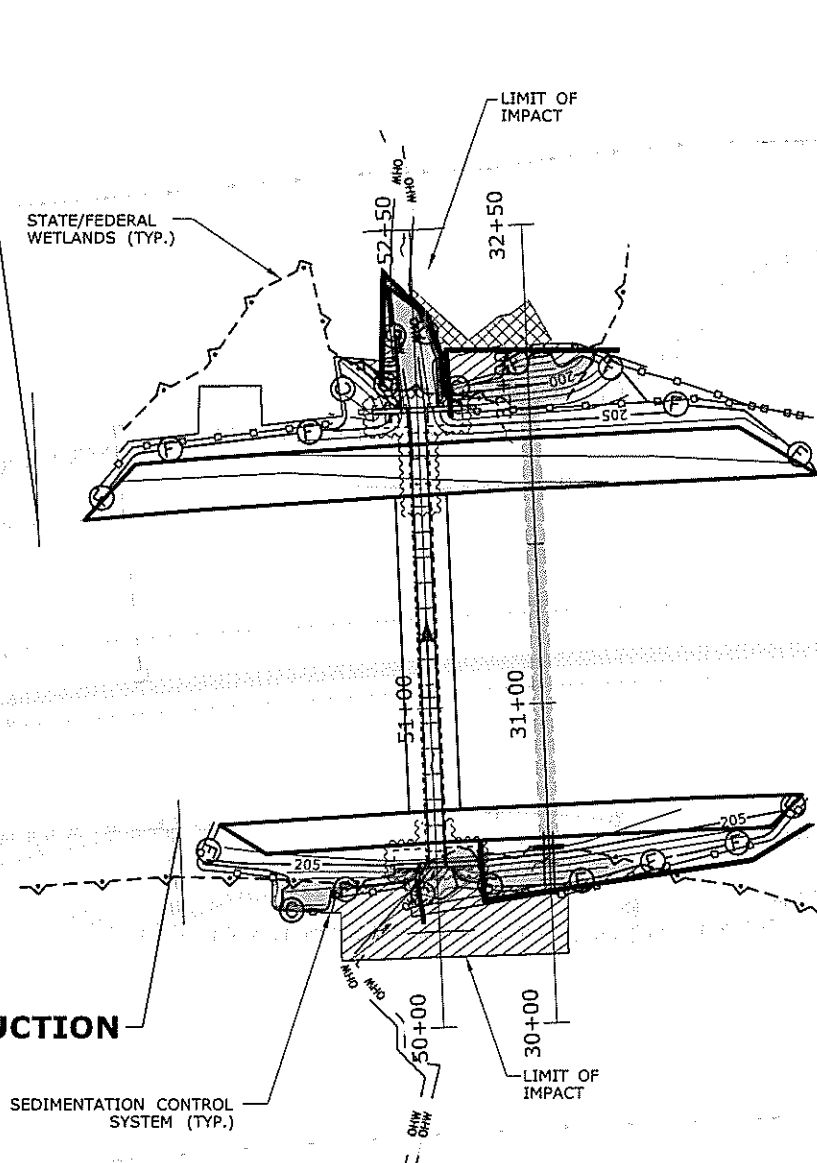
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.			DESIGNER/DRAFTER: MAM CHECKED BY: MJM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-02 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019	Filename: ...HW_MSH_0103-0266_Br_06797_RDP_PLN-01.DGN.dgn			

DRAWING TITLE:
BR. NO. 06797
GENERAL SITE PLAN



LIMIT OF CONSTRUCTION



LIMIT OF CONSTRUCTION



I-395 SOUTHBOUND

I-395 NORTHBOUND

LIMIT OF CONSTRUCTION

LIMIT OF CONSTRUCTION

NOTE:

CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

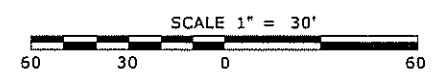
DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

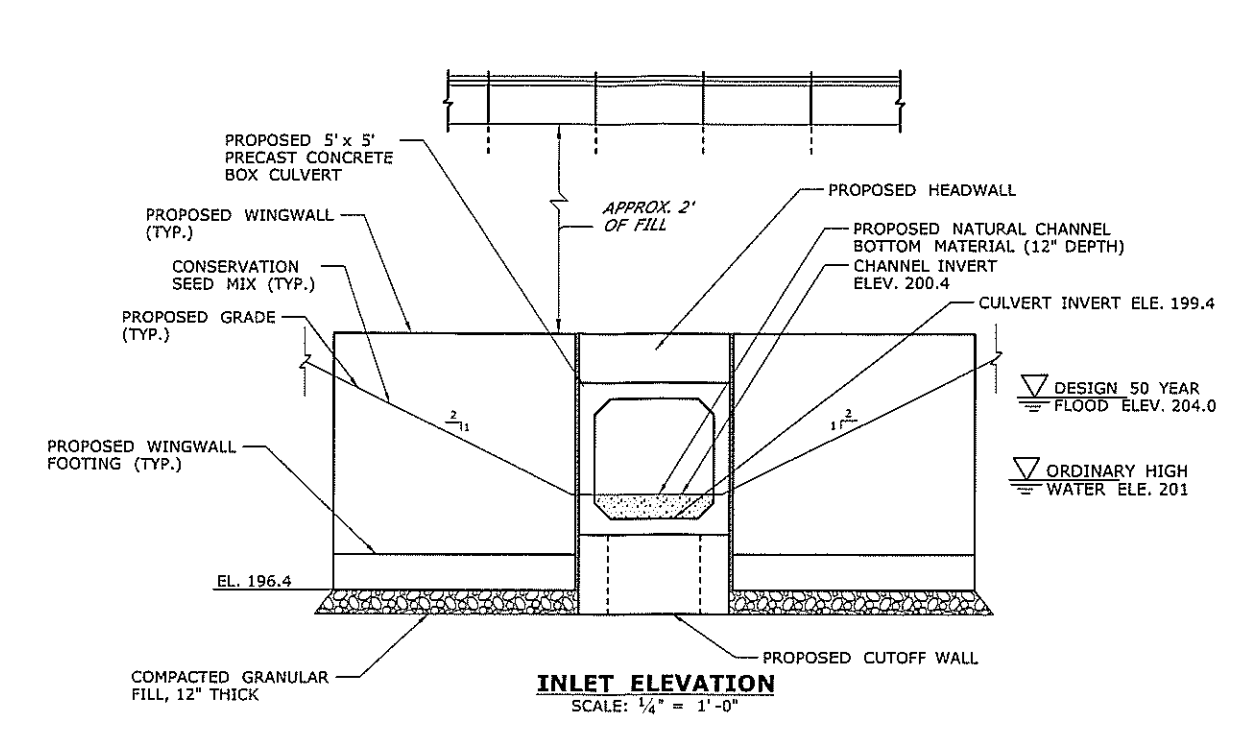
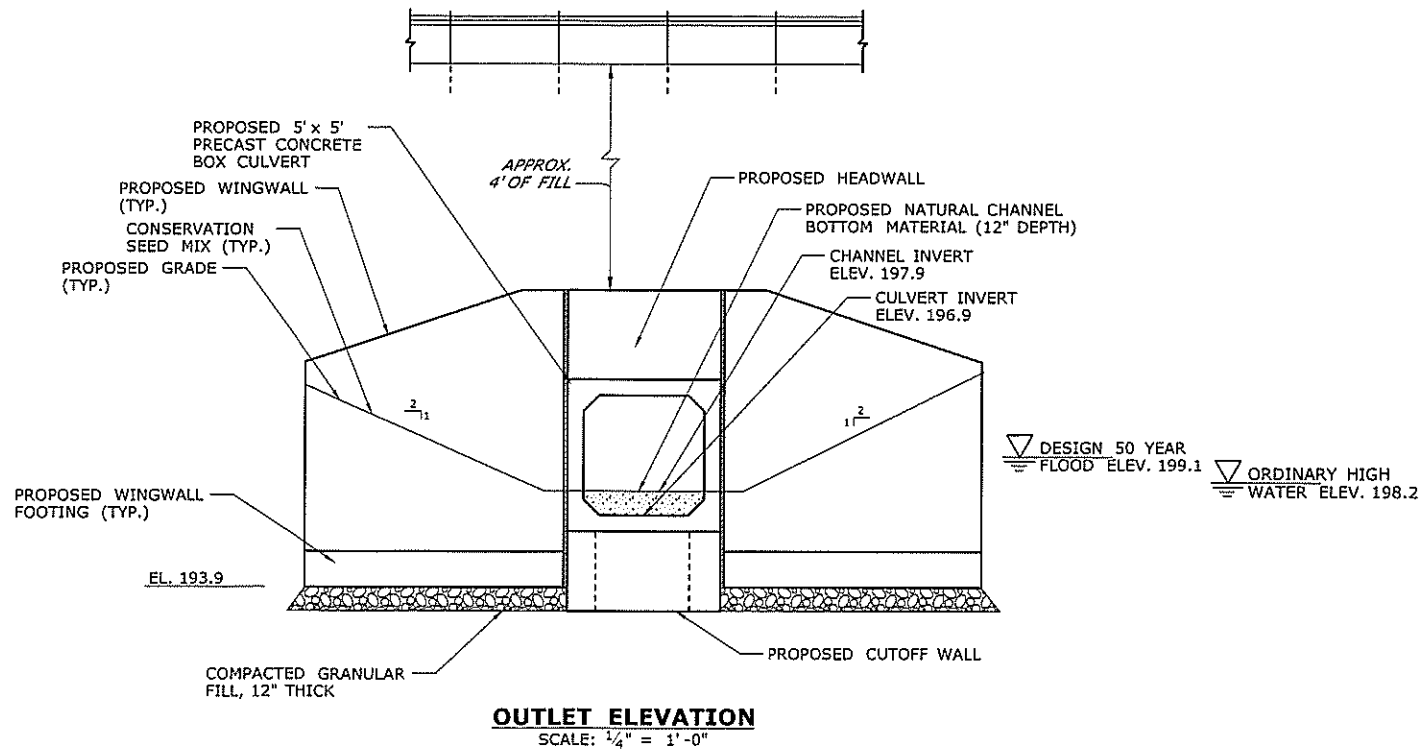
- TEMPORARY IMPACT
- SECONDARY IMPACT
- PERMANENT IMPACT
- OHW — ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

WETLAND IMPACT TABLE				
	WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS	3	1200 S.F. (0.027 AC.)	1350 S.F. (0.030 AC.)	2550 S.F. (0.059 AC.)
TEMPORARY IMPACTS	3	2100 S.F. (0.048 AC.)	100 S.F. (0.002 AC.)	2200 S.F. (0.051 AC.)
SECONDARY IMPACTS	3		400 S.F. (0.009 AC.)	400 S.F. (0.009 AC.)
TOTAL IMPACTS		3300 S.F. (0.076 AC.)	1850 S.F. (0.042 AC.)	5150 S.F. (0.118 AC.)



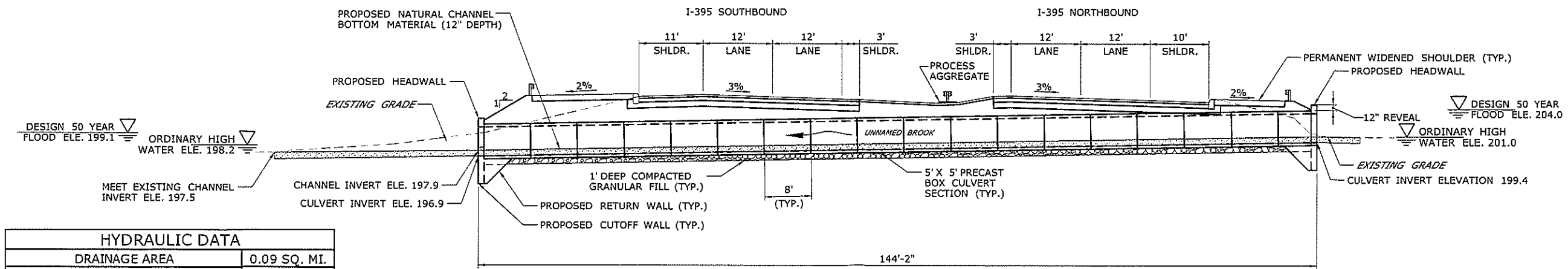
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER, US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266	DRAWING NO. PMT-03
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019	Filename: ...\\HW MSH 0103-0266 Br 06797 WIP PLH-01.DGN.dgn		DRAWING TITLE: BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN		SHEET NO.		



OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 20 S.F. / 144 FT. = 0.14 FT
 0.14 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

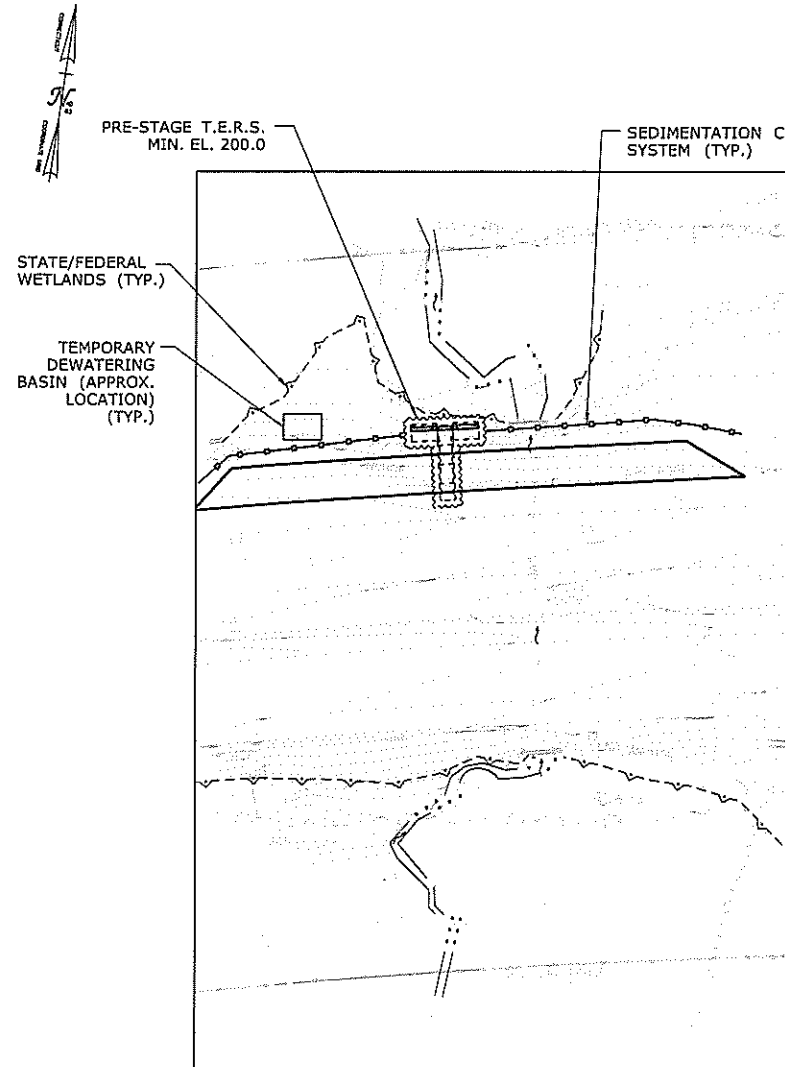
BANKFULL WIDTH (BFW):
 BFW = 4 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 4.8 FT.
 4.8 FT. < 5 FT. PROPOSED CULVERT SPAN



HYDRAULIC DATA	
DRAINAGE AREA	0.09 SQ. MI.
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	95 CFS
AVERAGE DAILY FLOW ELEVATION	201.0 FT.
UPSTREAM DESIGN SURFACE WATER ELEVATION	204.0 FT.
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	199.1 FT.

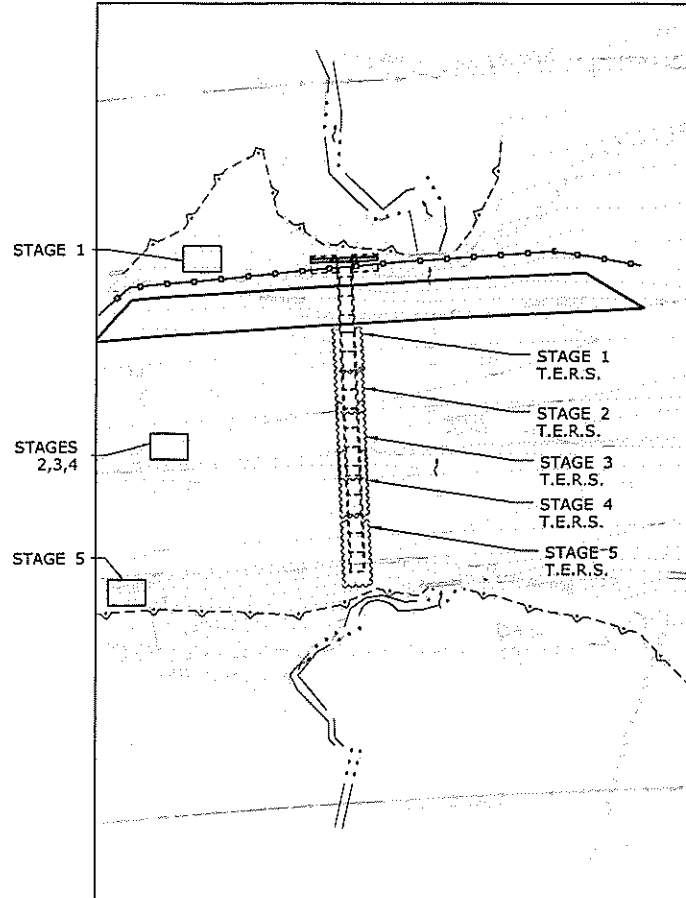
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266
	CHECKED BY: MJM					
SCALE AS NOTED	FILENAME: ...LSB.MSH_0103-0266_Br_06797_ES_PLAN.dgn	DRAWING TITLE: BR. NO. 06797 CULVERT ELEV. & SECTION PLAN	SHEET NO.			



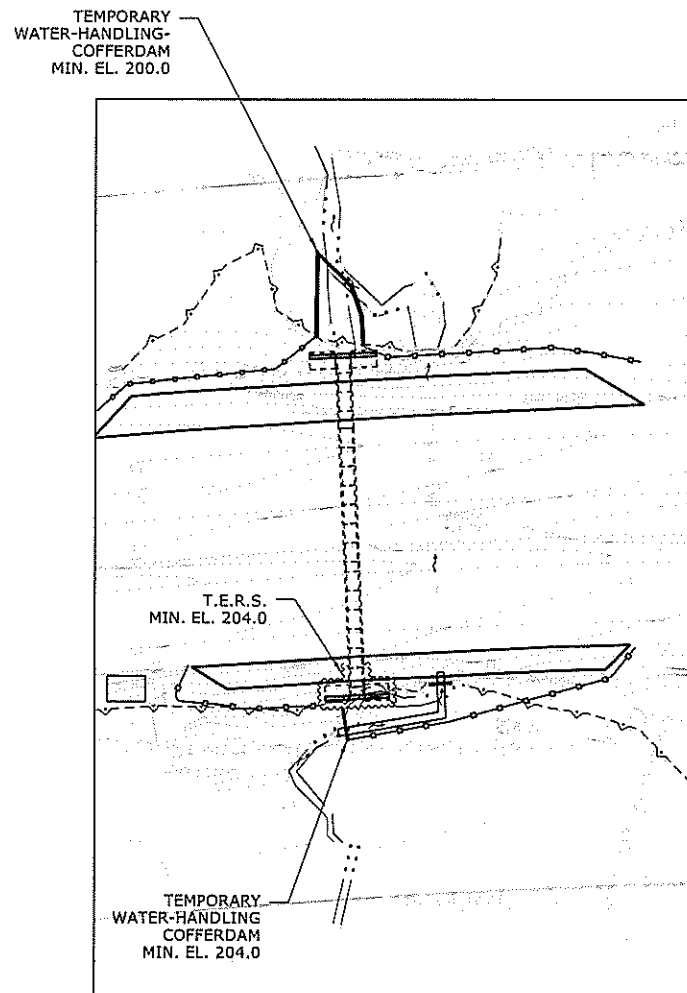
PRE-STAGE - SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.



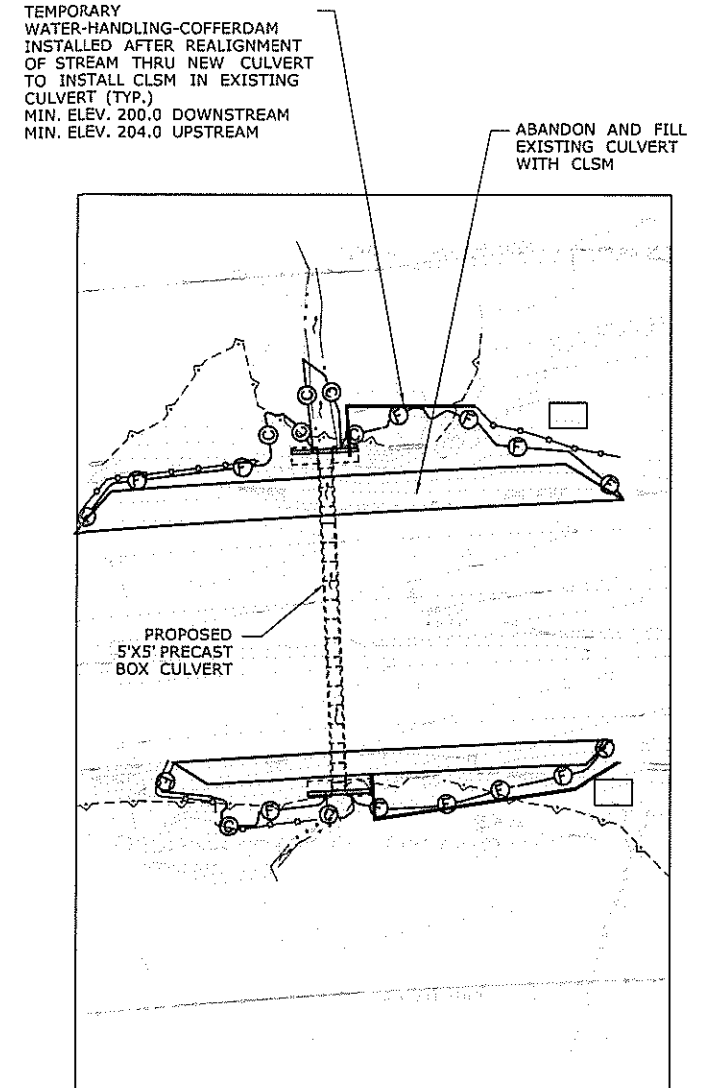
STAGE 1-5 SUGGESTED SEQUENCE

- REPEAT THESE STEPS FOR STAGES 1 THROUGH 5
1. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
 2. EXCAVATE AND INSTALL BOX CULVERT SECTIONS.
 3. REMOVE TEMPORARY EARTH RETAINING SYSTEM.



STAGE - 6 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. INSTALL TEMPORARY WATER HANDLING FACILITIES, INCLUDING WATER-HANDLING COFFERDAM, TEMPORARY 36" BYPASS PIPES.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.
7. REGRADE CHANNEL AT INLET AND OUTLET.
8. INSTALL 12" OF NATURAL STREAMBED MATERIAL ALONG THE INVERT OF THE CULVERT.
9. REMOVE TEMPORARY WATER HANDLING FACILITIES TO ALLOW STREAM THROUGH PROPOSED CULVERT.



FINAL STAGE - SUGGESTED SEQUENCE

1. INSTALL TEMPORARY WATER-HANDLING COFFERDAM
2. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM).
3. COMPLETE GRADING AS REQUIRED.
4. REMOVE TEMPORARY WATER-HANDLING COFFERDAM.
5. RESTORE TEMPORARILY DISTURBED AREAS AND INSTALL NATIVE PLANTS ACCORDING TO PMT-06.
6. REMOVE SEDIMENTATION AND EROSION CONTROLS UPON PERMANENT STABILIZATION.

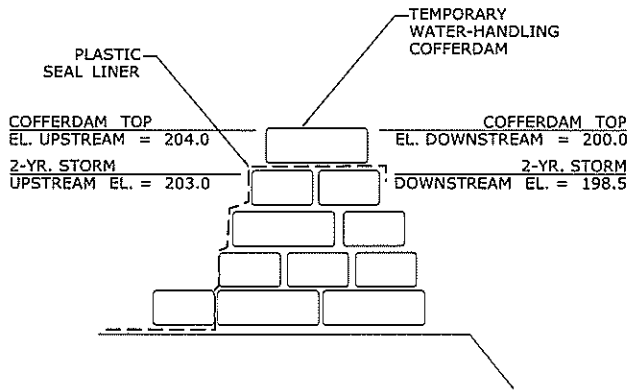
TEMPORARY HYDRAULIC DATA 06797	
AVERAGE DAILY FLOW	0.2 CFS
AVERAGE SPRING FLOW	0.3 CFS
2-YEAR FREQUENCY DISCHARGE	15 CFS
TEMPORARY DESIGN DISCHARGE	15 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	203.0 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	198.5 FT

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE EXISTING CULVERT AS SHOWN DURING CONSTRUCTION OF THE NEW STRUCTURE.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

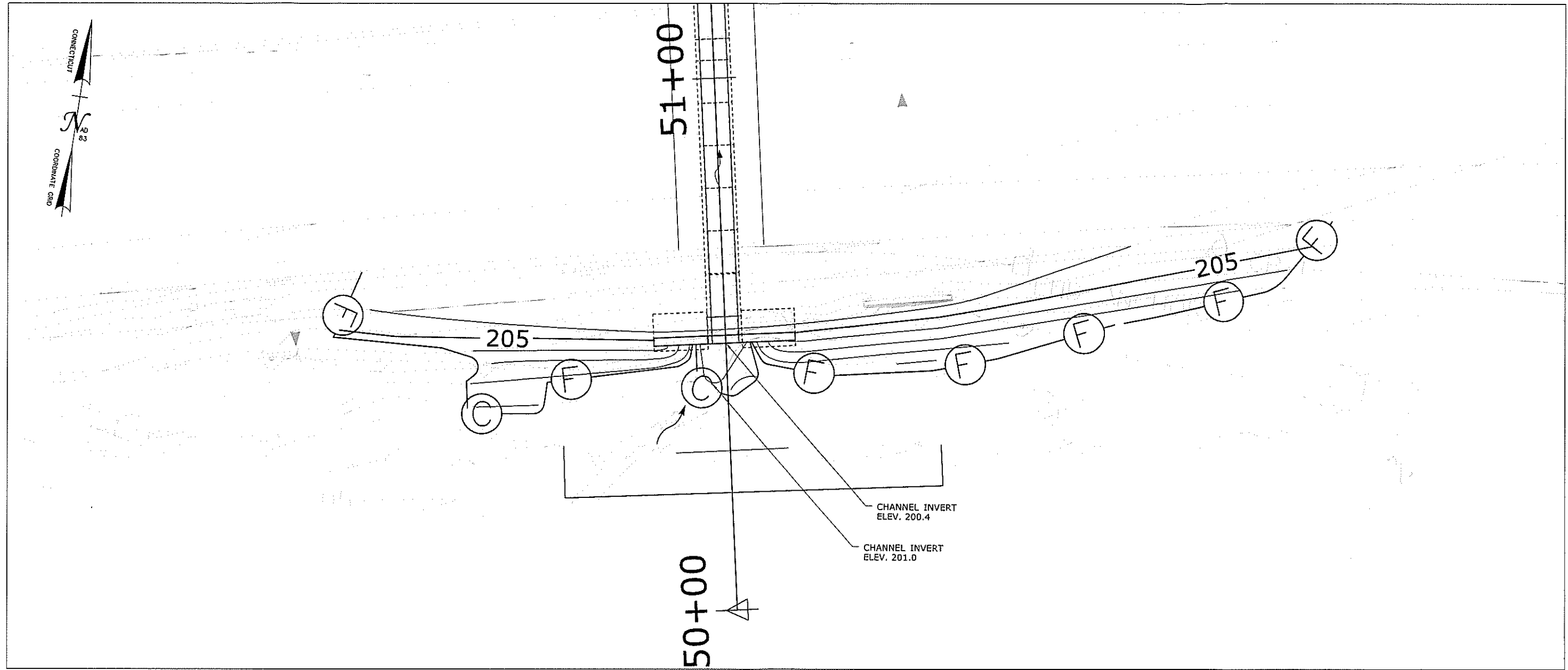


LEGEND:

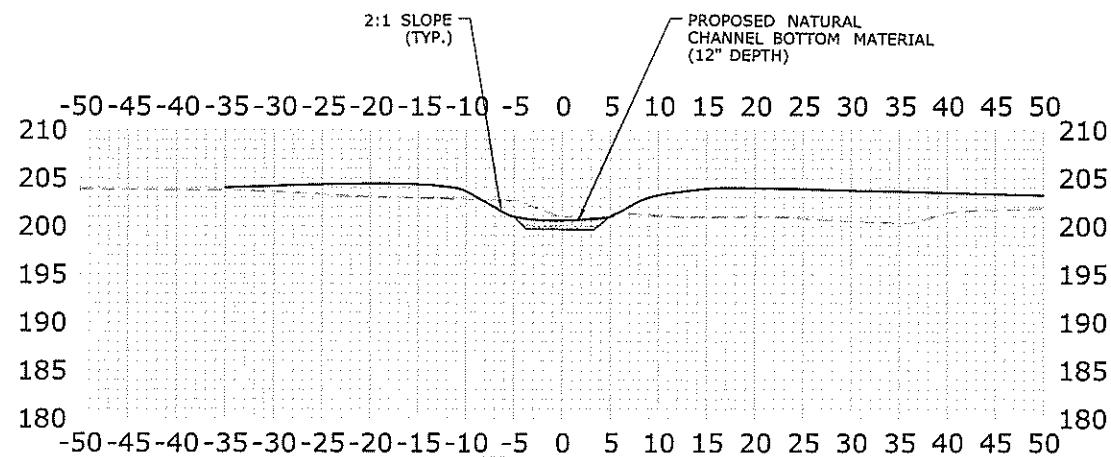
- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE IN FEET 0 40 80 SCALE 1" = 40'	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/BLOCK: PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06797 WATER HANDLING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-05 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019	Filename: ...:\HW HSH 0103-0266 Br 06797.WHP.PLN-01.DGN.dgn		LOUIS BERGER U.S., Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK		



**BR. NO. 06797
UPSTREAM GRADING PLAN**



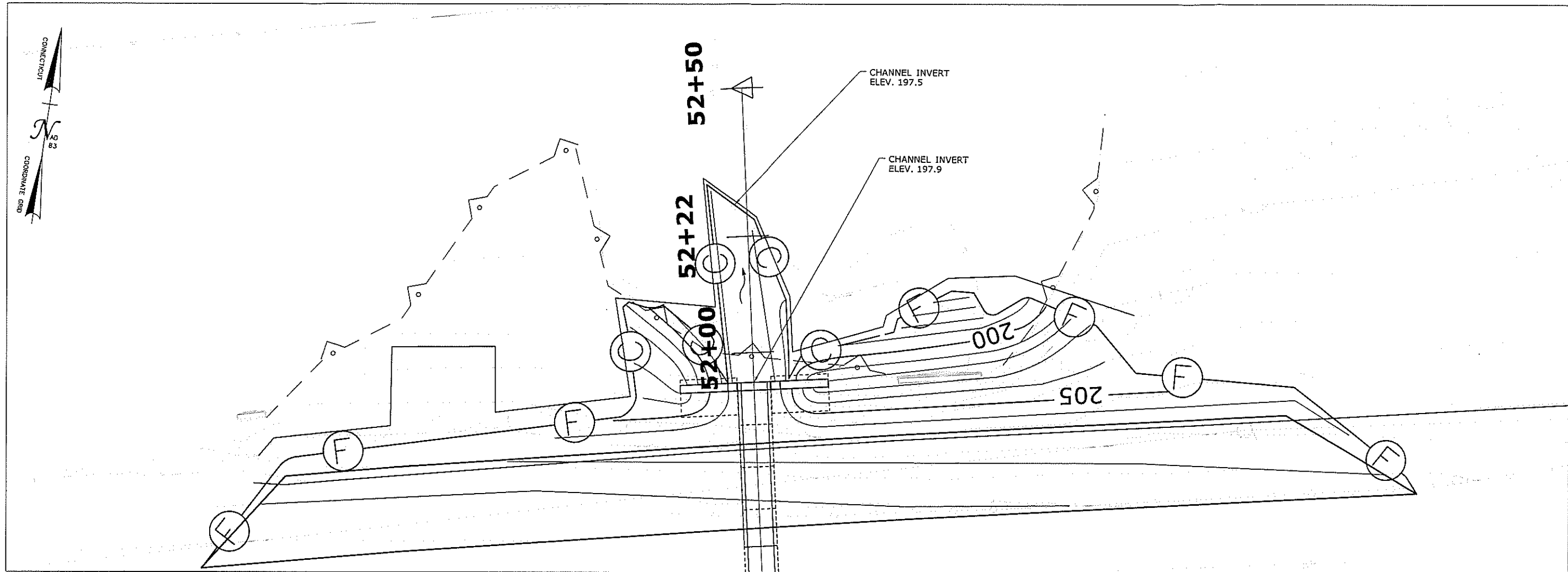
50+50

(SECTION AT FACE OF HEADWALL)

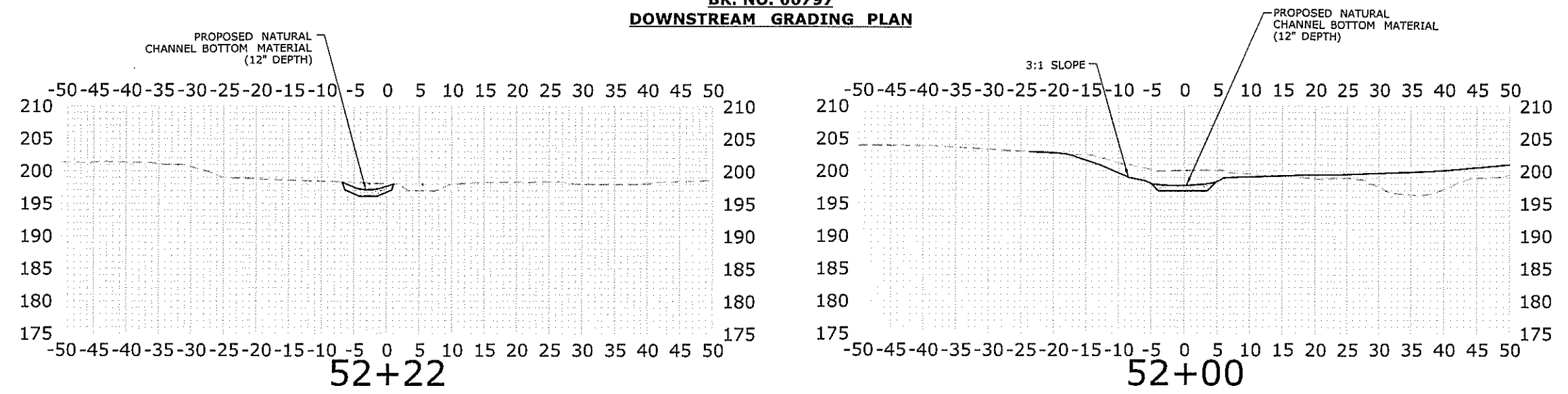
ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT/MJM CHECKED BY: JH SCALE IN FEET 0 10 20 SCALE 1"=10'	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-06 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019	Filename: ...JHW MSH 0103-0266 Br 06797 GRD PLN-01.DGN.dgn		

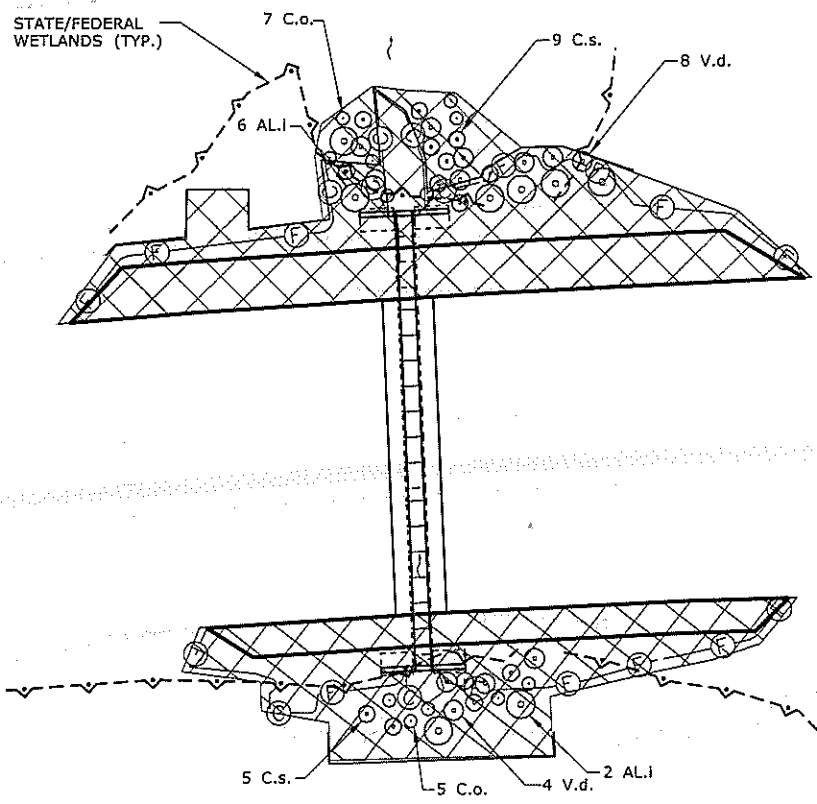
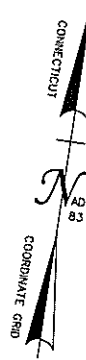


**BR. NO. 06797
DOWNSTREAM GRADING PLAN**



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: JCT/MJM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266
	CHECKED BY: JH					
REV. I DATE REVISION DESCRIPTION SHEET NO.	Plotted Date: 6/28/2019	SCALE IN FEET SCALE 1"=10'	Filename: ...\\HV. MSH. 0103-0266 Br 06797 GRD. PLN-01.DGN.dgn			



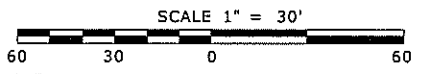
CONTROL AND REMOVAL OF INVASIVE SPECIES
(SEE NOTE 5)

NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.

PERMIT PLANT LIST

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	WETLAND INDICATOR
Al.i.	8	Speckled Alder	<i>Alnus incana</i>	18"-24" HT. B.B.	Field Located	FACW
C.s.	14	Red-Osier Dogwood	<i>Cornus sericea</i>	18"-24" HT. B.B.	Field Located	FACW
V.d.	12	Northern Arrowwood	<i>Viburnum dentatum</i>	18"-24" HT. B.B.	Field Located	FACW
C.o.	12	Common Buttonbush	<i>Cephalanthus occidentalis</i>	18"-24" HT. B.B.	Field Located	OBL



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 7/1/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/ BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BRIDGE 06797 PERMIT PLANTING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-08 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 7/1/2019	File name: ...:\HW MSH 0103-0266 Br 06797.PP.PLN-01.DGN.dgn					

Attachment D: Environmental Report, NRCS Map, and Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266

Rehabilitation of Bridge No. 06797 Carrying Unnamed Brook under Interstate 395

Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06797 in Norwich, Connecticut. Bridge No. 06797 is a 72 inch span by 48 inch rise arched asphalt coated corrugated metal pipe (ACCMP) culvert that conveys an unnamed brook under Interstate 395 (I-395). The bridge was originally built in 1956 to allow I-395 to pass over the unnamed brook. The total structure length of the ACCMP is 139 feet long. The culvert is below the roadway and it is underneath approximately 3 feet of fill. The existing culvert is considered to be in serious condition. It is structurally deficient due to the heavy laminar rust and minor section losses, and perforation to the pipe, which requires rehabilitation. The existing concrete headwalls, cut-off walls, and wingwalls also exhibit areas with deterioration. The project involves constructing a new box culvert approximately 35 feet west of the existing culvert. The replacement culvert will be 5 foot wide by 5 foot high pre-cast concrete box culvert with a total structure length of 144 feet. Cut-off walls and U-type wingwalls will be installed at the inlet and outlet. The boxed culvert will have a rounded entrance lip at the inlet. The brook will be realigned to its original course prior to the construction of I-395 through the new culvert. The existing culvert will be abandoned in place and filled with controlled low strength material. Project No. 103-266 also includes Bridges No. 06795 and 06796. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06795 and 06796 are being processed under separate permits.

Site Information

The unnamed brook has a drainage area of 0.09 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The watershed is located in the northeastern portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural fields (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat area. The unnamed brook at Bridge No. 06797 is not included in the FEMA New London County Flood Insurance Study.

Study Area

Bridge No. 06797 is located on I-395 over an unnamed brook, approximately 0.4 miles north of Bridge No. 00279 (Lawler Lane). Land use in the vicinity of the site includes transportation (roadway), forest, wetlands, and pasture and row crop agricultural uses.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are adjacent to the unnamed brook at the inlet and outlet of Bridge No. 06797. The unnamed brook is riverine (R4SBC) flows south to north. The culvert creates channelized flow in a wetland area that is bisected by I-395. Upstream of the project culvert, the discernable channel leads to forested wetland with pit and mound topography. Downstream of the project culvert, flows remain channelized up to the margin of a

pasture/wet meadow. The channel width is a meandering stream with gradually varying width, a moderate gradient, and occasional shape changes to the floodplain. Within the project area, the unnamed brook flows through a deciduous forest dominated by red maples. The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

The area adjacent to the unnamed brook is relatively flat with some pits and mounds and dominated by brush and Red Maple (*Acer rubrum*). The vegetation bordering the stream includes Chicory (*Cichorium intybus*), Skunk Cabbage (*Symplocarpus foetidus*), and Sensitive Fern (*Onoclea sensibilis*). The area adjacent to the roadway includes Goldenrod (*Solidago canadensis*), Common Blackberry (*Rubus allegheniensis*), as well as Japanese Barberry (*Berberis thunbergii*), and Japanese knotweed (*Fallopia japonica*).

Soils

Soils found within the project area are mapped by the Natural Resource Conservation Service (NRCS). The roadway as well as the adjacent side slopes are disturbed soils mapped as Udorthents-Urban Land complex (Map # 306). The soils located immediately adjacent to the existing and proposed inlet and outlet of the structures are Raypol silt loam (Map #12). The NRCS Web Soil Survey Map is attached.

Functions and Values

The primary functions and values of the unnamed brook and wetlands in the project area are wildlife and fish habitat and groundwater recharge. The stream channel functions within the culvert are limited to fish and wildlife habitat/passage. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest. The habitat in the project area is of low quality to fish within the watershed. The existing structure creates a barrier to fish movement, however fish species were observed within the stream within the project area. The proposed project will have very limited effects on wetland function and values in the project area as it pertains to wildlife habitat. The project proposes to maintain the existing wildlife capacity of the wetland area. Direct impacts have been minimized to the fullest extent. Access points have been designed to utilize a portion of the existing shoulders of I-395 reducing the need to further encroach into the adjacent wetlands. The critical issue with the proposed culvert replacement is the alteration of the existing stream channel and the proposed permanent impacts to the existing watercourse. The replacement requires installing a new 5 foot wide by 5 foot high pre-cast box culvert spanning a length of 144 feet approximately 35 feet to the west of the existing culvert. The existing brook will be regraded and realigned to flow through the replacement culvert. The existing culvert will be filled with controlled low strength material and abandoned in place. The box culvert will provide a larger hydraulic opening, meet the 1.2x bankfull width recommendation, eliminate the bridge from being classified as structurally deficient, and reduce flow velocities due to placement of one foot of natural streambed material which in turn will facilitate fish and wildlife passage, all of which are not provided by the existing culvert. The design process for this project included hydraulic modeling of the proposed box culvert replacement for the 50-year design storm. The larger hydraulic opening and rounded inlet will reduce the upstream backwater elevation and increase the freeboard above the minimum of one foot, meeting the ConnDOT Drainage Manual criteria that the existing culvert does not currently provide. The proposed channel construction will mimic the existing channel conditions in depth and width. The proposed channel bottom will also be created with native streambed material. The surrounding project area is relatively flat. It is anticipated that the wetland will remain within the existing limits. Secondary impacts as a result of the project are anticipated due to the outlet watercourse realignment. Due to the relatively flat and low topography of the surrounding area, it is anticipated that this area will remain classified as a wetland.

Short-term effects as a result of construction activities are minimized by:

- Limiting areas of disturbance in uplands.
- Utilizing an erosion and sedimentation control plan.
- Inclusion of a water handling plan.
- Adherence to the time-of-year restriction for unconfined in stream work.
- Minimizing work area in the watercourse and wetlands.
- Restoration of temporarily disturbed areas with plantings and seeding.

Regulatory Impacts

To gain access to the structure to perform the proposed work, permanent access shoulders will be constructed within the shoulders of I-395. These constructed widened shoulders will allow heavy construction equipment and material required to conduct work, to access the existing and proposed culverts as well as minimize impacts to the adjacent wetland and watercourse. These proposed access areas will require limited clearing and grubbing, invasive species control, as well as some minor permanent impacts to wetlands. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction.

Construction access and water handling:

To minimize traffic impacts, the work zone on I-395 will be handled progressively from north to south and with temporary lane closures for 36-48 hours per stage. With the installation of each box culvert section, the roadway pavement will be removed, and the structure excavation initiated; the excavated area will then be backfilled and the road re-constructed. Off-peak temporary shoulder and lane closures will be used for equipment and construction personnel to enter and exit the access areas, as required.

The construction sequencing involves a pre-stage, six stages, and a final stage. The brook will flow under its present alignment through the existing culvert until Stage 6. During the pre-stage and stages 1-3, I-395 southbound lanes will be impacted. During Stages 3-5, I-395 northbound lanes will be impacted. The pre-stage involves the construction of the northern permanent access shoulder. A temporary cofferdam will restrict potential flows from entering the work area. Temporary earth retaining systems (TERS) will be utilized to install the pre-cast sections of the culvert. The cut-off wall, wingwalls, box culvert sections, and headwall will be constructed at the downstream outlet (north). In Stages 1 through 5, the excavation and installation of each box culvert section will be completed progressively from north to south. The roadway will be removed and then re-constructed in order to complete the work. Stage 6 includes the construction of the southern permanent access shoulder. A temporary water-handling-cofferdam and a temporary bypass extension pipe to the inlet of the existing pipe will be installed for the construction of the inlet cut-off wall, wingwalls, headwall and final box culvert sections. At the proposed outlet, a temporary water-handling-cofferdam will be installed for the channel regrading. Once the final portion of the proposed culvert is constructed, the channel will be regraded at the inlet and outlet and a minimum of one foot of natural streambed material will be placed along the invert of the proposed culvert and as the proposed channel bottom. The final step of stage 6 includes the removal of the temporary water handling facilities which will allow the stream to pass through the proposed culvert. In the final stage of construction, a temporary water-handling cofferdam will be constructed at the inlet and outlet of the existing culvert to restrict any potential flows. This will allow the existing culvert to be filled with controlled low strength material under dry conditions. The final slope grading will also occur during this stage. Once work is concluded and project area is stabilized, all temporary water-handling systems will be removed. As

required, dewatering of the work area will include pumping dewatered water to a temporary sedimentation basin located in an upland area. Any wetland temporarily impacted by the work shall be restored utilizing native plantings and a wetland seed mix. All disturbed areas will be restored at the completion of construction and temporary sedimentation and erosion controls will be removed upon permanent stabilization.

Culvert Replacement:

The proposed project involves abandoning in place a severely deteriorated culvert and realigning the existing stream through a new 5 foot wide by 5 foot high pre-cast concrete box culvert spanning a length of 144 feet. The culvert replacement and stream realignment will result in impacts to the existing conditions and wetland functions and values. The greatest concern for this replacement is altering of the existing flows and hydraulic conditions at the culvert. Hydraulic modeling analysis of the culvert was conducted and found that the 50-year water surface elevation will decrease by approximately 0.3 feet. The culvert replacement will not result in changes to the hydraulic conditions that will significantly impact flow velocities. The project meets the design criteria for the CTDOT Drainage Manual. This project also proposes to improve wildlife and fish access to the culvert by increasing the hydraulic opening, removing the perched culvert, and providing minimum 1 foot of natural streambed material within the structure.

Fish Passage:

The project includes feasible elements designed to minimize project impacts to fisheries resources while minimizing channel connectivity impacts from the proposed project. Any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. Current fish passage is considered low due to the inconsistent flows, the presence of swamp wetlands in the area, as well as the culvert being perched. The completed project should not have significant impacts, but will improve fish passage within the area. CTDEEP Inland Fisheries Division has confirmed that the project complies with their conditions. Fisheries design elements include:

- Regrading of natural streambed material at the inlet and outlet to grade the streambed to the new channel culvert invert elevation, ensuring that the outlet does not create a barrier to fish movement.
- The placement of minimum 1 foot of natural streambed material within the culvert bottom to create a more continuous habitat through the structure.
- The discontinuation of the deficient culvert.
- Adherence to the time-of-year restriction.
- The restoration of disturbed areas with plantings and seeding.

Proposed Impacts:

The replacement of Bridge No. 06797 results in 1,200 square feet (0.027 acres) of permanent wetland impacts. Permanent impacts are a result of the installation of the box culvert, and grading required within the wetland for the proposed stream alignment. Some grading impacts will also occur as a result of the construction of permanent access shoulders. The project results in 1,350 square feet (0.030 acres) of permanent watercourse impacts. This number accounts for the full closure of the existing bridge and new stream alignment as well as and the construction at the cut-off walls, and wingwalls. Though this is described as a permanent impact, the watercourse will remain, but will be redirected through the new, hydraulically adequate structure. Temporary impacts include the areas necessary for the water handling and access to the project culverts. Temporary impact to the wetlands is 2,100 square feet (0.048 acres) and

to the watercourse is 100 square feet (0.002 acres). Secondary watercourse impacts are also proposed where the channel at the outlet will be abandoned due to the new stream alignment. This results in 400 square feet (0.009 acres) of impact. The total wetland and watercourse impact is 5,150 square feet (0.118 acres). Impacts are described within the table on the following page:

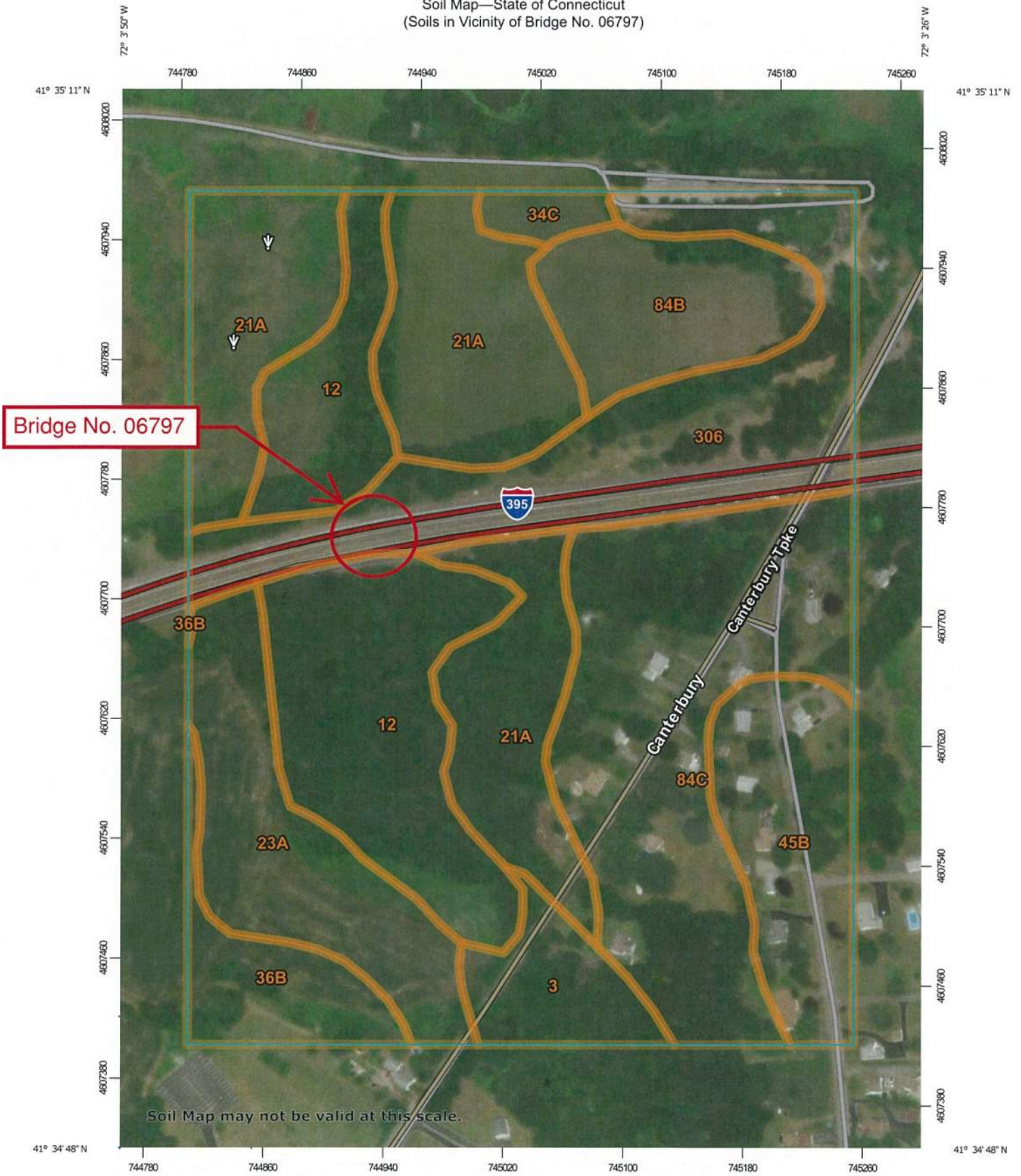
Bridge No. 06797 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	2,100 sqft (0.048 ac)	100 sqft (0.002 ac)	2,200 sqft (0.051 ac)
Permanent	1,200 sqft (0.027 ac)	1,350 sqft (0.030 ac)	2,550 sqft (0.059 ac)
Secondary	0 sqft (0.000 ac)	400 sqft (0.009 ac)	400 sqft (0.009 ac)
Total	3,300 sqft (0.076 ac)	1,850 sqft (0.042 ac)	5,150 sqft (0.118 ac)

Minimization and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed replacement box culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing a water handling plan for the continuous flow of the unnamed brook, placing 1 foot of natural streambed material throughout the culvert as well as at the proposed inlet and outlet to grade the streambed to the new invert elevation. The project also minimizes impacts by utilizing pre-cast structures to minimize the construction duration, installing cutoff walls, flared wingwalls, and a beveled opening at the inlet to improve stream flow. To address fish passage concerns, unconfined instream work shall be limited to June 1st to September 30th, inclusive, to avoid impacts to potential fish passage during construction.

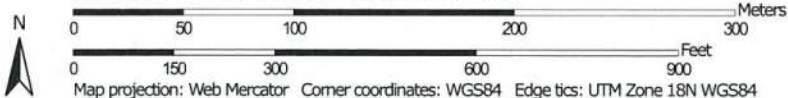
Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access shoulders at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. The watercourse will be disturbed in association with the proposed replacement box culvert and new watercourse alignment. The watercourse will remain and will flow through the new culvert following the completion of the project. Disturbed areas in the streambed will be restored with native natural channel bed material. Any wetlands impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
(Soils in Vicinity of Bridge No. 06797)










































Soil Map may not be valid at this scale.

Map Scale: 1:3,440 if printed on A portrait (8.5" x 11") sheet.



MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Area of Interest (AOI)	 Very Stony Spot
 Soil Map Unit Polygons	 Wet Spot
 Soil Map Unit Lines	 Other
 Soil Map Unit Points	 Special Line Features
 Special Point Features	
 Blowout	Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 14, 2011—Aug 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	2.2	3.5%
12	Raypol silt loam	9.9	15.8%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	12.9	20.5%
23A	Sudbury sandy loam, 0 to 5 percent slopes	5.6	8.9%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	0.7	1.1%
36B	Windsor loamy sand, 3 to 8 percent slopes	2.5	3.9%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	4.6	7.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	3.9	6.3%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	11.3	18.0%
306	Udorthents-Urban land complex	9.2	14.7%
Totals for Area of Interest		62.9	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06797 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat/pits Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5836 Long: -72.0619 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>10</u> =Total Cover		
Sapling/Shrub Stratum (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____ =Total Cover		
Herb Stratum (Plot size: <u>50 ft</u>)			
1. <u>Cichorium intybus</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
2. <u>Symplocarpus foetidus</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>
3. <u>Onoclea sensibilis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>30</u> =Total Cover		
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	_____ =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>15</u>	x 1 = <u>15</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>10</u>	x 3 = <u>30</u>
FACU species <u>5</u>	x 4 = <u>20</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>40</u> (A)	<u>85</u> (B)
Prevalence Index = B/A = <u>2.13</u>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06797 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u> 50 ft </u>)																				
1. <u><i>Acer rubrum</i></u>	<u> 10 </u>	<u> Yes </u>	<u> FAC </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 1 </u> (A) Total Number of Dominant Species Across All Strata: <u> 5 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 20.0% </u> (A/B) Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u> 0 </u></td> <td>x 1 = <u> 0 </u></td> </tr> <tr> <td>FACW species <u> 0 </u></td> <td>x 2 = <u> 0 </u></td> </tr> <tr> <td>FAC species <u> 10 </u></td> <td>x 3 = <u> 30 </u></td> </tr> <tr> <td>FACU species <u> 65 </u></td> <td>x 4 = <u> 260 </u></td> </tr> <tr> <td>UPL species <u> 5 </u></td> <td>x 5 = <u> 25 </u></td> </tr> <tr> <td>Column Totals: <u> 80 </u> (A)</td> <td><u> 315 </u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u> 3.94 </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> 0 </u>	x 1 = <u> 0 </u>	FACW species <u> 0 </u>	x 2 = <u> 0 </u>	FAC species <u> 10 </u>	x 3 = <u> 30 </u>	FACU species <u> 65 </u>	x 4 = <u> 260 </u>	UPL species <u> 5 </u>	x 5 = <u> 25 </u>	Column Totals: <u> 80 </u> (A)	<u> 315 </u> (B)	Prevalence Index = B/A = <u> 3.94 </u>	
Total % Cover of:	Multiply by:																			
OBL species <u> 0 </u>	x 1 = <u> 0 </u>																			
FACW species <u> 0 </u>	x 2 = <u> 0 </u>																			
FAC species <u> 10 </u>	x 3 = <u> 30 </u>																			
FACU species <u> 65 </u>	x 4 = <u> 260 </u>																			
UPL species <u> 5 </u>	x 5 = <u> 25 </u>																			
Column Totals: <u> 80 </u> (A)	<u> 315 </u> (B)																			
Prevalence Index = B/A = <u> 3.94 </u>																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
<u> 10 </u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u> 50 ft </u>)																				
1. <u><i>Rubus allegheniensis</i></u>	<u> 50 </u>	<u> Yes </u>	<u> FACU </u>	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
<u> 50 </u> =Total Cover																				
Herb Stratum (Plot size: <u> 50 ft </u>)																				
1. <u><i>Solidago canadensis</i></u>	<u> 10 </u>	<u> Yes </u>	<u> FACU </u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
<u> 10 </u> =Total Cover																				
Woody Vine Stratum (Plot size: <u> 50 ft </u>)																				
1. <u><i>Berberis thunbergii</i></u>	<u> 5 </u>	<u> Yes </u>	<u> FACU </u>																	
2. <u><i>Celastrus orbiculatus</i></u>	<u> 5 </u>	<u> Yes </u>	<u> UPL </u>																	
3. _____																				
4. _____																				
<u> 10 </u> =Total Cover																				

Remarks: (Include photo numbers here or on a separate sheet.)

Attachment E: Hydraulic and Drainage Report (Submitted on CD)

Attachment F: Project Area Photos



Aerial Photo of Bridge No. 06797, Bing Images



Upstream of inlet to Bridge No. 06797



Inlet of Bridge No. 06797



Outlet of Bridge No. 06797

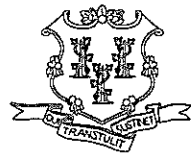


Outlet of Bridge No. 06797

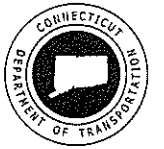


Downstream of Outlet,
Bridge No. 06797

Attachment G: Fisheries Approval



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

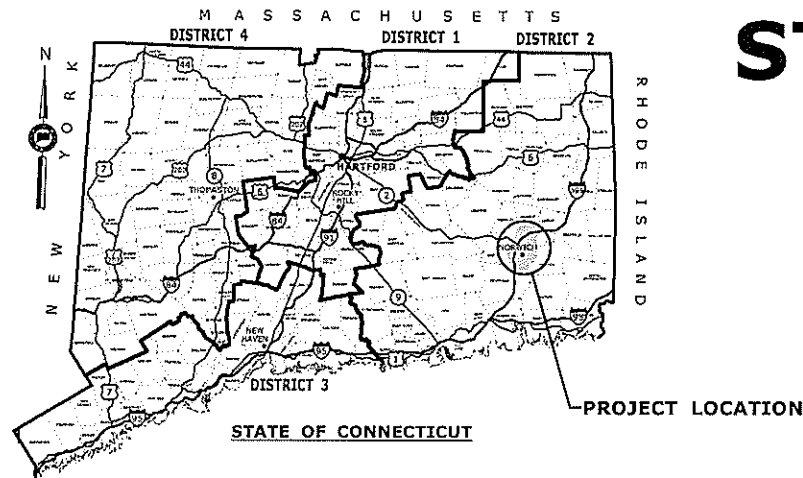
STATE PROJECT NO. 103-266

REPLACEMENT OF BRIDGE NO. 06797

I-395 OVER UNNAMED BROOK

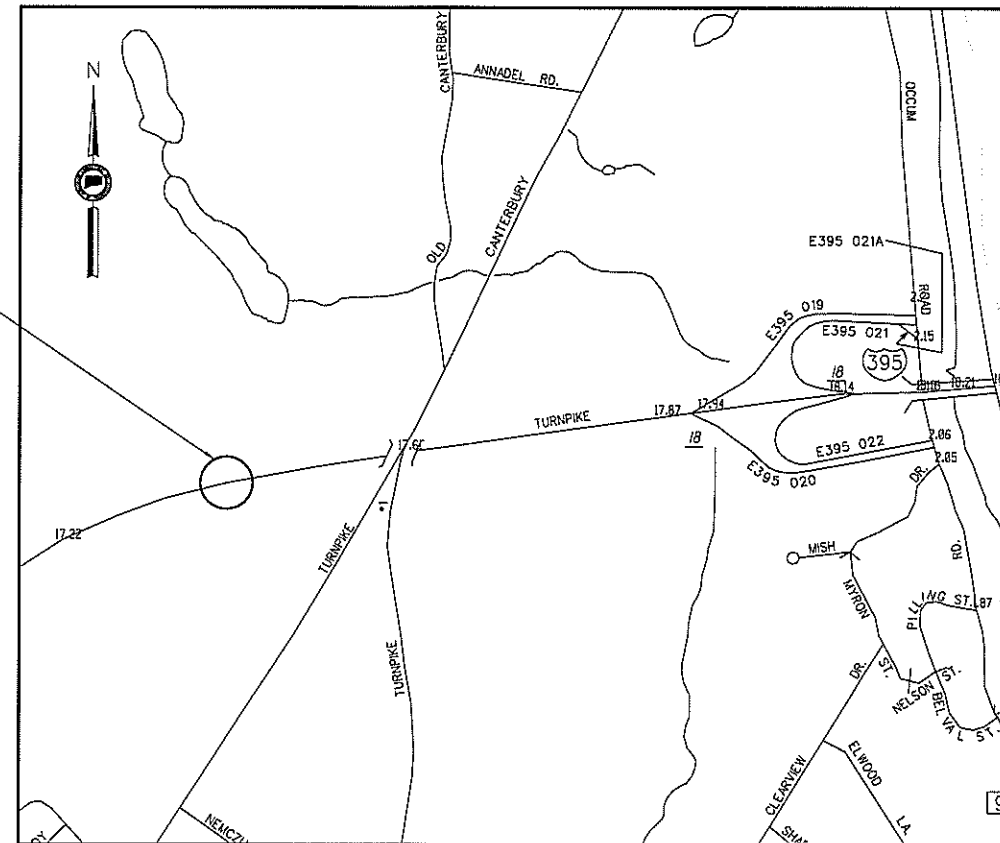
(SITE No. 3)

IN THE CITY OF NORWICH



Brian Murphy
Digitally signed by Brian Murphy
Date: 2019.07.30 13:47:21 -04'00'

BRIDGE NO. 06797
I-395 OVER
BYRON BROOK



LOCATION PLAN

SCALE: 1" = 500'

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06797 TITLE SHEET
PMT-02	BR. NO. 06797 GENERAL SITE PLAN
PMT-03	BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06797 ELEV. & SECTION PLAN
PMT-05	BR. NO. 06797 STAGING AND WATER HANDLING PLAN
PMT-06	BR. NO. 06797 UPSTREAM GRADING PLAN
PMT-07	BR. NO. 06797 DOWNSTREAM GRADING PLAN
PMT-08	BR. NO. 06797 PERMIT PLANTING PLAN

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

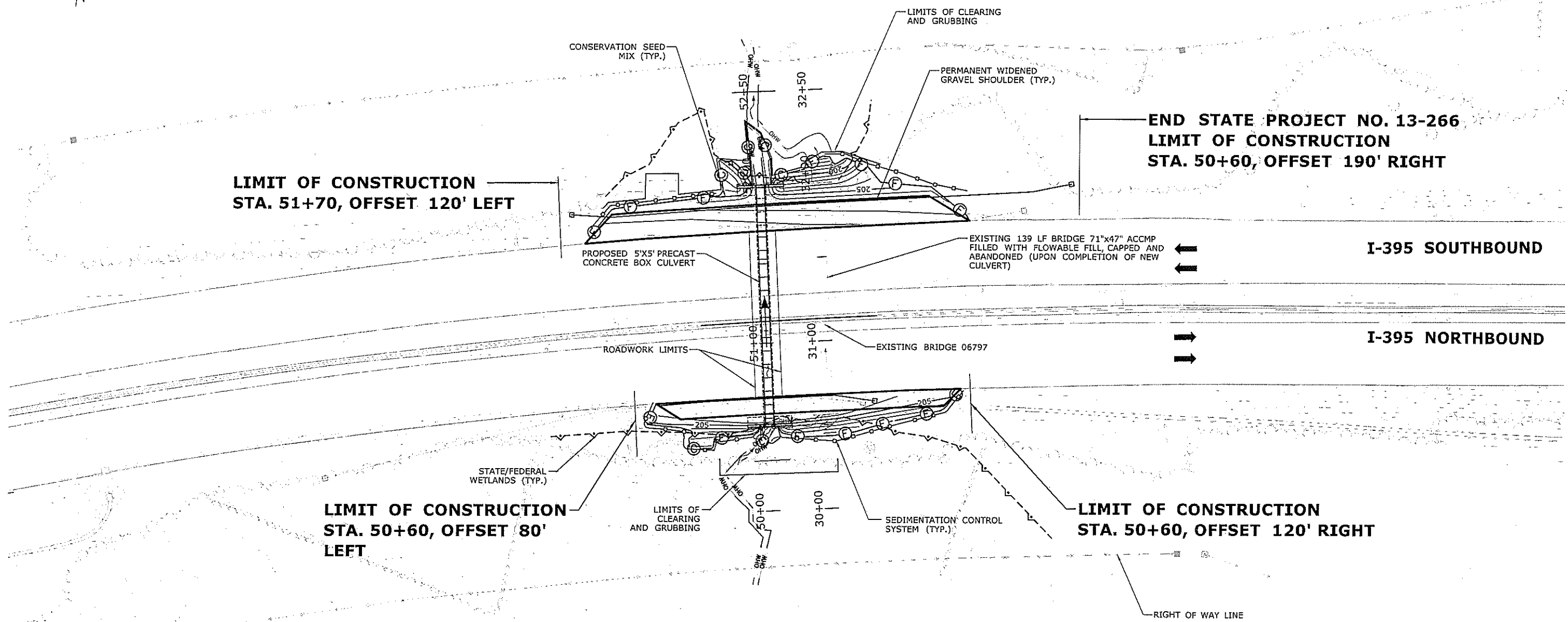
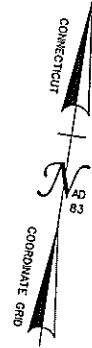
LOUIS BERGER US, Inc.
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Digitally signed by Robert Lin
Date: 2019.07.01 10:44:55-04'00'

ENVIRONMENTAL PERMIT PLANS

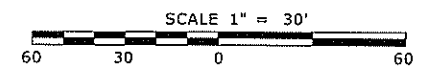
PLAN DATE 6/27/2019

<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p> <p>Plotted Date: 6/27/2019</p>	<p>DESIGNER/DRAFTER: JPM</p> <p>CHECKED BY: -</p> <p>SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p>LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>SIGNATURE/BLOCK:</p> <p>PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)</p>	<p>TOWN: NORWICH</p> <p>DRAWING TITLE: BR. NO. 06797 TITLE SHEET</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-01</p> <p>SHEET NO.</p>
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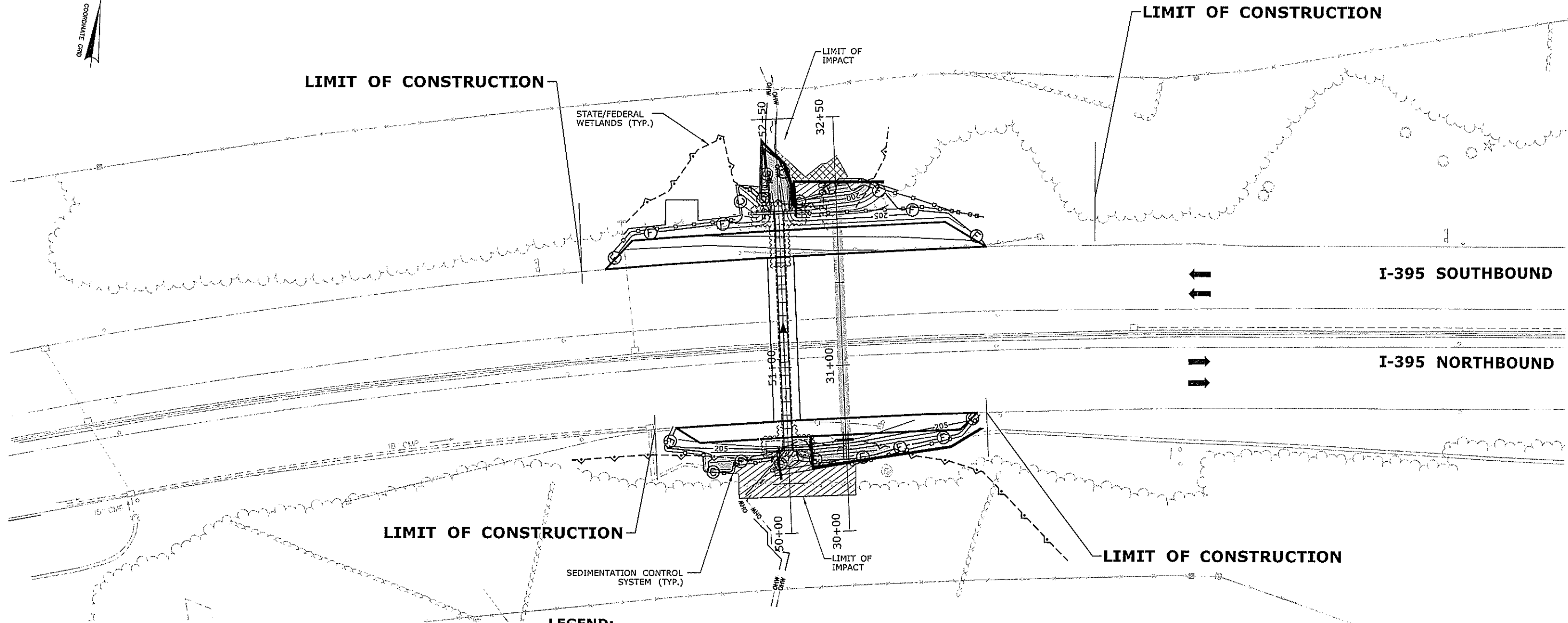
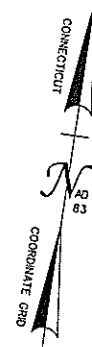
LEGEND:

- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

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REV. DATE REVISION DESCRIPTION SHEET NO.	Plotted Date: 6/28/2019	Filename: ...LHW_MSH_0103-0266_Br 06797_RDP_PLN-01.DGN	LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	DRAWING TITLE: BR. NO. 06797 GENERAL SITE PLAN			



NOTE:

CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

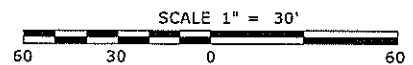
DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- SECONDARY IMPACT
- PERMANENT IMPACT
- OHW — ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

WETLAND IMPACT TABLE			
	WETLAND SITE NO.	WETLAND IMPACTS	TOTAL
PERMANENT IMPACTS	3	1200 S.F. (0.027 AC.)	2550 S.F. (0.059 AC.)
TEMPORARY IMPACTS	3	2100 S.F. (0.048 AC.)	2200 S.F. (0.051 AC.)
SECONDARY IMPACTS	3	400 S.F. (0.009 AC.)	400 S.F. (0.009 AC.)
TOTAL IMPACTS		3300 S.F. (0.076 AC.)	5150 S.F. (0.118 AC.)



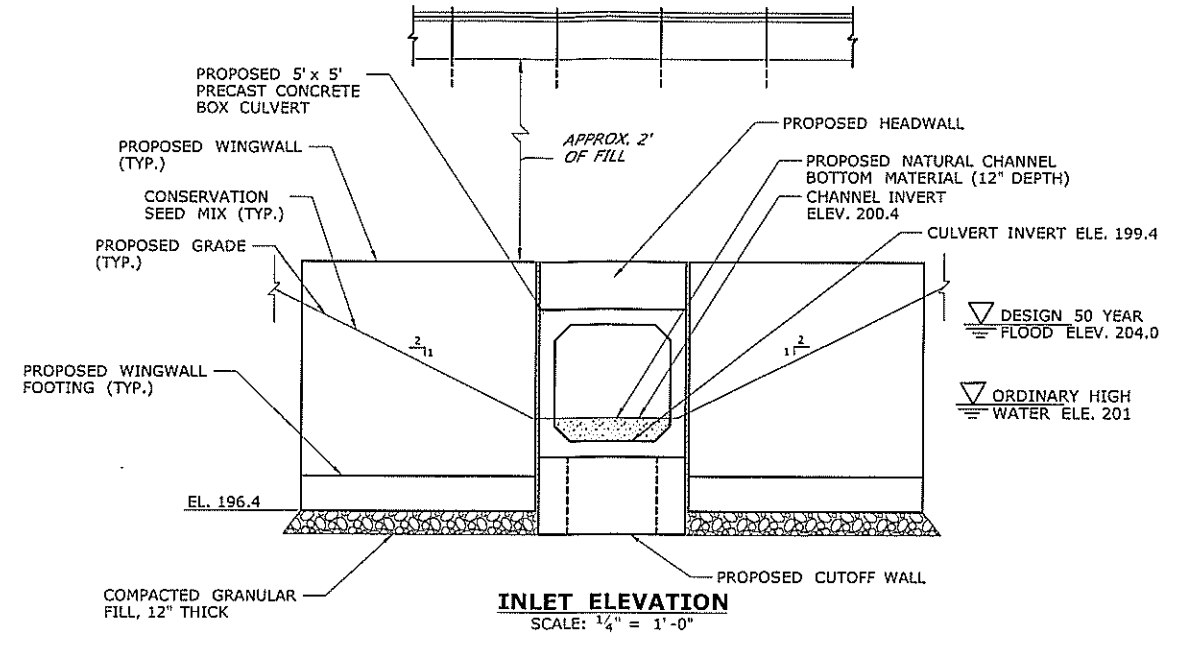
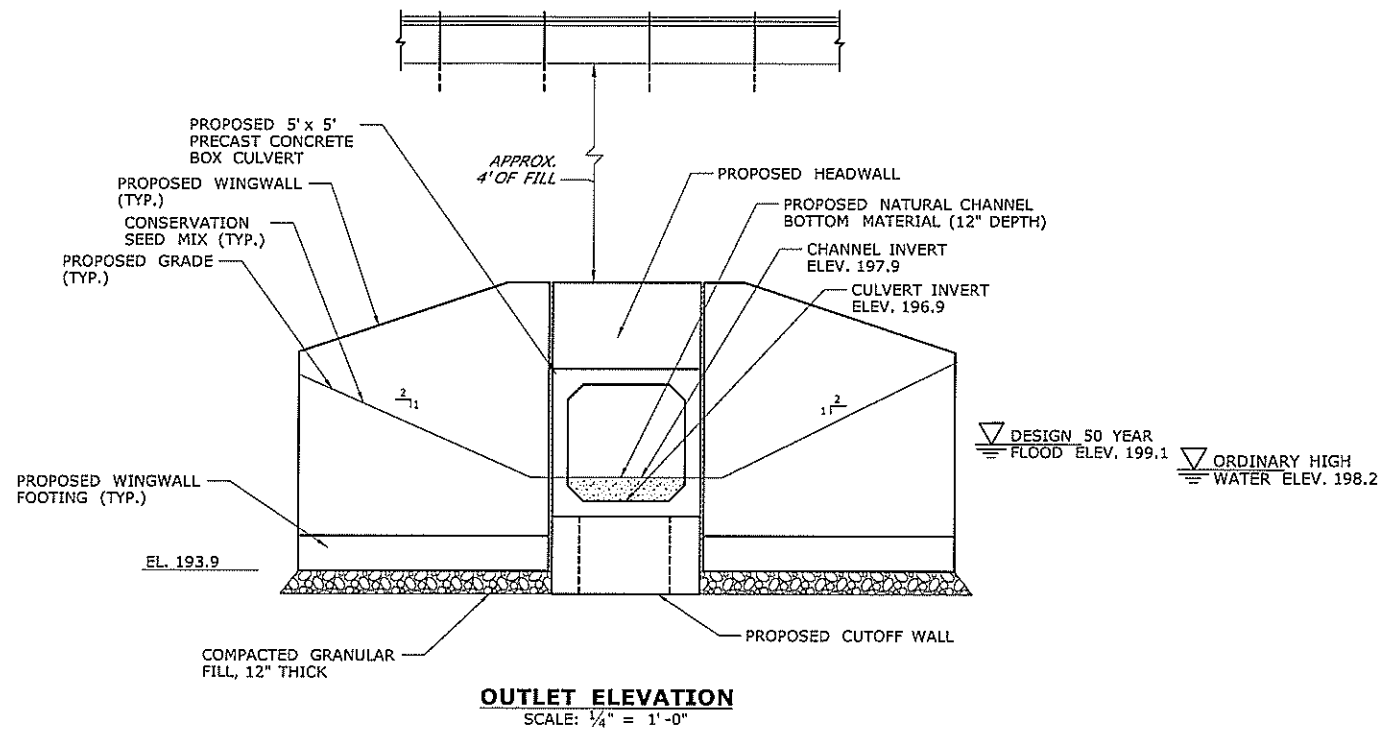
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

<p>DESIGNER/DRAFTER: MAM</p> <p>CHECKED BY: MJM</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>SIGNATURE/ BLOCK:</p> <p>LOUIS BERGER, US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)</p>	<p>TOWN: NORWICH</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-03</p> <p>SHEET NO.</p>
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REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

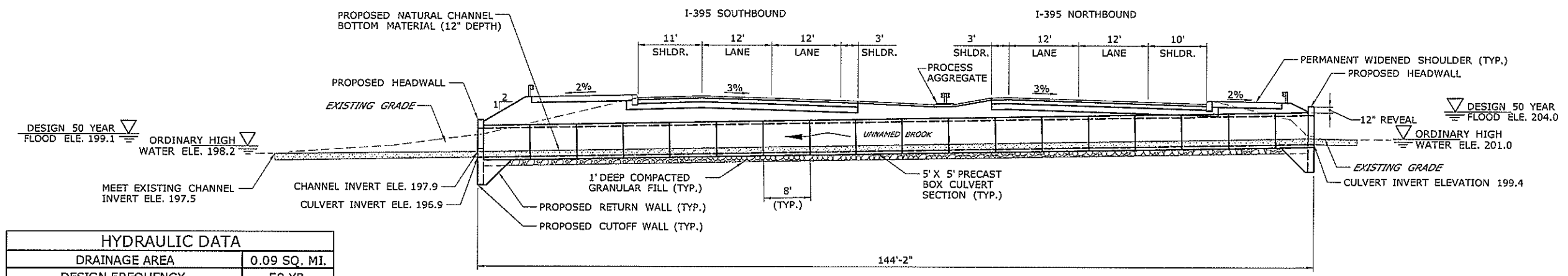
Plotted Date: 6/28/2019
Filename: ...\\HW_MSH_0103-0266_Br 06797_WSP_PLN-01.DGN.dgn



Brian Murphy
 Digitally signed by Brian Murphy
 Date: 2019.07.30 13:48:00 -04'00'

OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 20 S.F. / 144 FT. = 0.14 FT
 0.14 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):
 BFW = 4 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 4.8 FT.
 4.8 FT. < 5 FT. PROPOSED CULVERT SPAN

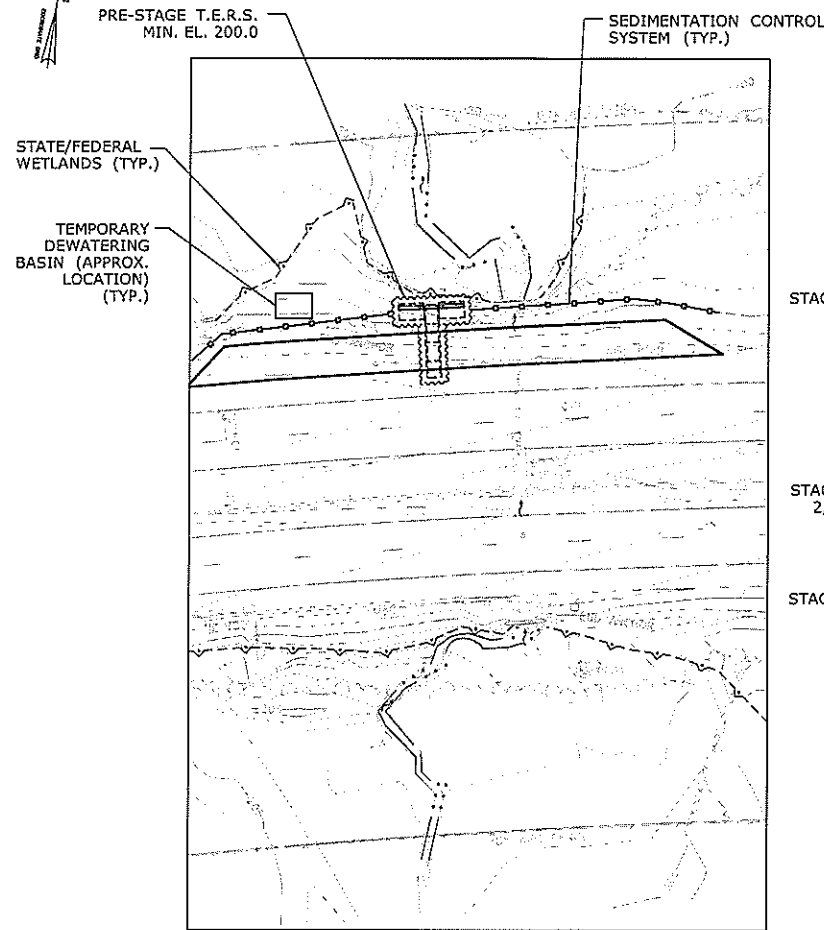


HYDRAULIC DATA	
DRAINAGE AREA	0.09 SQ. MI.
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	95 CFS
AVERAGE DAILY FLOW ELEVATION	201.0 FT.
UPSTREAM DESIGN SURFACE WATER ELEVATION	204.0 FT.
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	199.1 FT.

LONGITUDINAL SECTION
 SCALE: 1" = 10'

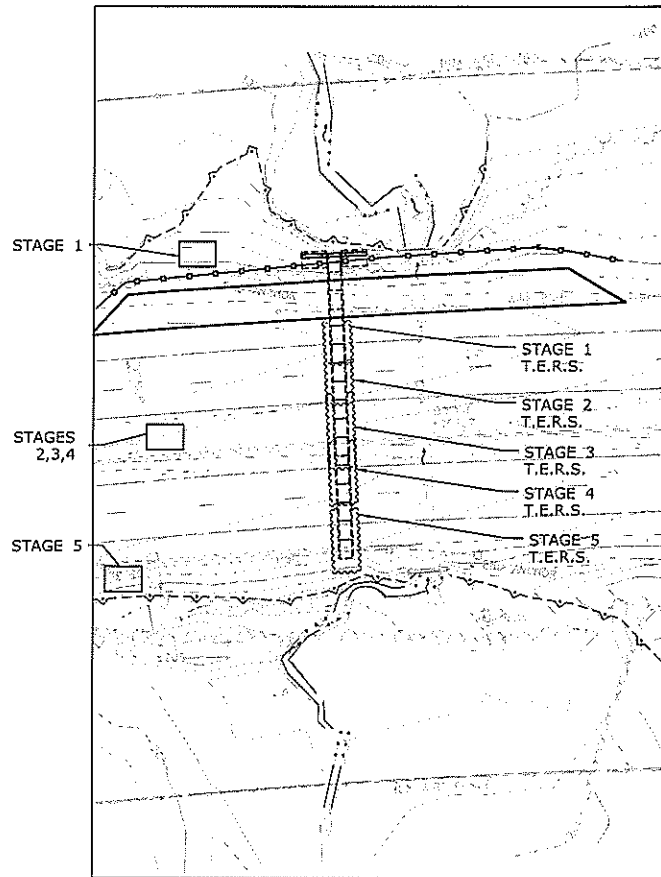
ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/28/2019

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	CHECKED BY: MJM				
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019	SCALE AS NOTED	Filename: ...\\SB_MSH_0103-0266_Br 06797_ES_PLAN.dgn	SHEET NO.		



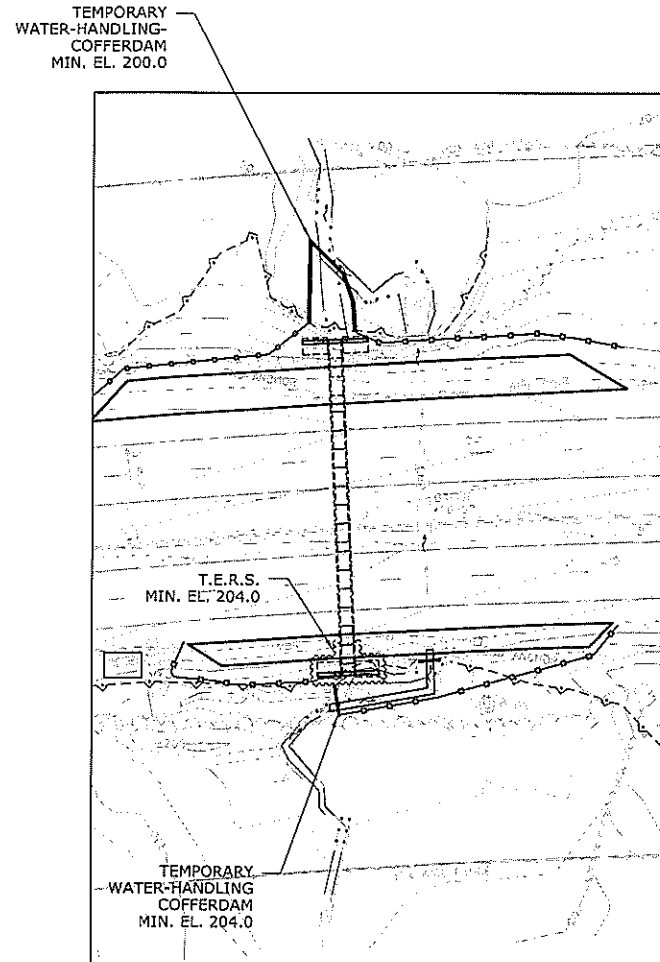
PRE-STAGE - SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.



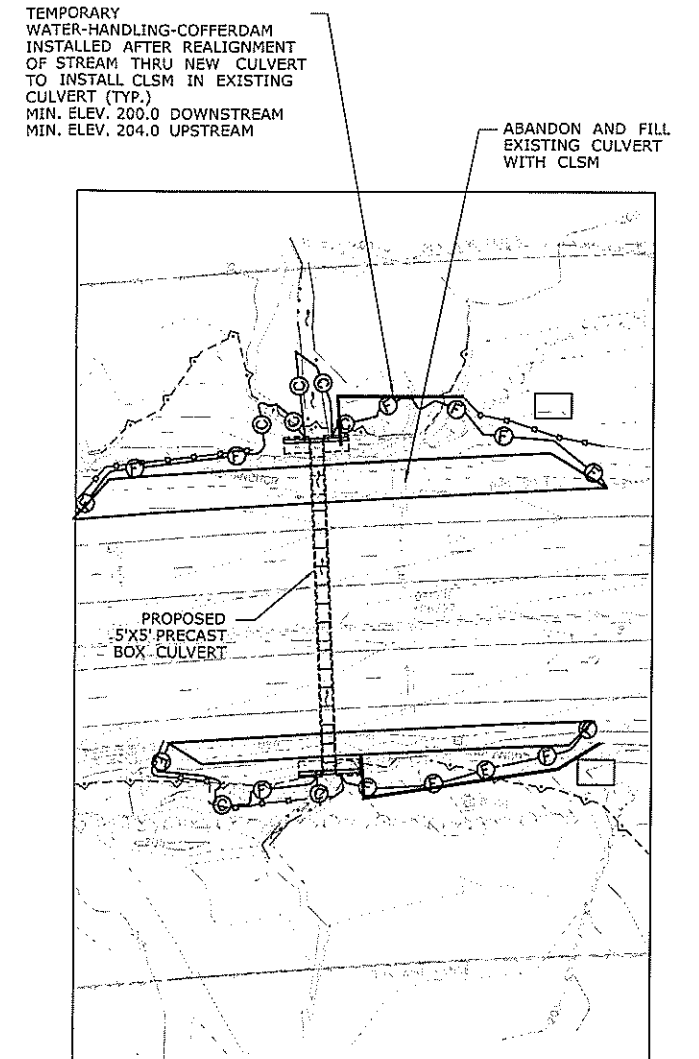
STAGE 1-5 SUGGESTED SEQUENCE

- REPEAT THESE STEPS FOR STAGES 1 THROUGH 5
1. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
 2. EXCAVATE AND INSTALL BOX CULVERT SECTIONS.
 3. REMOVE TEMPORARY EARTH RETAINING SYSTEM.



STAGE - 6 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. INSTALL TEMPORARY WATER HANDLING FACILITIES, INCLUDING WATER-HANDLING COFFERDAM, TEMPORARY 36" BYPASS PIPES.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.
7. REGRADE CHANNEL AT INLET AND OUTLET.
8. INSTALL 12" OF NATURAL STREAMBED MATERIAL ALONG THE INVERT OF THE CULVERT.
9. REMOVE TEMPORARY WATER HANDLING FACILITIES TO ALLOW STREAM THROUGH PROPOSED CULVERT.



FINAL STAGE - SUGGESTED SEQUENCE

1. INSTALL TEMPORARY WATER-HANDLING COFFERDAM
2. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM).
3. COMPLETE GRADING AS REQUIRED.
4. REMOVE TEMPORARY WATER-HANDLING COFFERDAM.
5. RESTORE TEMPORARILY DISTURBED AREAS AND INSTALL NATIVE PLANTS ACCORDING TO PMT-06.
6. REMOVE SEDIMENTATION AND EROSION CONTROLS UPON PERMANENT STABILIZATION.

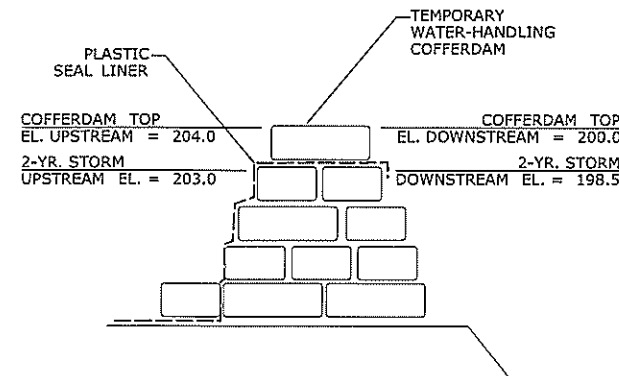
TEMPORARY HYDRAULIC DATA 06797	
AVERAGE DAILY FLOW	0.2 CFS
AVERAGE SPRING FLOW	0.3 CFS
2-YEAR FREQUENCY DISCHARGE	15 CFS
TEMPORARY DESIGN DISCHARGE	15 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	203.0 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	198.5 FT

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE EXISTING CULVERT AS SHOWN DURING CONSTRUCTION OF THE NEW STRUCTURE.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.



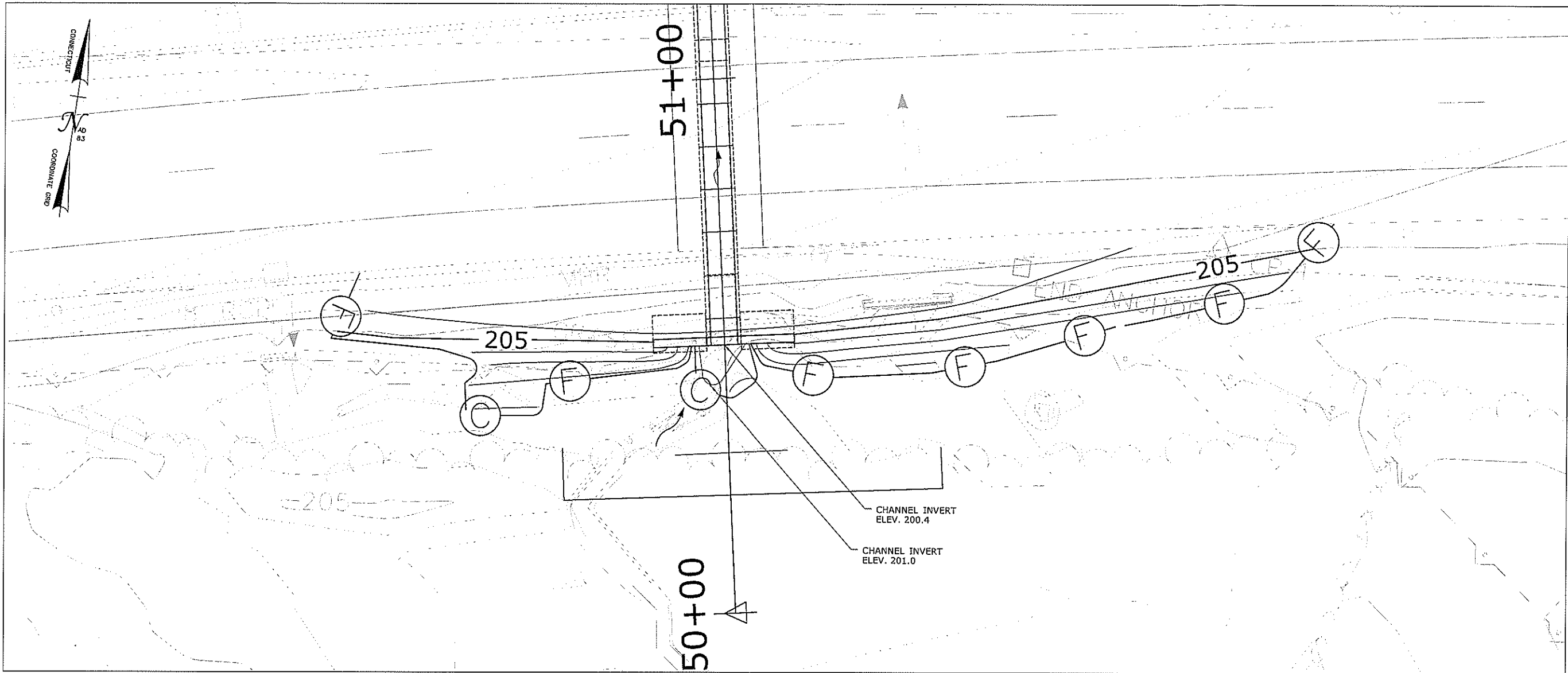
LEGEND:

- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- ○ ○ SEDIMENTATION CONTROL SYSTEM (SCS)

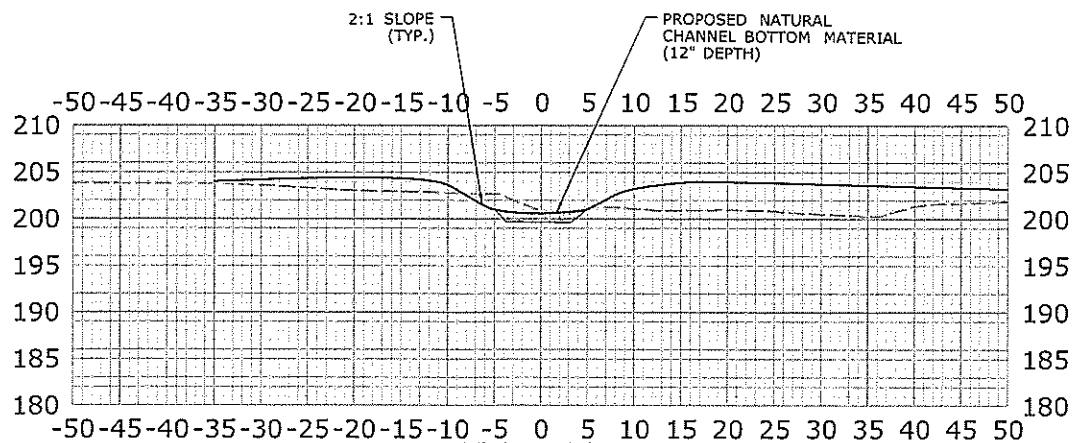
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

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REV.	DATE	REVISION DESCRIPTION	SHEET NO.



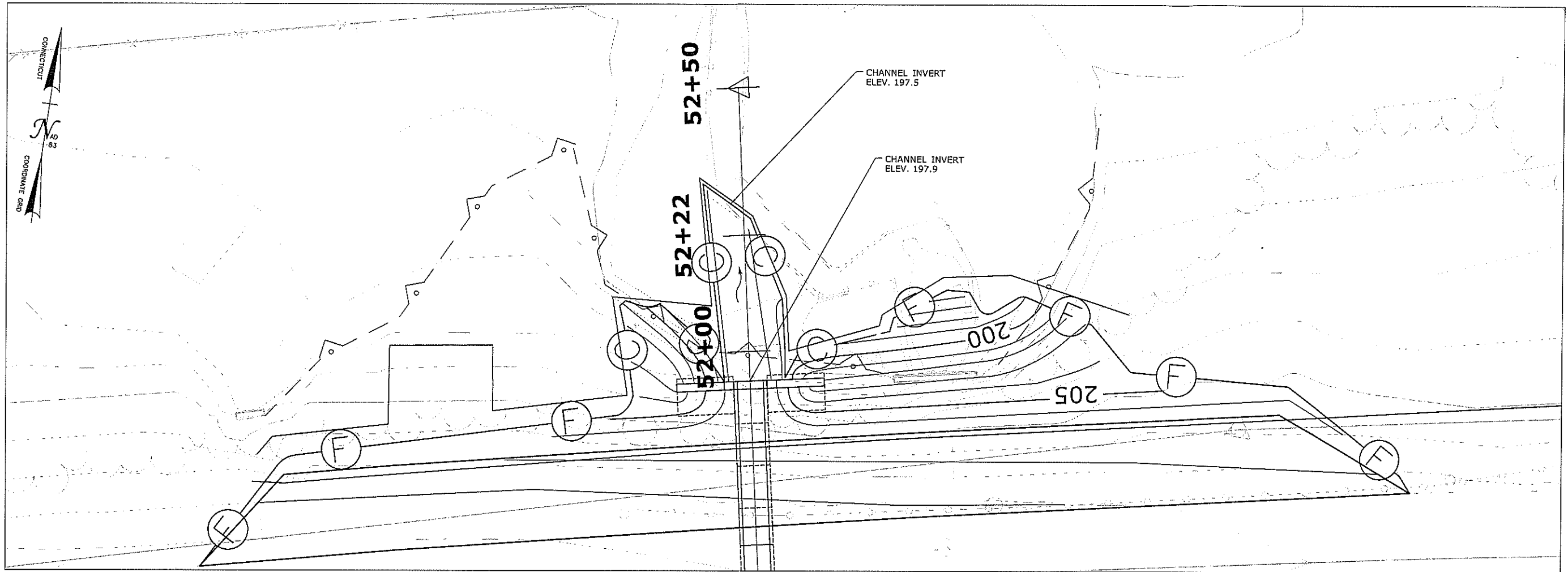
**BR. NO. 06797
UPSTREAM GRADING PLAN**



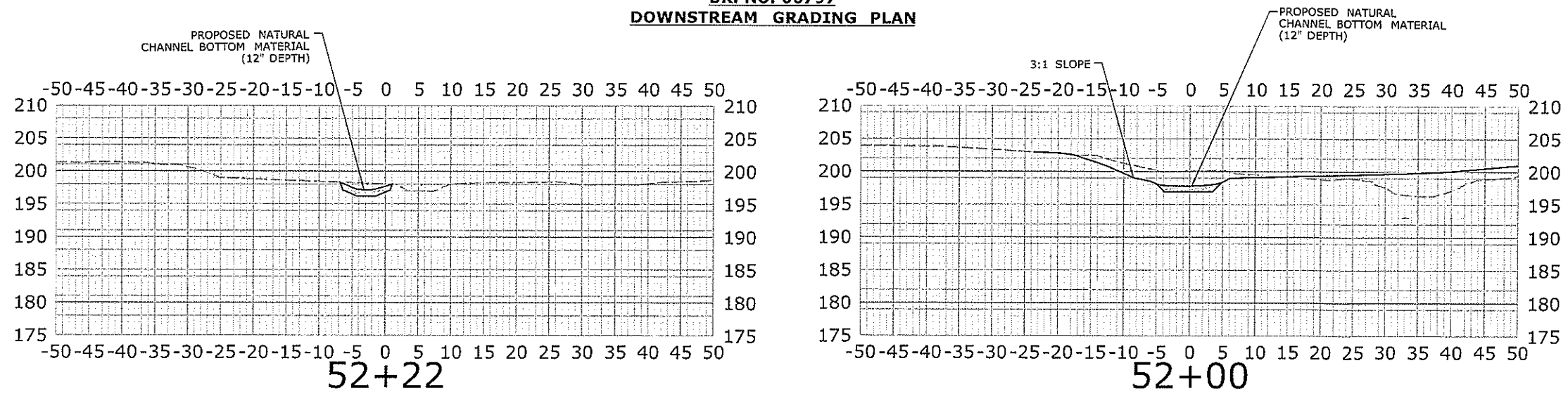
**50+50
(SECTION AT FACE OF HEADWALL)**

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

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REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019				

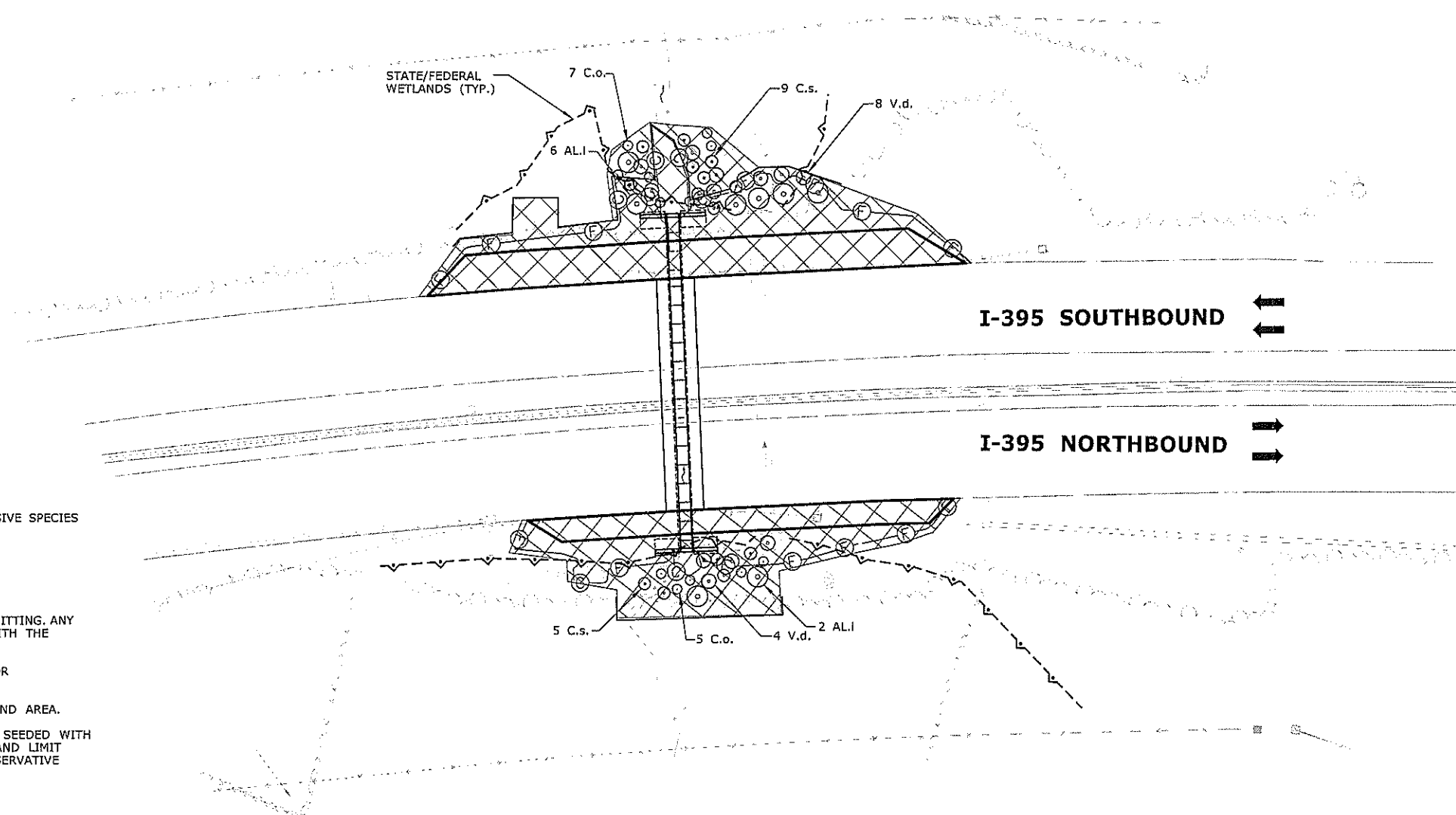
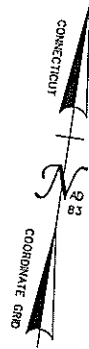


BR. NO. 06797
DOWNSTREAM GRADING PLAN



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

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REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019			



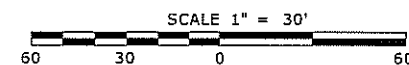
CONTROL AND REMOVAL OF INVASIVE SPECIES
(SEE NOTE 5)

NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.

PERMIT PLANT LIST

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	WETLAND INDICATOR
AL.I.	8	Speckled Alder	<i>Alnus incana</i>	18"-24" HT. B.B.	Field Located	FACW
C.s.	14	Red-Osier Dogwood	<i>Cornus sericea</i>	18"-24" HT. B.B.	Field Located	FACW
V.d.	12	Northern Arrowwood	<i>Viburnum dentatum</i>	18"-24" HT. B.B.	Field Located	FACW
C.o.	12	Common Buttonbush	<i>Cephalanthus occidentalis</i>	18"-24" HT. B.B.	Field Located	OBL



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 7/1/2019

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	CHECKED BY: MJM					
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 7/1/2019						

Attachment H: Interagency Regulatory Coordination Meeting Notes



DEEP / DOT REGULATORY COORDINATION Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. Bridge No. 06795-

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCOMP) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

**DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes**

2. Bridge No. 06796-

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. Bridge No. 06797-

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.

Attachment I: US Army Corps of Engineers Application



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

860-594-2931

July 31, 2019

Ms. Susan Lee
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Subject: State Project No. 103-266
Bridge No. 06797: Interstate 395 over Unnamed Brook
City of Norwich

Dear Ms. Lee,

Enclosed please find the Section 404 permit application for the General Permit 19 – Stream, River and Brook Crossings for your review and approval. An application for a 401 Water Quality Certification (via the Connecticut Addendum) was previously submitted to the Connecticut Department of Energy and Environmental Protection under a separate cover letter for processing. Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at 860-594-2157.

Very truly yours,

A handwritten signature in blue ink that reads "Kimberly C. Lesay".

Kimberly C. Lesay
Transportation Assistant Planning Director
Bureau of Policy and Planning

Attachments

cc: Nathan Margason – USEPA

bcc: Kimberly Lesay
Andrew H. Davis – Christopher W. Samorajczyk – Alexander T. Finch
Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin
Robert E. Obey – Eileen Ego (District 2 Construction)
Donald P. Wurst – Aaron J. Foster (CME)

U.S. Army Corps of Engineers (USACE)
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
 33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -
 OMB No. 0710-0003
 Expires: 01-08-2018*

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at . Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website:

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
--------------------	----------------------	------------------	------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - Connecticut Department of Transportation E-mail Address - kimberly.lesay@ct.gov	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- 2800 Berlin Turnpike City - Newington State - CT Zip - 06131 Country - USA	9. AGENT'S ADDRESS: Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax 860-594-2931 860-594-3028	10. AGENTS PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT

DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) Replacement of culvert 06797 carrying Unnamed Brook beneath I-395 located in Norwich	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Unnamed Brook	14. PROJECT STREET ADDRESS (if applicable) Address N/A. Culvert on Interstate 395
15. LOCATION OF PROJECT Latitude: °N 41°35'2.01" Longitude: °W 72° 3'42.76"	City - Norwich State- CT Zip-
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID Municipality Section - Township - Range -	

17. DIRECTIONS TO THE SITE

The project site is Interstate 395 over an Unnamed Brook in Norwich, CT. Directions from the US Army Corps of Engineers New England District Main Office include: MA-2A E to I-95 S. Then take exit 25 to I-90 W. Take exit 10 toward MA-12 N, and keep right at the fork to merge onto I-395 S. The culvert is approximately 0.18 miles south (traveling along I-395 northbound) of the Canterbury Turnpike over pass, and approximately 0.48 miles north (traveling North along I-395 northbound) of Lawler Lane.

18. Nature of Activity (Description of project, include all features)

See attached.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of the project is to address items identified in the December 2014 inspection. The inspection report noted corrosion, section loss, and perforations. ConnDOT recommends the culvert to be replaced. The structure is in serious condition and exhibits spotty areas of asphalt coating loss on corner and bottom plates with heavy laminar rust and minor section loss. There are perforations up to 8 inches by 2 inches. At inlet and outlet there is heavy laminar rust and section loss down to knife edge for approximately 10 feet long.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

The project requires impacts to the channel for the replacement culvert of the existing culvert. Work within the unnamed brook watercourse will include installation of new culvert and its cut-off walls, flared wingwalls, and beveled opening at the inlet. Salvaged natural streambed material will be placed at the culvert inlet and outlet. The new proposed box culvert will contain 1 foot of natural streambed material. The brook will be regraded and realigned to its original course before the construction of I-395. The existing culvert will be discontinued and filled with low strength material.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type
Amount in Cubic Yards

Type
Amount in Cubic Yards

Type
Amount in Cubic Yards

See attached.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See attached.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

The project limits disturbance to the channel of the Unnamed Brook at the existing bridge and at the inlet and outlet of the culvert. See attached for more information.

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- Anna S Alfiero, 43 Bayberry Hill Road

City - Norwich State - CT Zip - 06360

b. Address- Bryon Brook Country Club LLC, 649 Route 25A Suite 1, P.O. Box 702

City - Rockypoint State - NY Zip - 11780

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-


City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CTDEEP	PGP Addendum	Concurrently			
CTDEEP	Water Res. Const. GP	Post PCN Approval			

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.


8-1-2019

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ACOE Block 18: Nature of Activity

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06797 Culvert Carrying Unnamed Brook under Interstate 395
Norwich, Connecticut

Bridge No. 06797 is an asphalt-coated corrugated metal pipe (ACCMP) arch culvert with an approximate 71 inch span by 47 inch rise (72 inch by 44 inch per original construction plans) that conveys an unnamed brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over the unnamed brook under Project No. 327-01. The total structure length of the ACCMP is 139 feet long and the culvert is located under approximately 3 feet of fill. There are reinforced concrete headwalls and wingwalls at both ends of the culvert. This structure carries four lanes of traffic, including two northbound lanes and two southbound lanes, with a small grassy median located between both bounds. Metal beam guiderails extend along the sides of the roadway. The existing culvert is considered to be in serious condition. It is structurally deficient due to the heavy laminar rust and minor section losses, and perforation to the pipe, which requires rehabilitation. The existing concrete headwalls, cut-off walls, and wingwalls also exhibit areas with deterioration. The existing ACCMP structure results in approximately 1.7 feet of backwater at the approach cross-section and is hydraulically inadequate due to insufficient freeboard.

The unnamed brook has a drainage area of 0.09 square mile. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The unnamed brook at Bridge No. 06797 is not included in the FEMA New London County Flood Insurance Study. This culvert replacement 35 feet to the west of the existing structure is part of State Project No. 103-266 and in conjunction with Bridge Nos. 06795 and 06796, also located along I-395.

The project proposes a replacement box culvert 35 feet to the west of the existing pipe arched culvert. The pre-cast concrete box culvert will be 5 feet wide by 5 feet high with a total length of 144 feet. The structure will be installed under both bounds of I-395. This replacement requires the realignment of the unnamed brook. U-Type concrete wingwalls will be constructed at both ends of the culvert to improve the flow of the newly aligned brook. Concrete cut-off and return walls will be installed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the box, reducing headwater. Once the new culvert is constructed, the existing culvert will be taken out of service and filled with controlled low strength material. Natural streambed material will be installed at the inlet and outlet to grade the streambed to the new invert elevation. A minimum of one foot of natural streambed material will also be employed along the culvert invert. The new structure will be hydraulically adequate. The proposed water surface elevations are not expected to impact any existing structures on properties adjacent to the project site. The slight decrease in water surface elevation at the culvert inlet will not have any adverse impacts. In the hydraulically modeled conditions for a 50-year storm, the freeboard is approximately 1.2 feet. The surrounding project area is relatively flat. It is anticipated that the wetland will remain within the existing limits, secondary impacts are not anticipated. The project is scheduled to be constructed in Spring of 2020 and is anticipated to be completed in one construction season.

Construction Sequencing:

The construction sequencing involves a pre-stage, six stages, and a final stage. The brook will flow under its present alignment through the existing culvert until Stage 6. During the pre-stage and stages 1-3, I-395 southbound lanes will be impacted. During Stages 3-5, I-395 northbound lanes will be impacted.

The pre-stage involves the construction of the northern permanent access shoulder. A temporary cofferdam will restrict potential flows from entering the work area. Temporary earth retaining systems (TERS) will be utilized to install the pre-cast sections of the culvert. The cut-off wall, wingwalls, box culvert sections, and headwall will be constructed at the downstream outlet (north). In Stages 1 through 5, the excavation and installation of each box culvert section will be completed progressively from north to south. The roadway will be removed and then re-constructed in order to complete the work. Stage 6 work includes the construction of the southern permanent access shoulder. A temporary water-handling-cofferdam and a temporary bypass extension pipe to the inlet of the existing pipe will be installed for the construction of the inlet cut-off wall, wingwalls, headwall and final box culvert sections. At the proposed outlet, a temporary water-handling-cofferdam will be installed for the channel regrading. Once the final portion of the proposed culvert is constructed, the channel will be regraded at the inlet and outlet and a minimum of one foot of natural streambed material will be placed along the invert of the proposed culvert. The final step of stage 6 includes the removal of the temporary water handling facilities which will allow the stream to pass through the proposed culvert. In the final stage of construction, a temporary water-handling cofferdam will be constructed at the inlet and outlet of the existing culvert to restrict any potential flows. This will allow the existing culvert to be filled with controlled low strength material under dry conditions. The final slope grading will also occur during this stage. Once work is concluded and project area is stabilized, all temporary water-handling systems will be removed. As required, dewatering of the work area will include pumping dewatered groundwater to a temporary sedimentation basin located in an upland area. Any wetland temporarily impacted by the work shall be restored utilizing native plantings and a wetland seed mix. All disturbed areas will be restored at the completion of construction and temporary sedimentation and erosion controls will be removed upon permanent stabilization.

Additional permits being sought includes a State of Connecticut Addendum to the Army Corps of Engineers General Permit and CTDEEP General Permit for Water Resources Construction Activities.

ACOE Block 21: Types of Material Being Discharged and the Amount of Each Type in Cubic Yards

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06797 Culvert Carrying Unnamed Brook under Interstate 395
Norwich, Connecticut

Material	Volume (Cubic Yards)	Comment
Embankment Fill	60 CY	For the construction of the access shoulders of I-395.
Streambed Material	10 CY	To grade the streambed to the new culvert invert elevation at the inlet and outlet.
Granular Fill	5 CY	Placed below the culvert cutoff walls located within wetlands.
Concrete End Treatment	15 CY	For the construction of the headwalls, wingwalls, and cutoff walls.
Controlled Low Strength Material	105 CY	To be filled within in the existing culvert.

ACOE Block 22: Surface Area in Acres of Wetlands or Other Waters Filled

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
 Rehabilitation of Bridge 06797 Carrying Unnamed Brook under Interstate 395
 Norwich, Connecticut

The replacement of Bridge No. 06797 results in 1,200 square feet (0.027 acres) of permanent wetland impacts. Permanent impacts are a result of the installation of the box culvert, and grading required within the wetland for the proposed stream alignment. Some grading impacts will also occur as a result of the construction of permanent access shoulders. The project results in 1,350 square feet (0.030 acres) of permanent watercourse impacts. This number accounts for the full closure of the existing bridge and new stream alignment as well as and the construction at the cut-off walls, and wingwalls. Though this is described as a permanent impact, the watercourse will remain, but will be redirected through the new, hydraulically adequate structure. Temporary impacts include the areas necessary for the water handling and access to the project culverts. Temporary impact to the wetlands is 2,100 square feet (0.048 acres) and to the watercourse is 100 square feet (0.002 acres). Secondary watercourse impacts are also proposed where the channel at the outlet will be abandoned due to the new stream alignment. This results in 400 square feet (0.009 acres) of impact. The total wetland and watercourse impact is 5,150 square feet (0.118 acres). Impacts are described within the table below:

Bridge No. 06797 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	2,100 sqft (0.048 ac)	100 sqft (0.002 ac)	2,200 sqft (0.051 ac)
Permanent	1,200 sqft (0.027 ac)	1,350 sqft (0.030 ac)	2,550 sqft (0.059 ac)
Secondary	0 sqft (0.000 ac)	400 sqft (0.009 ac)	400 sqft (0.009 ac)
Total	3,300 sqft (0.076 ac)	1,850 sqft (0.042 ac)	5,150 sqft (0.118 ac)

ACOE Block 23: Description of Avoidance, Minimization, and Compensation

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06797 Culvert Carrying Unnamed Brook under Interstate 395
Norwich, Connecticut

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed replacement box culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing a water handling plan for the continuous flow of the unnamed brook, placing 1 foot of natural streambed material throughout the culvert as well as at the proposed inlet and outlet to grade the streambed to the new invert elevation. The project also minimizes impacts by utilizing pre-cast structures to minimize the construction duration, installing cutoff walls, flared wingwalls, and a beveled opening at the inlet to improve stream flow. To address fish passage concerns, unconfined instream work shall be limited to June 1st to September 30th, inclusive, to avoid impacts to potential fish passage during construction.

Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access shoulders at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. The watercourse will be disturbed in association with the proposed replacement box culvert and new watercourse alignment. The watercourse will remain and will flow through the new culvert following the completion of the project. Disturbed areas in the streambed will be restored with native natural channel bed material. Any wetlands impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Attachments

Attachment A: Location Maps

- o USGS Map
- o Aerial Map

Attachment B: Site Permit Plans

Attachment C: Site Photos

Attachment D: Environmental Report, NRCS Soil Map and Wetland Delineation Datasheets

Attachment E: Northern Long-Eared Bat Consultation

Attachment F: Fisheries Sign-off

Attachment G: State Historic Preservation Office (SHPO) Exemption

Attachment H: Tribal Historic Preservation Office (THPO) Exemption

Attachment I: Interagency Coordination Meeting Notes

Attachment A

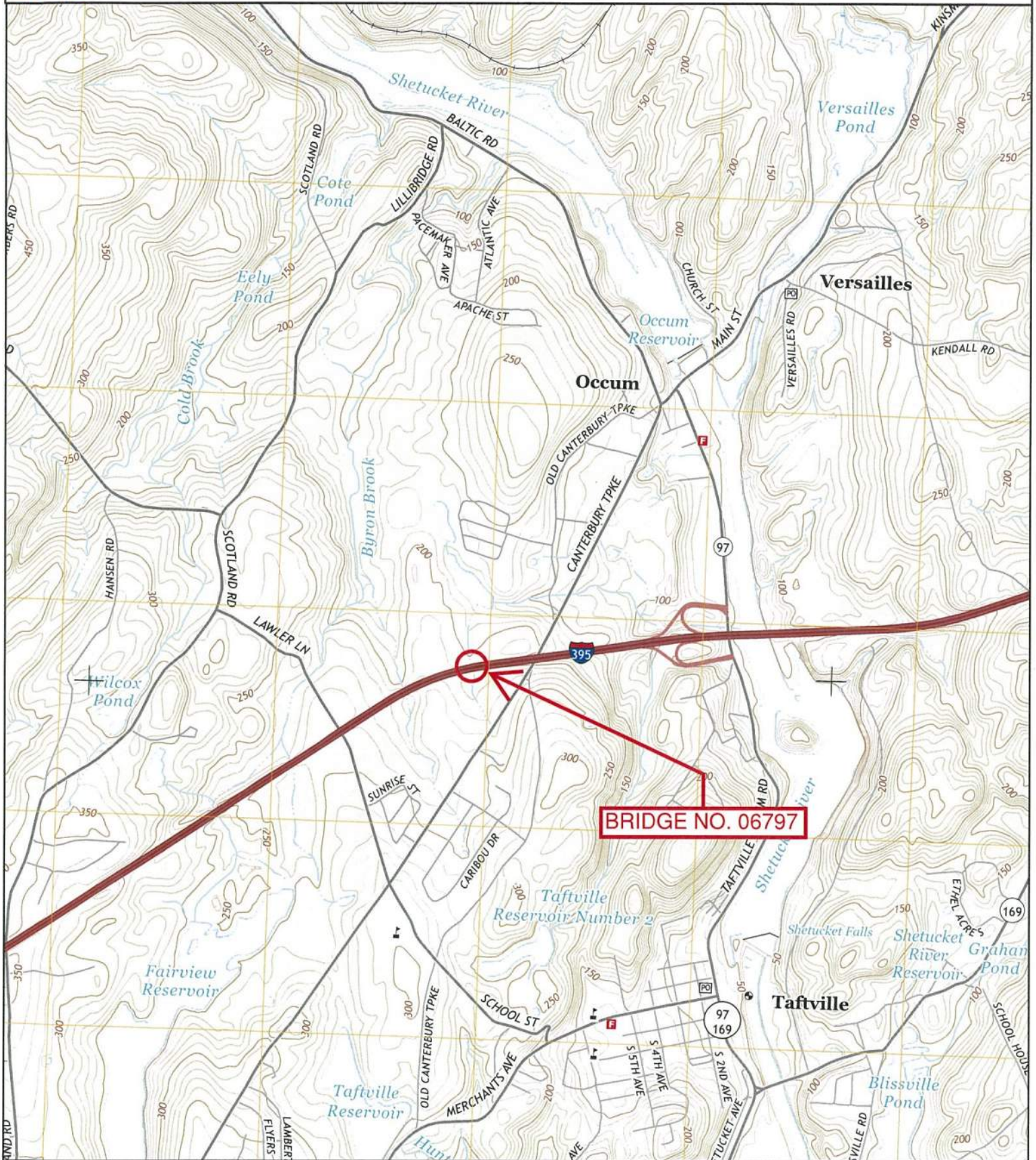
Location Maps

- USGS Map
- Aerial Map

USGS QUADRANGLE MAP

BRIDGE NO. 06797 IN NORWICH, CT

INTERSTATE 395 OVER UNNAMED BROOK



USGS MAP #72
NORWICH



Created: 2019

1 INCH = 2,000 FEET



DETAILED AERIAL MAP
 BRIDGE NO. 06797 IN NORWICH, CT
 INTERSTATE 395 OVER UNNAMED BROOK



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CTECO AERIAL
 MAP
 NORWICH,
 CONNECTICUT


 Created: 2019

1 INCH = 500 FEET



Attachment B
Site Plans



CONNECTICUT DEPARTMENT OF TRANSPORTATION



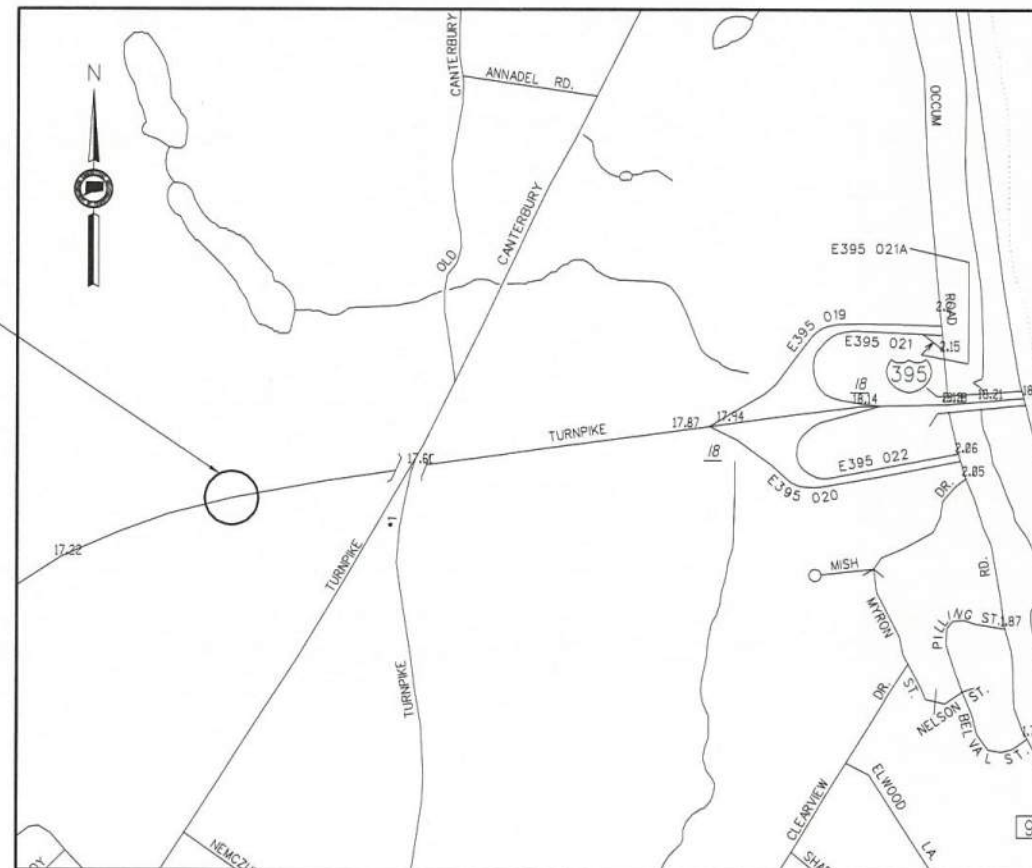
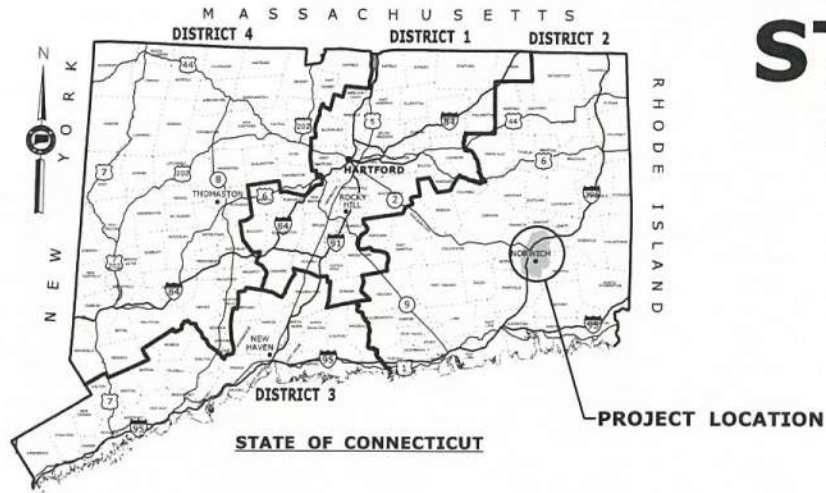
ENVIRONMENTAL PERMIT PLANS

STATE PROJECT NO. 103-266

REPLACEMENT OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK

(SITE No. 3)

IN THE CITY OF NORWICH



LOCATION PLAN

SCALE: 1" = 500'

BRIDGE NO. 06797
I-395 OVER
BYRON BROOK

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06797 TITLE SHEET
PMT-02	BR. NO. 06797 GENERAL SITE PLAN
PMT-03	BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06797 ELEV. & SECTION PLAN
PMT-05	BR. NO. 06797 STAGING AND WATER HANDLING PLAN
PMT-06	BR. NO. 06797 UPSTREAM GRADING PLAN
PMT-07	BR. NO. 06797 DOWNSTREAM GRADING PLAN
PMT-08	BR. NO. 06797 PERMIT PLANTING PLAN

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

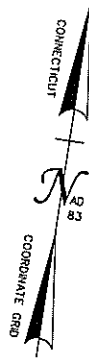
LOUIS BERGER US, Inc.
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Digitally signed
by Robert Lin
Date:
2019.07.01
10:44:55-04'00'

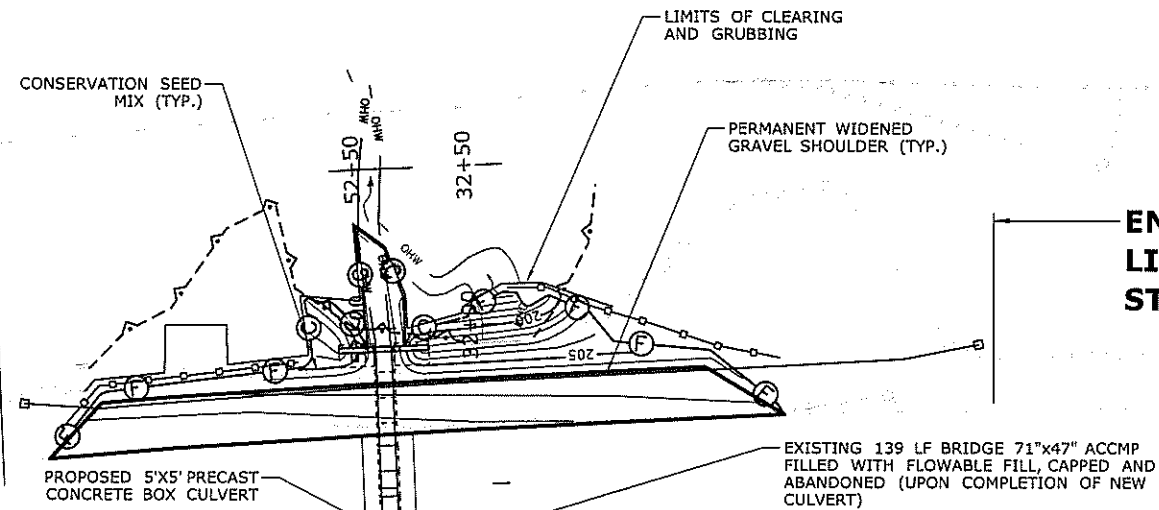
ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/27/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED. Plotted Date: 6/27/2019	DESIGNER/DRAFTER: JPM CHECKED BY: - SCALE AS NOTED	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...\\HV MSH 0103 0266 06797 TSH.dgn	SIGNATURE/BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06797 TITLE SHEET	PROJECT NO. 103-266 DRAWING NO. PMT-01 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO.						



**LIMIT OF CONSTRUCTION
STA. 51+70, OFFSET 120' LEFT**



**END STATE PROJECT NO. 13-266
LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 190' RIGHT**

I-395 SOUTHBOUND

I-395 NORTHBOUND

**LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 80'
LEFT**

STATE/FEDERAL
WETLANDS (TYP.)

LIMITS OF
CLEARING
AND
GRUBBING

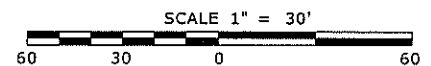
SEDIMENTATION CONTROL
SYSTEM (TYP.)

**LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 120' RIGHT**

RIGHT OF WAY LINE

LEGEND:

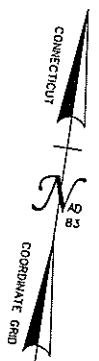
- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS

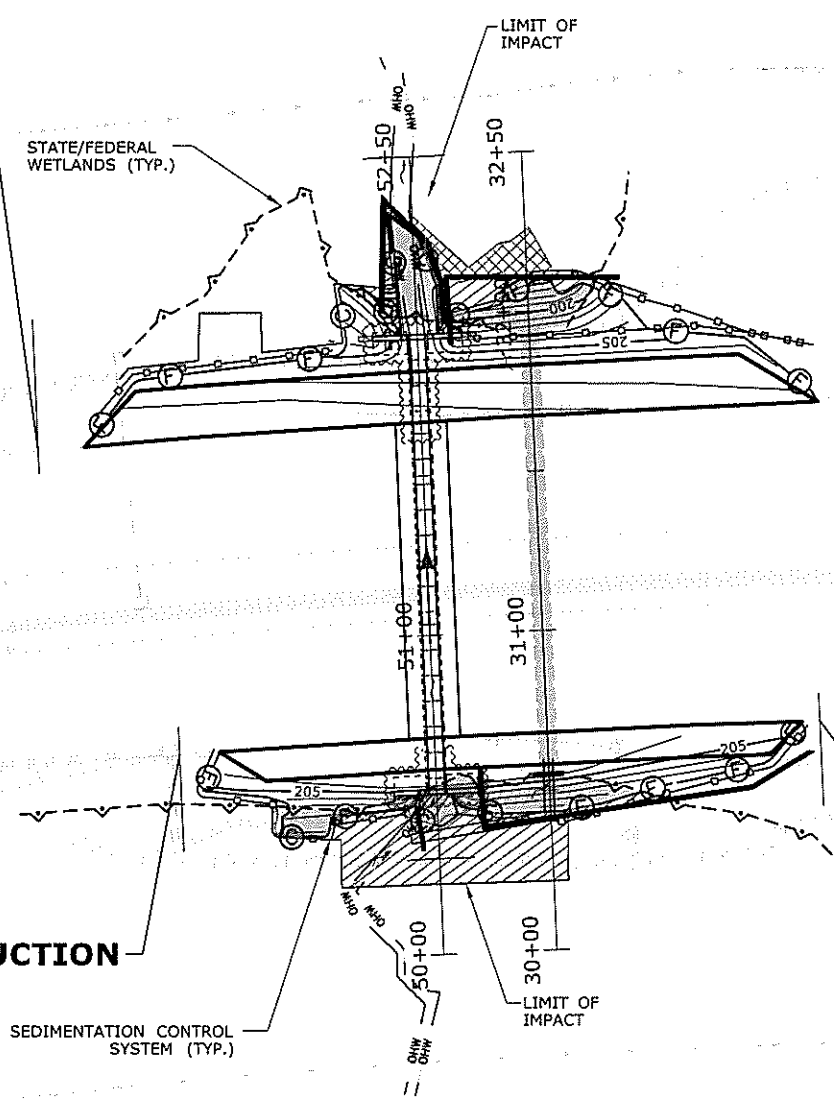
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.			DESIGNER/DRAFTER: MAM CHECKED BY: MJM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-02 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019	Filename: ...HW_MSH_0103-0266_Br_06797_RDP_PLN-01.DGN.dgn			



LIMIT OF CONSTRUCTION

LIMIT OF CONSTRUCTION



I-395 SOUTHBOUND

I-395 NORTHBOUND

LIMIT OF CONSTRUCTION

LIMIT OF CONSTRUCTION

NOTE:

CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

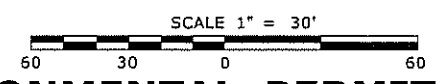
DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

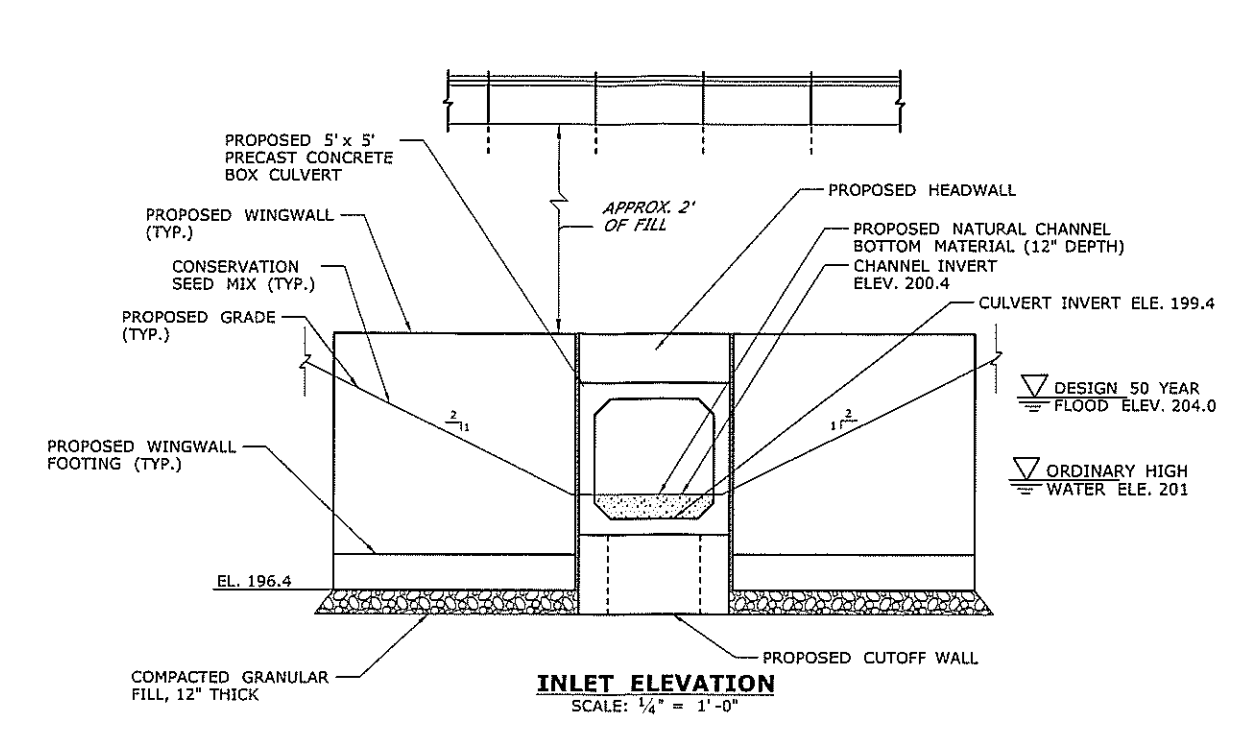
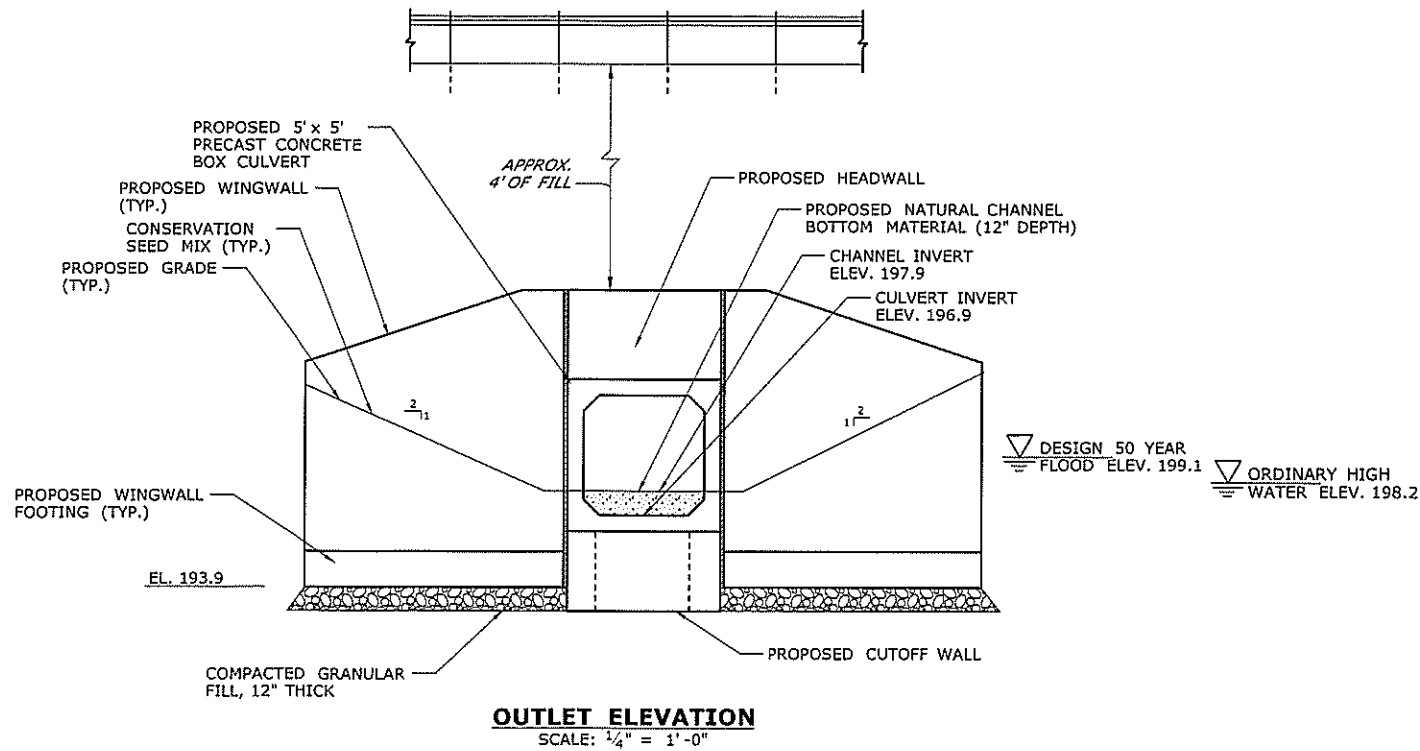
- TEMPORARY IMPACT
- SECONDARY IMPACT
- PERMANENT IMPACT
- OHW — ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

WETLAND IMPACT TABLE				
	WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS	3	1200 S.F. (0.027 AC.)	1350 S.F. (0.030 AC.)	2550 S.F. (0.059 AC.)
TEMPORARY IMPACTS	3	2100 S.F. (0.048 AC.)	100 S.F. (0.002 AC.)	2200 S.F. (0.051 AC.)
SECONDARY IMPACTS	3		400 S.F. (0.009 AC.)	400 S.F. (0.009 AC.)
TOTAL IMPACTS		3300 S.F. (0.076 AC.)	1850 S.F. (0.042 AC.)	5150 S.F. (0.118 AC.)



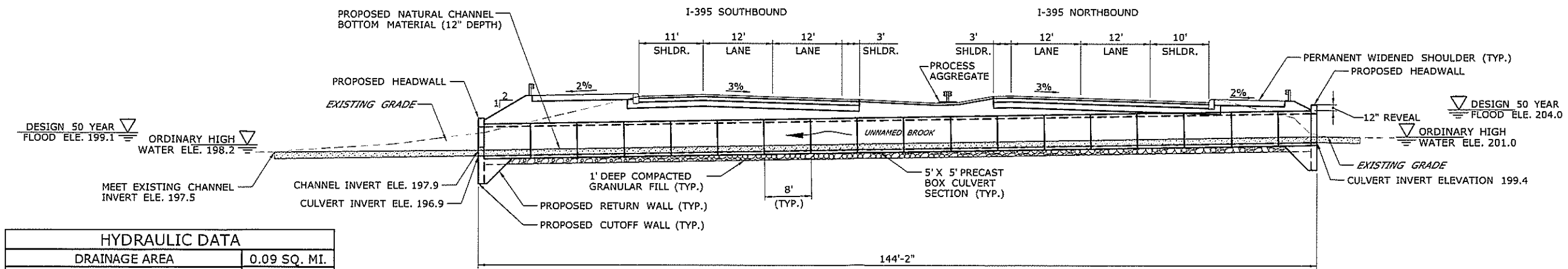
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

DESIGNER/DRAFTER: MAM	CHECKED BY: MJM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	 LOUIS BERGER, US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266	DRAWING NO. PMT-03
REV. DATE	REVISION DESCRIPTION			SHEET NO.	Plotted Date: 6/28/2019	FILENAME: ...\\HW HSH 0103-0266 Br 06797 WIP PLH-01.DGN.dgn	DRAWING TITLE: BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN



OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 20 S.F. / 144 FT. = 0.14 FT
 0.14 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

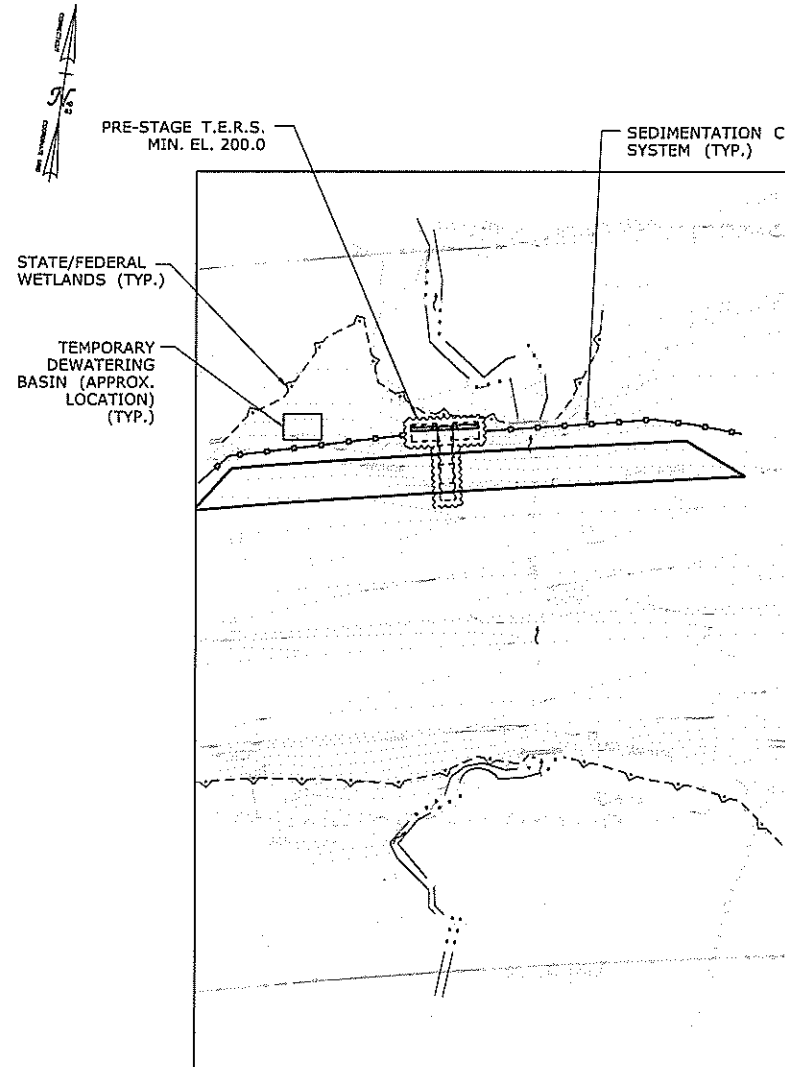
BANKFULL WIDTH (BFW):
 BFW = 4 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 4.8 FT.
 4.8 FT. < 5 FT. PROPOSED CULVERT SPAN



HYDRAULIC DATA	
DRAINAGE AREA	0.09 SQ. MI.
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	95 CFS
AVERAGE DAILY FLOW ELEVATION	201.0 FT.
UPSTREAM DESIGN SURFACE WATER ELEVATION	204.0 FT.
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	199.1 FT.

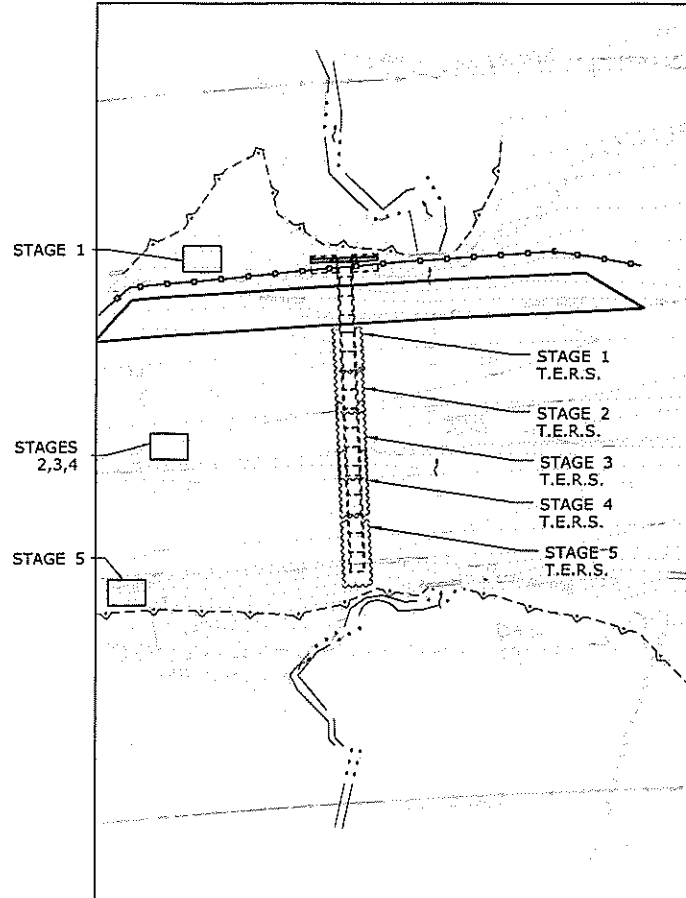
ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/28/2019

DESIGNER/DRAFTER: MAM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-04
CHECKED BY: MJM					
SCALE AS NOTED	FILENAME: ...LSB.MSH_0103-0266_Br_06797_ES_PLAN.dgn	REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019	DRAWING TITLE: BR. NO. 06797 CULVERT ELEV. & SECTION PLAN	SHEET NO.	



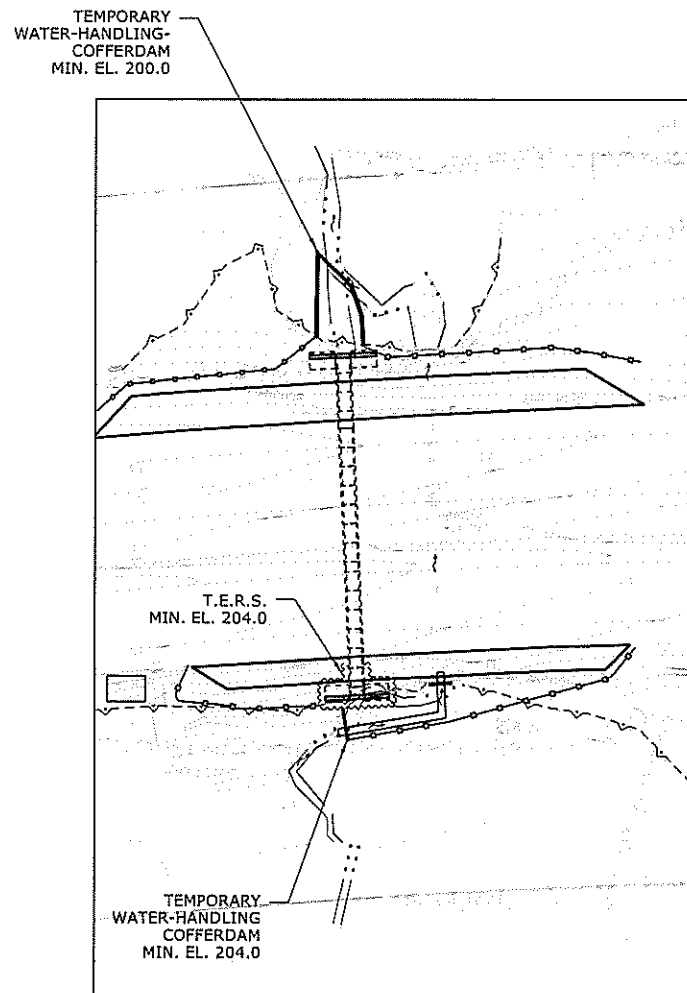
PRE-STAGE - SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.



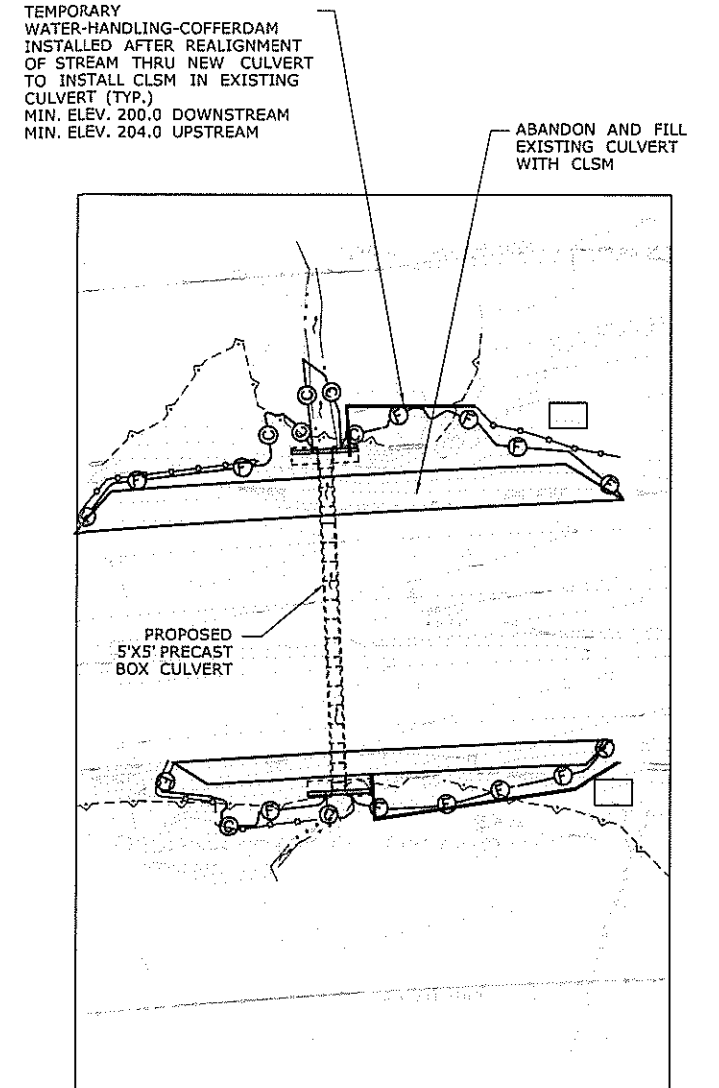
STAGE 1-5 SUGGESTED SEQUENCE

- REPEAT THESE STEPS FOR STAGES 1 THROUGH 5
1. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
 2. EXCAVATE AND INSTALL BOX CULVERT SECTIONS.
 3. REMOVE TEMPORARY EARTH RETAINING SYSTEM.



STAGE - 6 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. INSTALL TEMPORARY WATER HANDLING FACILITIES, INCLUDING WATER-HANDLING COFFERDAM, TEMPORARY 36" BYPASS PIPES.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.
7. REGRADE CHANNEL AT INLET AND OUTLET.
8. INSTALL 12" OF NATURAL STREAMBED MATERIAL ALONG THE INVERT OF THE CULVERT.
9. REMOVE TEMPORARY WATER HANDLING FACILITIES TO ALLOW STREAM THROUGH PROPOSED CULVERT.



FINAL STAGE - SUGGESTED SEQUENCE

1. INSTALL TEMPORARY WATER-HANDLING COFFERDAM
2. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM).
3. COMPLETE GRADING AS REQUIRED.
4. REMOVE TEMPORARY WATER-HANDLING COFFERDAM.
5. RESTORE TEMPORARILY DISTURBED AREAS AND INSTALL NATIVE PLANTS ACCORDING TO PMT-06.
6. REMOVE SEDIMENTATION AND EROSION CONTROLS UPON PERMANENT STABILIZATION.

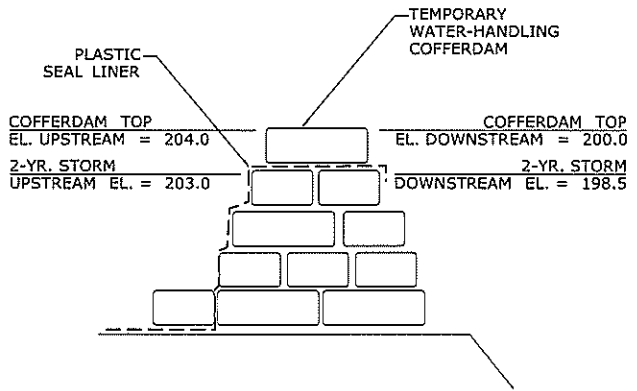
TEMPORARY HYDRAULIC DATA 06797	
AVERAGE DAILY FLOW	0.2 CFS
AVERAGE SPRING FLOW	0.3 CFS
2-YEAR FREQUENCY DISCHARGE	15 CFS
TEMPORARY DESIGN DISCHARGE	15 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	203.0 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	198.5 FT

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE EXISTING CULVERT AS SHOWN DURING CONSTRUCTION OF THE NEW STRUCTURE.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.



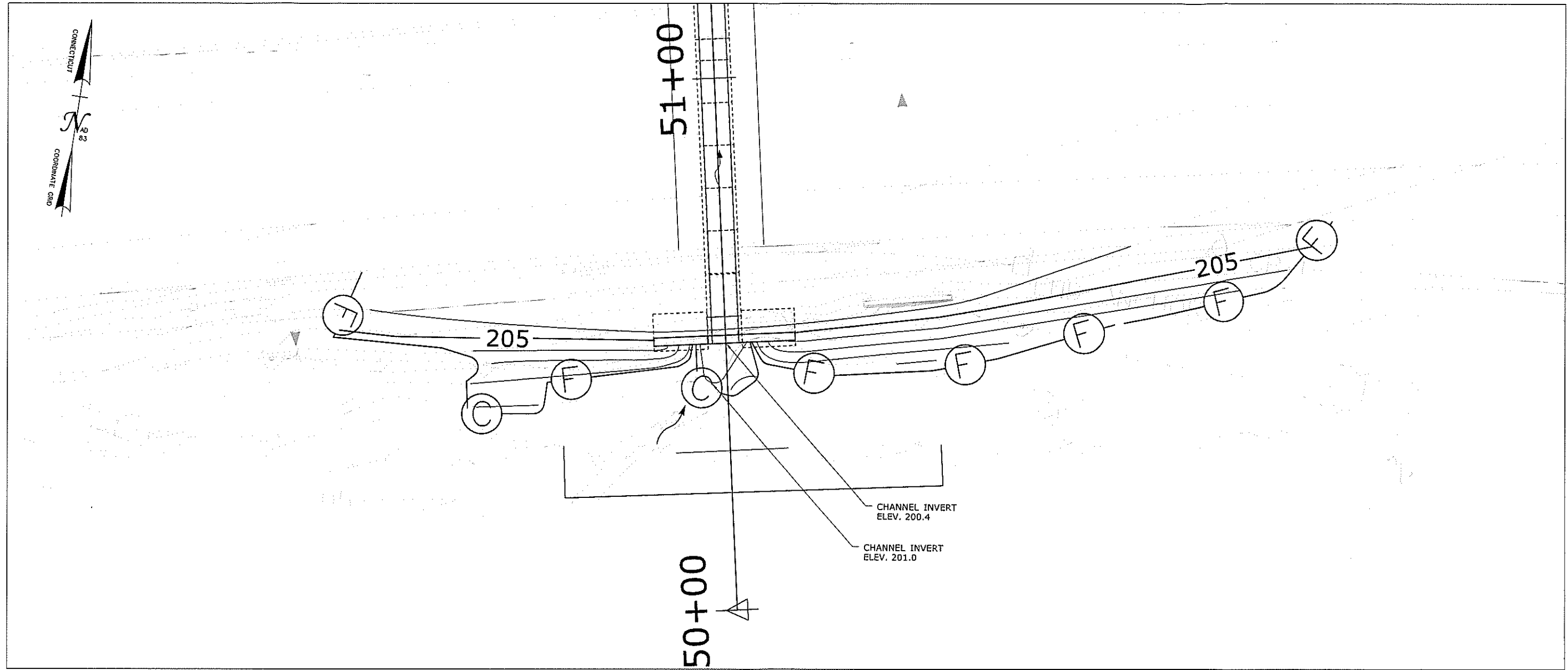
LEGEND:

- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

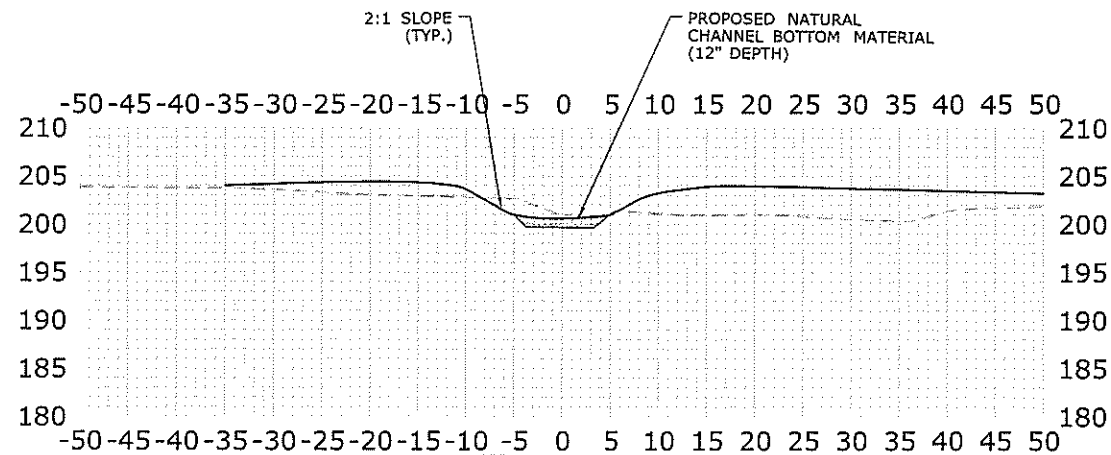
ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE IN FEET SCALE 1" = 40'	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER U.S., Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06797 WATER HANDLING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-05 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019						



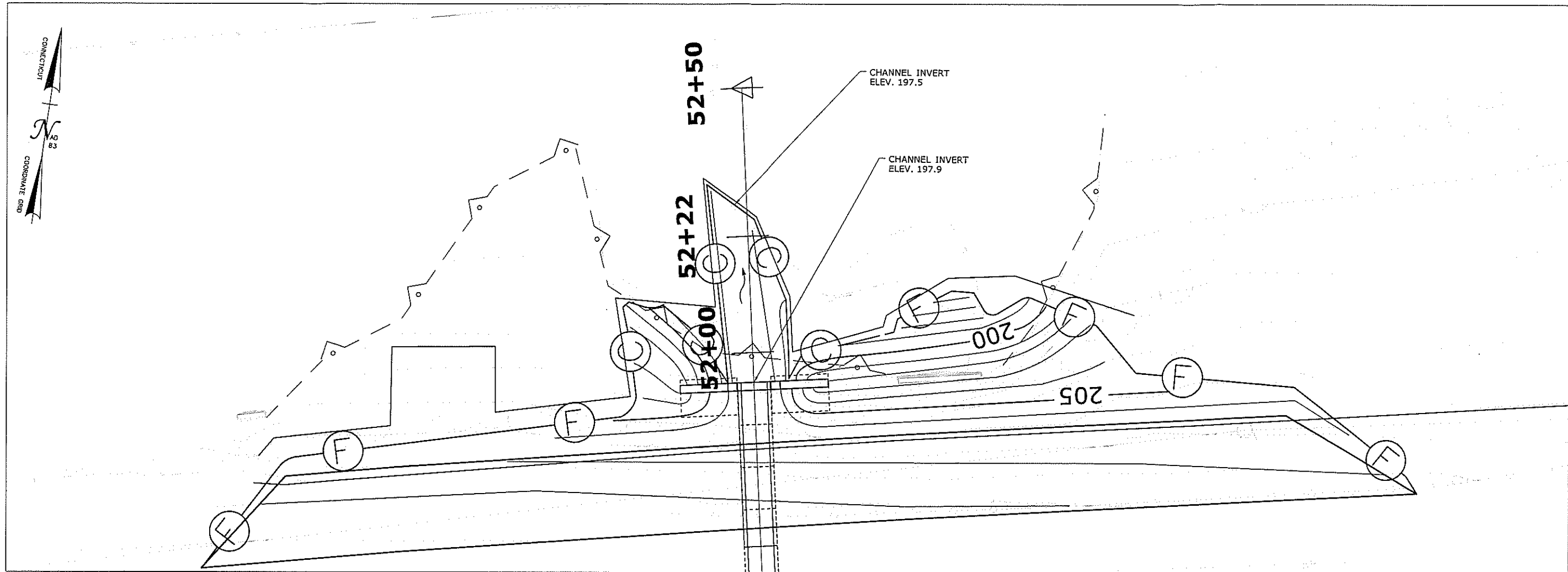
**BR. NO. 06797
UPSTREAM GRADING PLAN**



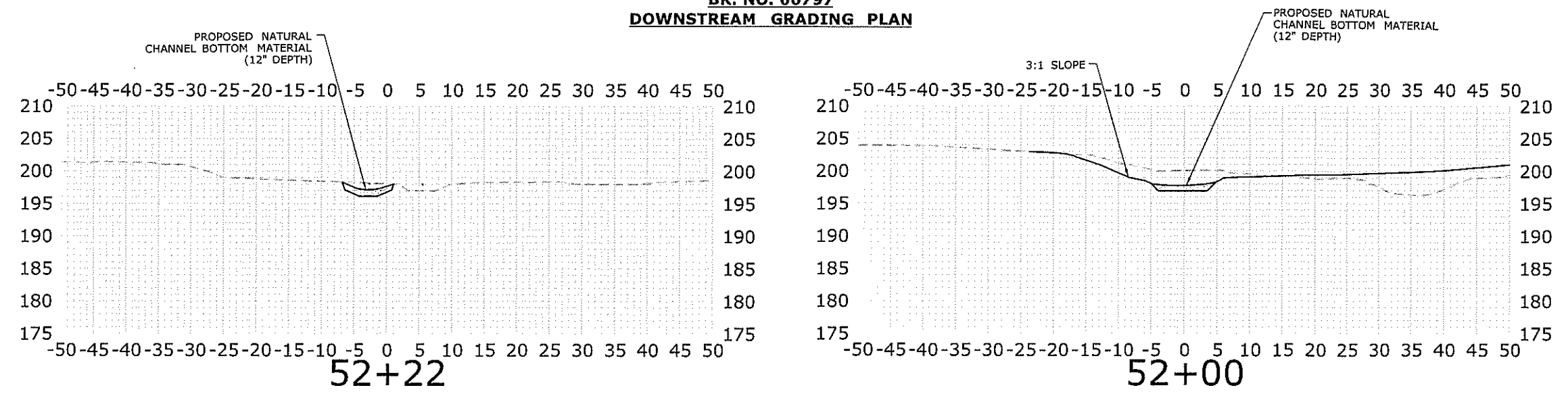
**50+50
(SECTION AT FACE OF HEADWALL)**

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT/MJM CHECKED BY: JH SCALE IN FEET 0 10 20 SCALE 1"=10'	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-06 SHEET NO.
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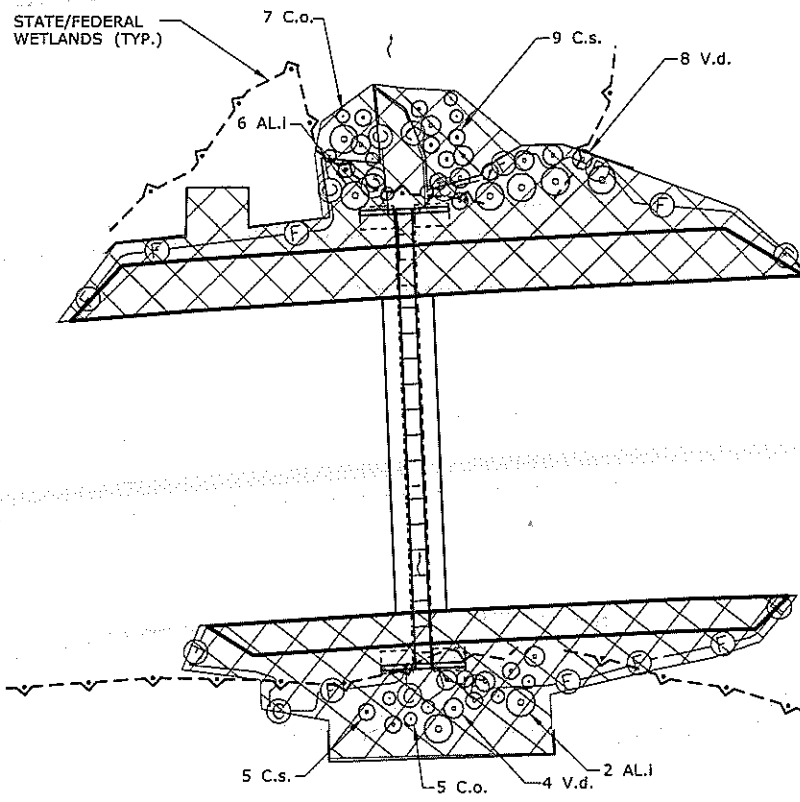
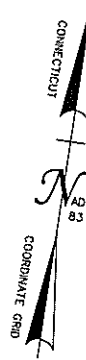


**BR. NO. 06797
DOWNSTREAM GRADING PLAN**



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: JCT/MJM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-07 SHEET NO.
	CHECKED BY: JH					
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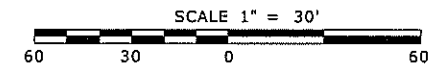
CONTROL AND REMOVAL OF INVASIVE SPECIES
(SEE NOTE 5)

NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.

PERMIT PLANT LIST

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	WETLAND INDICATOR
Al.i.	8	Speckled Alder	<i>Alnus incana</i>	18"-24" HT. B.B.	Field Located	FACW
C.s.	14	Red-Osier Dogwood	<i>Cornus sericea</i>	18"-24" HT. B.B.	Field Located	FACW
V.d.	12	Northern Arrowwood	<i>Viburnum dentatum</i>	18"-24" HT. B.B.	Field Located	FACW
C.o.	12	Common Buttonbush	<i>Cephalanthus occidentalis</i>	18"-24" HT. B.B.	Field Located	OBL



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 7/1/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p style="font-size: small;">Filename: ...:\HW MSH 0103-0266 Br 06797.PP.PLN-01.DGN.dgn</p>	SIGNATURE/BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BRIDGE 06797 PERMIT PLANTING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-08 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 7/1/2019						

Attachment C
Site Photos





Inlet of Bridge No. 06797



Outlet of Bridge No. 06797



Outlet of Bridge No. 06797



Downstream of Outlet,
Bridge No. 06797

Attachment D

Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266

Rehabilitation of Bridge No. 06797 Carrying Unnamed Brook under Interstate 395
Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06797 in Norwich, Connecticut. Bridge No. 06797 is a 72 inch span by 48 inch rise arched asphalt coated corrugated metal pipe (ACCMP) culvert that conveys an unnamed brook under Interstate 395 (I-395). The bridge was originally built in 1956 to allow I-395 to pass over the unnamed brook. The total structure length of the ACCMP is 139 feet long. The culvert is below the roadway and it is underneath approximately 3 feet of fill. The existing culvert is considered to be in serious condition. It is structurally deficient due to the heavy laminar rust and minor section losses, and perforation to the pipe, which requires rehabilitation. The existing concrete headwalls, cut-off walls, and wingwalls also exhibit areas with deterioration. The project involves constructing a new box culvert approximately 35 feet west of the existing culvert. The replacement culvert will be 5 foot wide by 5 foot high pre-cast concrete box culvert with a total structure length of 144 feet. Cut-off walls and U-type wingwalls will be installed at the inlet and outlet. The boxed culvert will have a rounded entrance lip at the inlet. The brook will be realigned to its original course prior to the construction of I-395 through the new culvert. The existing culvert will be abandoned in place and filled with controlled low strength material. Project No. 103-266 also includes Bridges No. 06795 and 06796. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06795 and 06796 are being processed under separate permits.

Site Information

The unnamed brook has a drainage area of 0.09 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The watershed is located in the northeastern portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural fields (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat area. The unnamed brook at Bridge No. 06797 is not included in the FEMA New London County Flood Insurance Study.

Study Area

Bridge No. 06797 is located on I-395 over an unnamed brook, approximately 0.4 miles north of Bridge No. 00279 (Lawler Lane). Land use in the vicinity of the site includes transportation (roadway), forest, wetlands, and pasture and row crop agricultural uses.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are adjacent to the unnamed brook at the inlet and outlet of Bridge No. 06797. The unnamed brook is riverine (R4SBC) flows south to north. The culvert creates channelized flow in a wetland area that is bisected by I-395. Upstream of the project culvert, the discernable channel leads to forested wetland with pit and mound topography. Downstream of the project culvert, flows remain channelized up to the margin of a

pasture/wet meadow. The channel width is a meandering stream with gradually varying width, a moderate gradient, and occasional shape changes to the floodplain. Within the project area, the unnamed brook flows through a deciduous forest dominated by red maples. The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

The area adjacent to the unnamed brook is relatively flat with some pits and mounds and dominated by brush and Red Maple (*Acer rubrum*). The vegetation bordering the stream includes Chicory (*Cichorium intybus*), Skunk Cabbage (*Symplocarpus foetidus*), and Sensitive Fern (*Onoclea sensibilis*). The area adjacent to the roadway includes Goldenrod (*Solidago canadensis*), Common Blackberry (*Rubus allegheniensis*), as well as Japanese Barberry (*Berberis thunbergii*), and Japanese knotweed (*Fallopia japonica*).

Soils

Soils found within the project area are mapped by the Natural Resource Conservation Service (NRCS). The roadway as well as the adjacent side slopes are disturbed soils mapped as Udorthents-Urban Land complex (Map # 306). The soils located immediately adjacent to the existing and proposed inlet and outlet of the structures are Raypol silt loam (Map #12). The NRCS Web Soil Survey Map is attached.

Functions and Values

The primary functions and values of the unnamed brook and wetlands in the project area are wildlife and fish habitat and groundwater recharge. The stream channel functions within the culvert are limited to fish and wildlife habitat/passage. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest. The habitat in the project area is of low quality to fish within the watershed. The existing structure creates a barrier to fish movement, however fish species were observed within the stream within the project area. The proposed project will have very limited effects on wetland function and values in the project area as it pertains to wildlife habitat. The project proposes to maintain the existing wildlife capacity of the wetland area. Direct impacts have been minimized to the fullest extent. Access points have been designed to utilize a portion of the existing shoulders of I-395 reducing the need to further encroach into the adjacent wetlands. The critical issue with the proposed culvert replacement is the alteration of the existing stream channel and the proposed permanent impacts to the existing watercourse. The replacement requires installing a new 5 foot wide by 5 foot high pre-cast box culvert spanning a length of 144 feet approximately 35 feet to the west of the existing culvert. The existing brook will be regraded and realigned to flow through the replacement culvert. The existing culvert will be filled with controlled low strength material and abandoned in place. The box culvert will provide a larger hydraulic opening, meet the 1.2x bankfull width recommendation, eliminate the bridge from being classified as structurally deficient, and reduce flow velocities due to placement of one foot of natural streambed material which in turn will facilitate fish and wildlife passage, all of which are not provided by the existing culvert. The design process for this project included hydraulic modeling of the proposed box culvert replacement for the 50-year design storm. The larger hydraulic opening and rounded inlet will reduce the upstream backwater elevation and increase the freeboard above the minimum of one foot, meeting the ConnDOT Drainage Manual criteria that the existing culvert does not currently provide. The proposed channel construction will mimic the existing channel conditions in depth and width. The proposed channel bottom will also be created with native streambed material. The surrounding project area is relatively flat. It is anticipated that the wetland will remain within the existing limits. Secondary impacts as a result of the project are anticipated due to the outlet watercourse realignment. Due to the relatively flat and low topography of the surrounding area, it is anticipated that this area will remain classified as a wetland.

Short-term effects as a result of construction activities are minimized by:

- Limiting areas of disturbance in uplands.
- Utilizing an erosion and sedimentation control plan.
- Inclusion of a water handling plan.
- Adherence to the time-of-year restriction for unconfined in stream work.
- Minimizing work area in the watercourse and wetlands.
- Restoration of temporarily disturbed areas with plantings and seeding.

Regulatory Impacts

To gain access to the structure to perform the proposed work, permanent access shoulders will be constructed within the shoulders of I-395. These constructed widened shoulders will allow heavy construction equipment and material required to conduct work, to access the existing and proposed culverts as well as minimize impacts to the adjacent wetland and watercourse. These proposed access areas will require limited clearing and grubbing, invasive species control, as well as some minor permanent impacts to wetlands. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction.

Construction access and water handling:

To minimize traffic impacts, the work zone on I-395 will be handled progressively from north to south and with temporary lane closures for 36-48 hours per stage. With the installation of each box culvert section, the roadway pavement will be removed, and the structure excavation initiated; the excavated area will then be backfilled and the road re-constructed. Off-peak temporary shoulder and lane closures will be used for equipment and construction personnel to enter and exit the access areas, as required.

The construction sequencing involves a pre-stage, six stages, and a final stage. The brook will flow under its present alignment through the existing culvert until Stage 6. During the pre-stage and stages 1-3, I-395 southbound lanes will be impacted. During Stages 3-5, I-395 northbound lanes will be impacted. The pre-stage involves the construction of the northern permanent access shoulder. A temporary cofferdam will restrict potential flows from entering the work area. Temporary earth retaining systems (TERS) will be utilized to install the pre-cast sections of the culvert. The cut-off wall, wingwalls, box culvert sections, and headwall will be constructed at the downstream outlet (north). In Stages 1 through 5, the excavation and installation of each box culvert section will be completed progressively from north to south. The roadway will be removed and then re-constructed in order to complete the work. Stage 6 includes the construction of the southern permanent access shoulder. A temporary water-handling-cofferdam and a temporary bypass extension pipe to the inlet of the existing pipe will be installed for the construction of the inlet cut-off wall, wingwalls, headwall and final box culvert sections. At the proposed outlet, a temporary water-handling-cofferdam will be installed for the channel regrading. Once the final portion of the proposed culvert is constructed, the channel will be regraded at the inlet and outlet and a minimum of one foot of natural streambed material will be placed along the invert of the proposed culvert and as the proposed channel bottom. The final step of stage 6 includes the removal of the temporary water handling facilities which will allow the stream to pass through the proposed culvert. In the final stage of construction, a temporary water-handling cofferdam will be constructed at the inlet and outlet of the existing culvert to restrict any potential flows. This will allow the existing culvert to be filled with controlled low strength material under dry conditions. The final slope grading will also occur during this stage. Once work is concluded and project area is stabilized, all temporary water-handling systems will be removed. As

required, dewatering of the work area will include pumping dewatered water to a temporary sedimentation basin located in an upland area. Any wetland temporarily impacted by the work shall be restored utilizing native plantings and a wetland seed mix. All disturbed areas will be restored at the completion of construction and temporary sedimentation and erosion controls will be removed upon permanent stabilization.

Culvert Replacement:

The proposed project involves abandoning in place a severely deteriorated culvert and realigning the existing stream through a new 5 foot wide by 5 foot high pre-cast concrete box culvert spanning a length of 144 feet. The culvert replacement and stream realignment will result in impacts to the existing conditions and wetland functions and values. The greatest concern for this replacement is altering of the existing flows and hydraulic conditions at the culvert. Hydraulic modeling analysis of the culvert was conducted and found that the 50-year water surface elevation will decrease by approximately 0.3 feet. The culvert replacement will not result in changes to the hydraulic conditions that will significantly impact flow velocities. The project meets the design criteria for the CTDOT Drainage Manual. This project also proposes to improve wildlife and fish access to the culvert by increasing the hydraulic opening, removing the perched culvert, and providing minimum 1 foot of natural streambed material within the structure.

Fish Passage:

The project includes feasible elements designed to minimize project impacts to fisheries resources while minimizing channel connectivity impacts from the proposed project. Any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. Current fish passage is considered low due to the inconsistent flows, the presence of swamp wetlands in the area, as well as the culvert being perched. The completed project should not have significant impacts, but will improve fish passage within the area. CTDEEP Inland Fisheries Division has confirmed that the project complies with their conditions. Fisheries design elements include:

- Regrading of natural streambed material at the inlet and outlet to grade the streambed to the new channel culvert invert elevation, ensuring that the outlet does not create a barrier to fish movement.
- The placement of minimum 1 foot of natural streambed material within the culvert bottom to create a more continuous habitat through the structure.
- The discontinuation of the deficient culvert.
- Adherence to the time-of-year restriction.
- The restoration of disturbed areas with plantings and seeding.

Proposed Impacts:

The replacement of Bridge No. 06797 results in 1,200 square feet (0.027 acres) of permanent wetland impacts. Permanent impacts are a result of the installation of the box culvert, and grading required within the wetland for the proposed stream alignment. Some grading impacts will also occur as a result of the construction of permanent access shoulders. The project results in 1,350 square feet (0.030 acres) of permanent watercourse impacts. This number accounts for the full closure of the existing bridge and new stream alignment as well as and the construction at the cut-off walls, and wingwalls. Though this is described as a permanent impact, the watercourse will remain, but will be redirected through the new, hydraulically adequate structure. Temporary impacts include the areas necessary for the water handling and access to the project culverts. Temporary impact to the wetlands is 2,100 square feet (0.048 acres) and

to the watercourse is 100 square feet (0.002 acres). Secondary watercourse impacts are also proposed where the channel at the outlet will be abandoned due to the new stream alignment. This results in 400 square feet (0.009 acres) of impact. The total wetland and watercourse impact is 5,150 square feet (0.118 acres). Impacts are described within the table on the following page:

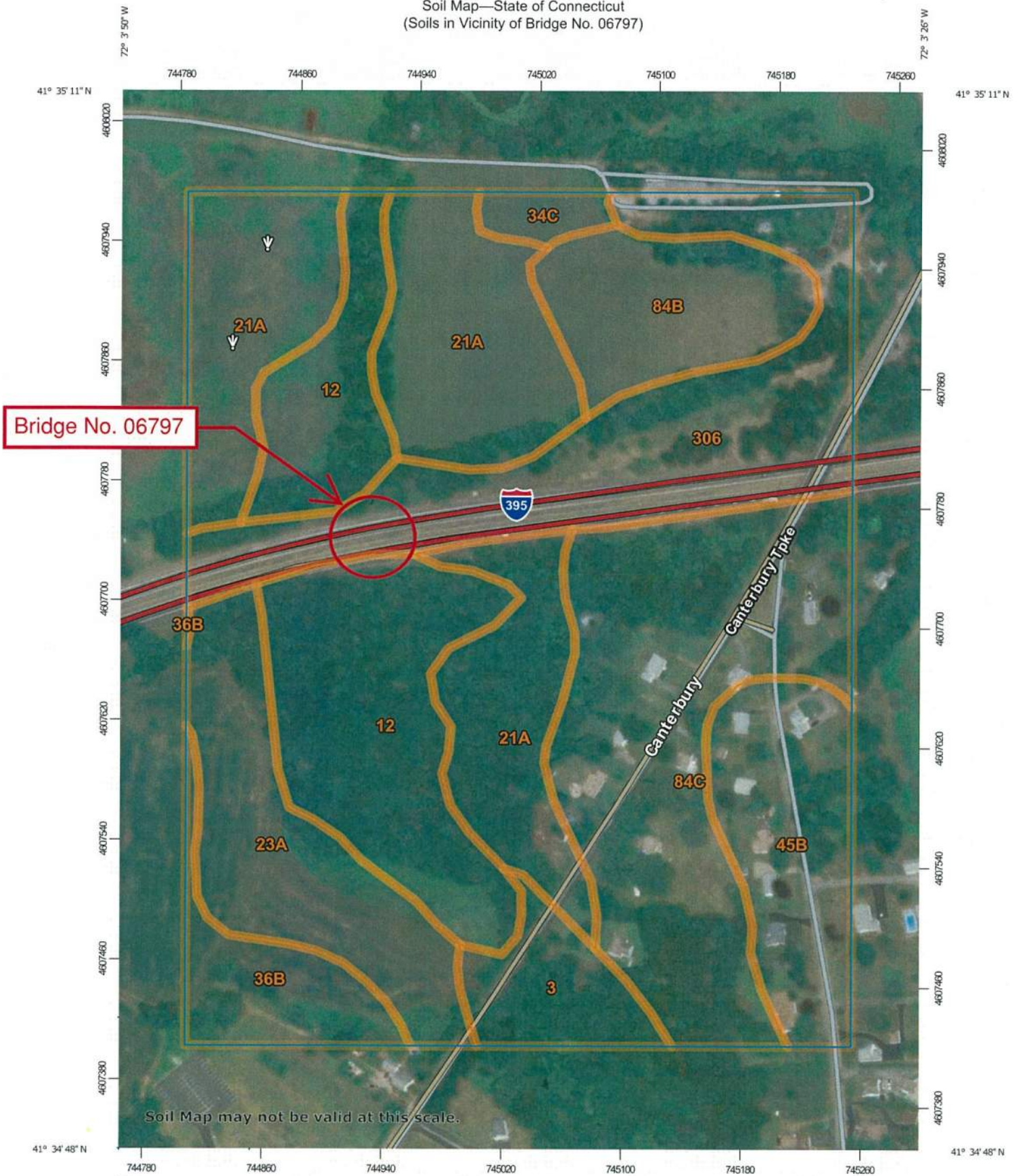
Bridge No. 06797 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	2,100 sqft (0.048 ac)	100 sqft (0.002 ac)	2,200 sqft (0.051 ac)
Permanent	1,200 sqft (0.027 ac)	1,350 sqft (0.030 ac)	2,550 sqft (0.059 ac)
Secondary	0 sqft (0.000 ac)	400 sqft (0.009 ac)	400 sqft (0.009 ac)
Total	3,300 sqft (0.076 ac)	1,850 sqft (0.042 ac)	5,150 sqft (0.118 ac)

Minimization and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed replacement box culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing a water handling plan for the continuous flow of the unnamed brook, placing 1 foot of natural streambed material throughout the culvert as well as at the proposed inlet and outlet to grade the streambed to the new invert elevation. The project also minimizes impacts by utilizing pre-cast structures to minimize the construction duration, installing cutoff walls, flared wingwalls, and a beveled opening at the inlet to improve stream flow. To address fish passage concerns, unconfined instream work shall be limited to June 1st to September 30th, inclusive, to avoid impacts to potential fish passage during construction.

Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access shoulders at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. The watercourse will be disturbed in association with the proposed replacement box culvert and new watercourse alignment. The watercourse will remain and will flow through the new culvert following the completion of the project. Disturbed areas in the streambed will be restored with native natural channel bed material. Any wetlands impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
(Soils in Vicinity of Bridge No. 06797)



Bridge No. 06797

Map Scale: 1:3,440 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

7/20/2018
Page 1 of 3

MAP LEGEND

- Area of Interest (AOI)**
 - Area of Interest (AOI)
- Soils**
 - Soil Map Unit Polygons
 - Soil Map Unit Lines
 - Soil Map Unit Points
- Special Point Features**
 - Blowout
 - Borrow Pit
 - Clay Spot
 - Closed Depression
 - Gravel Pit
 - Gravelly Spot
 - Landfill
 - Lava Flow
 - Marsh or swamp
 - Mine or Quarry
 - Miscellaneous Water
 - Perennial Water
 - Rock Outcrop
 - Saline Spot
 - Sandy Spot
 - Severely Eroded Spot
 - Sinkhole
 - Slide or Slip
 - Sodic Spot
- Water Features**
 - Streams and Canals
- Transportation**
 - Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads
- Background**
 - Aerial Photography
- Spill Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 14, 2011—Aug 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	2.2	3.5%
12	Raypol silt loam	9.9	15.8%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	12.9	20.5%
23A	Sudbury sandy loam, 0 to 5 percent slopes	5.6	8.9%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	0.7	1.1%
36B	Windsor loamy sand, 3 to 8 percent slopes	2.5	3.9%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	4.6	7.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	3.9	6.3%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	11.3	18.0%
306	Udorthents-Urban land complex	9.2	14.7%
Totals for Area of Interest		62.9	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06797 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat/pits Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5836 Long: -72.0619 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present?	Yes _____ No _____	Depth (inches): _____		
Water Table Present?	Yes _____ No _____	Depth (inches): _____		
Saturation Present? (includes capillary fringe)	Yes <u>x</u> No _____	Depth (inches): <u>0</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

<u>Tree Stratum</u> (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	10	Yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	10 =Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____ =Total Cover		
<u>Herb Stratum</u> (Plot size: <u>50 ft</u>)			
1. <u>Cichorium intybus</u>	5	No	FACU
2. <u>Symplocarpus foetidus</u>	15	Yes	OBL
3. <u>Onoclea sensibilis</u>	10	Yes	FACW
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	30 =Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	_____ =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>15</u>	x 1 = <u>15</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>10</u>	x 3 = <u>30</u>
FACU species <u>5</u>	x 4 = <u>20</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>40</u> (A)	<u>85</u> (B)
Prevalence Index = B/A = <u>2.13</u>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-9	10YR 2/2	95	5YR 4/6	5	C	PL	Mucky Loam/Clay	organic materials within

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06797 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status																		
1. <u><i>Acer rubrum</i></u>	10	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>20.0%</u> (A/B)																	
2. _____	_____	_____	_____																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
5. _____	_____	_____	_____																		
6. _____	_____	_____	_____																		
7. _____	_____	_____	_____																		
	10	=Total Cover																			
Sapling/Shrub Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status																		
1. <u><i>Rubus allegheniensis</i></u>	50	Yes	FACU	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>65</u></td> <td>x 4 = <u>260</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>315</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>3.94</u></td> </tr> </table>		Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>65</u>	x 4 = <u>260</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>80</u> (A)	<u>315</u> (B)	Prevalence Index = B/A = <u>3.94</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>0</u>	x 2 = <u>0</u>																				
FAC species <u>10</u>	x 3 = <u>30</u>																				
FACU species <u>65</u>	x 4 = <u>260</u>																				
UPL species <u>5</u>	x 5 = <u>25</u>																				
Column Totals: <u>80</u> (A)	<u>315</u> (B)																				
Prevalence Index = B/A = <u>3.94</u>																					
2. _____	_____	_____	_____																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
5. _____	_____	_____	_____																		
6. _____	_____	_____	_____																		
7. _____	_____	_____	_____																		
	50	=Total Cover																			
Herb Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status																		
1. <u><i>Solidago canadensis</i></u>	10	Yes	FACU	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is $\leq 3.0^1$ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																	
2. _____	_____	_____	_____																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
5. _____	_____	_____	_____																		
6. _____	_____	_____	_____																		
7. _____	_____	_____	_____																		
8. _____	_____	_____	_____																		
9. _____	_____	_____	_____																		
10. _____	_____	_____	_____																		
11. _____	_____	_____	_____																		
12. _____	_____	_____	_____																		
	10	=Total Cover																			
Woody Vine Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status																		
1. <u><i>Berberis thunbergii</i></u>	5	Yes	FACU	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																	
2. <u><i>Celastrus orbiculatus</i></u>	5	Yes	UPL																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
	10	=Total Cover																			

Remarks: (Include photo numbers here or on a separate sheet.)

SOILSampling Point: Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/2	100					Loamy/Clayey	organic materials within
8-12	10YR 5/8	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: _____
 Depth (inches): _____
Hydric Soil Present? Yes _____ No X
 Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Attachment E
Northern Long-Eared Bat Consultation

Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

Information to Determine 4(d) Rule Compliance:

	YES	NO
1. Does the project occur wholly outside of the WNS Zone ¹ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Have you contacted the appropriate agency ² to determine if your project is near known hibernacula or maternity roost trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Could the project disturb hibernating NLEBs in a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Could the project alter the entrance or interior environment of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

You are eligible to use this form if you have answered yes to question #1 or yes to question #2 and no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

Agency: FHWA – Connecticut Division

Applicant³ (Name, Email, Phone No.):

Connecticut Department of Transportation
 Amanda M. Saul, Office of Environmental Planning
DOT.NLEB@ct.gov, (860)594-2939

Project Name: CTDOT0103-0266

Project Location (include coordinates if known): I-395 Norwich (coordinates listed below) at three locations

Basic Project Description (provide narrative below or attach additional information):

This project involves the rehabilitation of three culverts under I-395 in the town of Norwich, Bridge 06795 over Hammer Brook (41.556303, -72.104585), Bridge 06796 over Byron Brook (41.577787, -72.076136), and Bridge 06797 over unnamed brook (41.583895, -72.061892).

¹ <http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>

² See <http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html>

³ If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

General Project Information	YES	NO
Does the project occur within 0.25 miles of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project occur within 150 feet of a known maternity roost tree?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project include forest conversion ⁴ ? (if yes, report acreage below)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Estimated total acres of forest conversion	1.5 ac	
If known, estimated acres ⁵ of forest conversion from April 1 to October 31		
If known, estimated acres ⁶ of forest conversion from June 1 to July 31 ⁶		
Does the project include timber harvest? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of timber harvest		
If known, estimated acres of timber harvest from April 1 to October 31		
If known, estimated acres of timber harvest from June 1 to July 31		
Does the project include prescribed fire? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of prescribed fire		
If known, estimated acres of prescribed fire from April 1 to October 31		
If known, estimated acres of prescribed fire from June 1 to July 31		
Does the project install new wind turbines? (if yes, report capacity in MW below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated wind capacity (MW)		

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: Amanda M. Saul

Digitally signed by Amanda M. Saul
 DN: cn=Amanda M. Saul, o=Connecticut
 Department of Transportation, ou=Office of
 Environmental Planning,
 email=amanda.saul@ct.gov, c=US
 Date: 2019.03.15 09:14:22 -04'00'

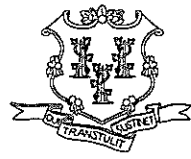
Date Submitted: 3/15/2019

⁴ Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).

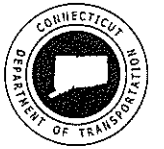
⁵ If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.

⁶ If the activity includes tree clearing in June and July, also include those acreage in April to October.

Attachment F
Fisheries Sign-Off



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

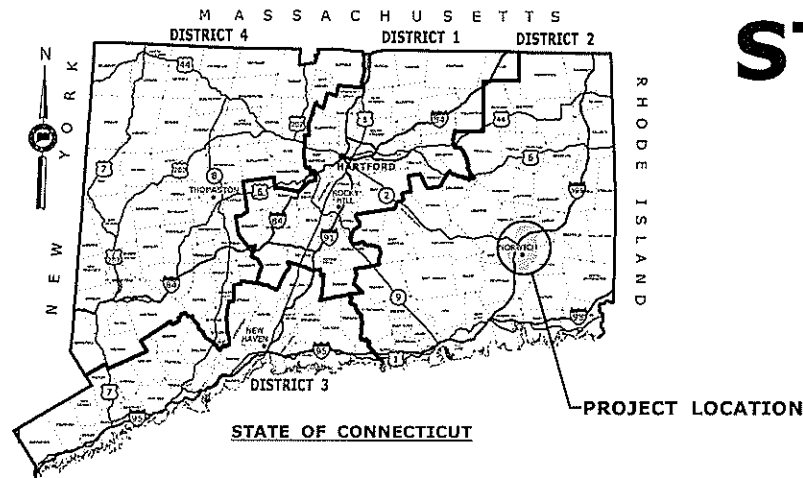
STATE PROJECT NO. 103-266

REPLACEMENT OF BRIDGE NO. 06797

I-395 OVER UNNAMED BROOK

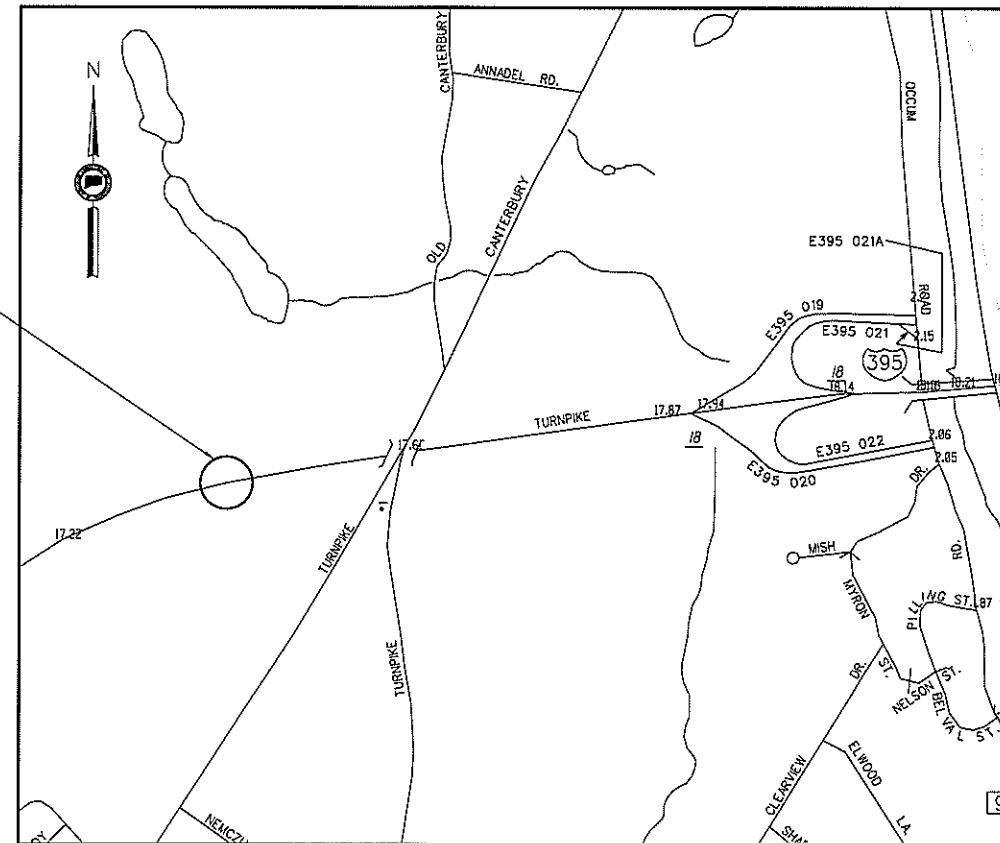
(SITE No. 3)

IN THE CITY OF NORWICH



Brian Murphy
Digitally signed by Brian Murphy
Date: 2019.07.30 13:47:21 -04'00'

BRIDGE NO. 06797
I-395 OVER
BYRON BROOK



LOCATION PLAN

SCALE: 1" = 500'

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06797 TITLE SHEET
PMT-02	BR. NO. 06797 GENERAL SITE PLAN
PMT-03	BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06797 ELEV. & SECTION PLAN
PMT-05	BR. NO. 06797 STAGING AND WATER HANDLING PLAN
PMT-06	BR. NO. 06797 UPSTREAM GRADING PLAN
PMT-07	BR. NO. 06797 DOWNSTREAM GRADING PLAN
PMT-08	BR. NO. 06797 PERMIT PLANTING PLAN

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LOUIS BERGER US, Inc.
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Digitally signed by Robert Lin
Date: 2019.07.01 10:44:55-04'00'

ENVIRONMENTAL PERMIT PLANS

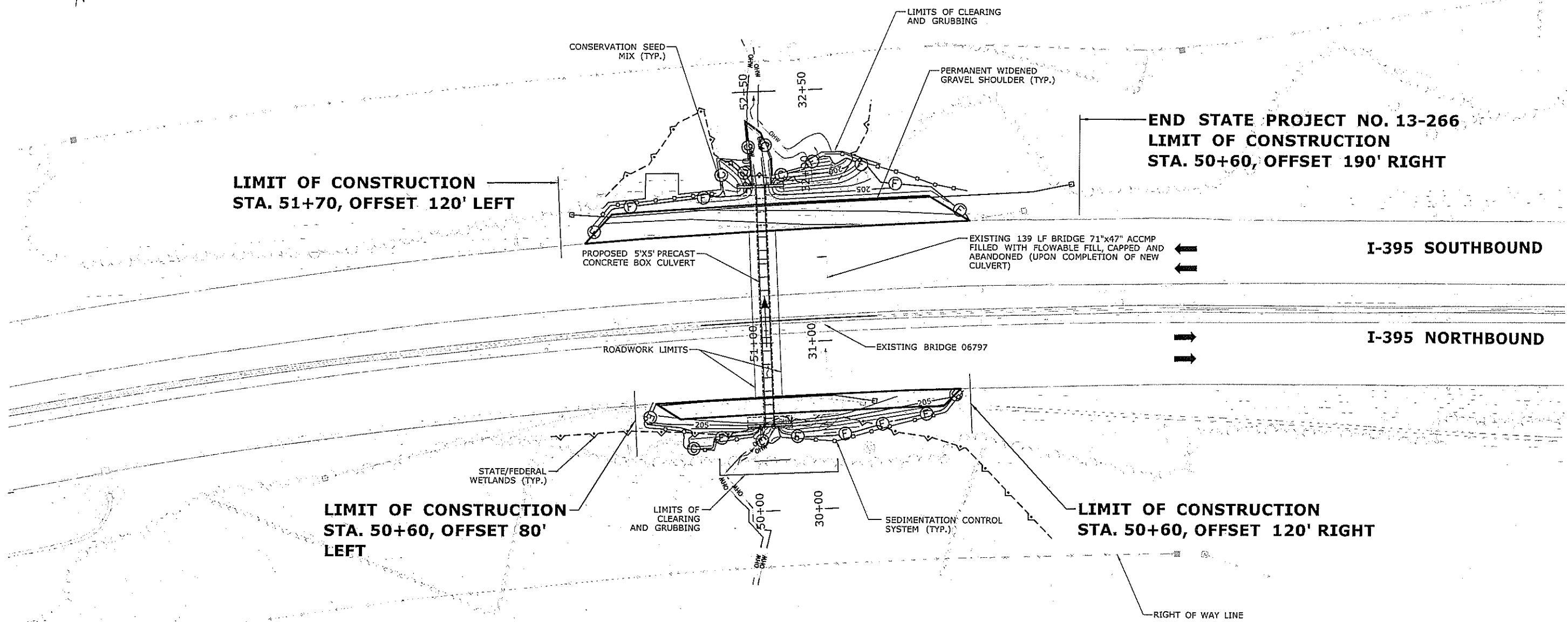
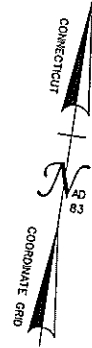
PLAN DATE 6/27/2019

<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>DESIGNER/DRAFTER: JPM</p> <p>CHECKED BY: -</p> <p>SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p>LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)</p>	<p>TOWN: NORWICH</p> <p>DRAWING TITLE: BR. NO. 06797 TITLE SHEET</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-01</p> <p>SHEET NO.</p>
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REV.	DATE	REVISION/ DESCRIPTION	SHEET NO.

Plotted Date: 6/27/2019

Filename: ...\\HW_MSH_0103_0266_06797_TSH.dgn



**LIMIT OF CONSTRUCTION
STA. 51+70, OFFSET 120' LEFT**

**END STATE PROJECT NO. 13-266
LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 190' RIGHT**

I-95 SOUTHBOUND

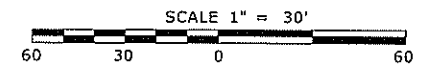
I-95 NORTHBOUND

**LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 80'
LEFT**

**LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 120' RIGHT**

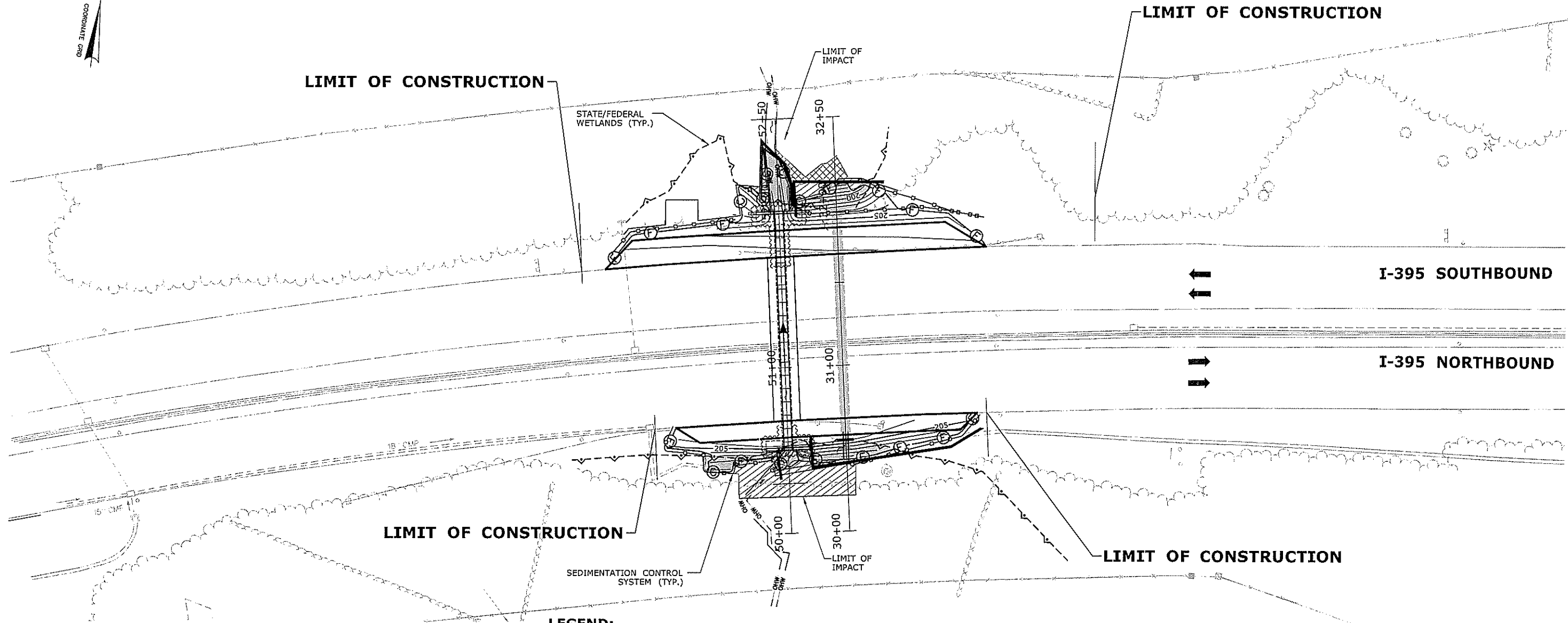
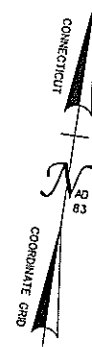
LEGEND:

- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: MAM CHECKED BY: MJM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-95 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-02 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019 Filename: ...LHW_MSH_0103-0266_Br 06797_RDP_PLN-01.DGN			



NOTE:

CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

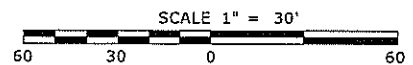
DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- SECONDARY IMPACT
- PERMANENT IMPACT
- OHW — ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

WETLAND IMPACT TABLE			
	WETLAND SITE NO.	WETLAND IMPACTS	TOTAL
PERMANENT IMPACTS	3	1200 S.F. (0.027 AC.)	2550 S.F. (0.059 AC.)
TEMPORARY IMPACTS	3	2100 S.F. (0.048 AC.)	2200 S.F. (0.051 AC.)
SECONDARY IMPACTS	3	400 S.F. (0.009 AC.)	400 S.F. (0.009 AC.)
TOTAL IMPACTS		3300 S.F. (0.076 AC.)	5150 S.F. (0.118 AC.)

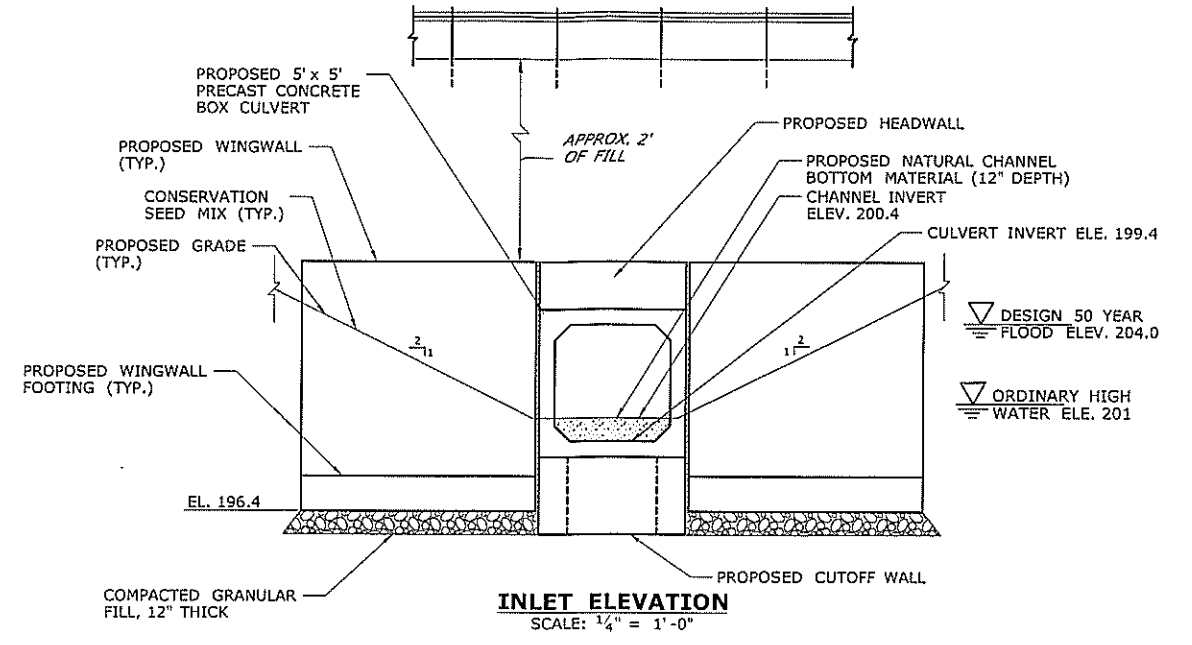
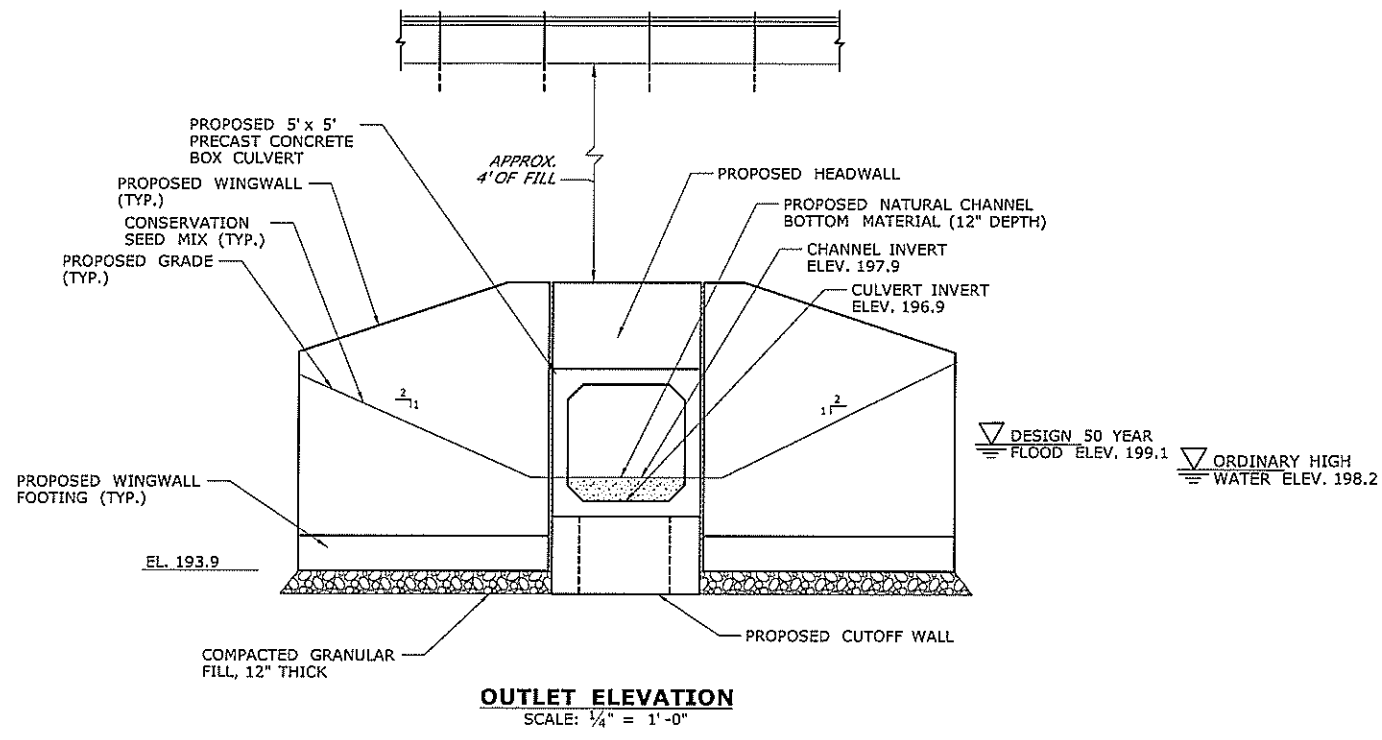


ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: LOUIS BERGER, US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-03 SHEET NO.
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REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019

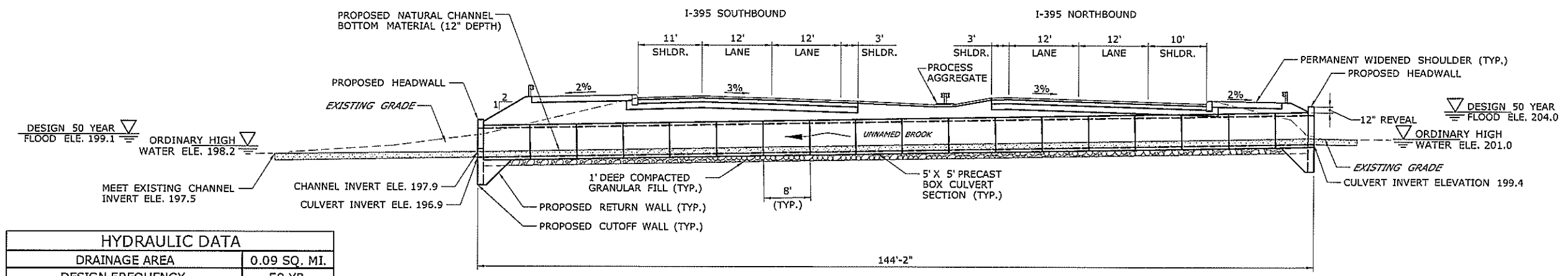
Filename: ...\\HW_MSH_0103-0266_Br 06797_WSP_PLN-01.DGN.dgn



Brian Murphy
 Digitally signed by Brian Murphy
 Date: 2019.07.30 13:48:00 -04'00'

OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 20 S.F. / 144 FT. = 0.14 FT
 0.14 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):
 BFW = 4 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 4.8 FT.
 4.8 FT. < 5 FT. PROPOSED CULVERT SPAN

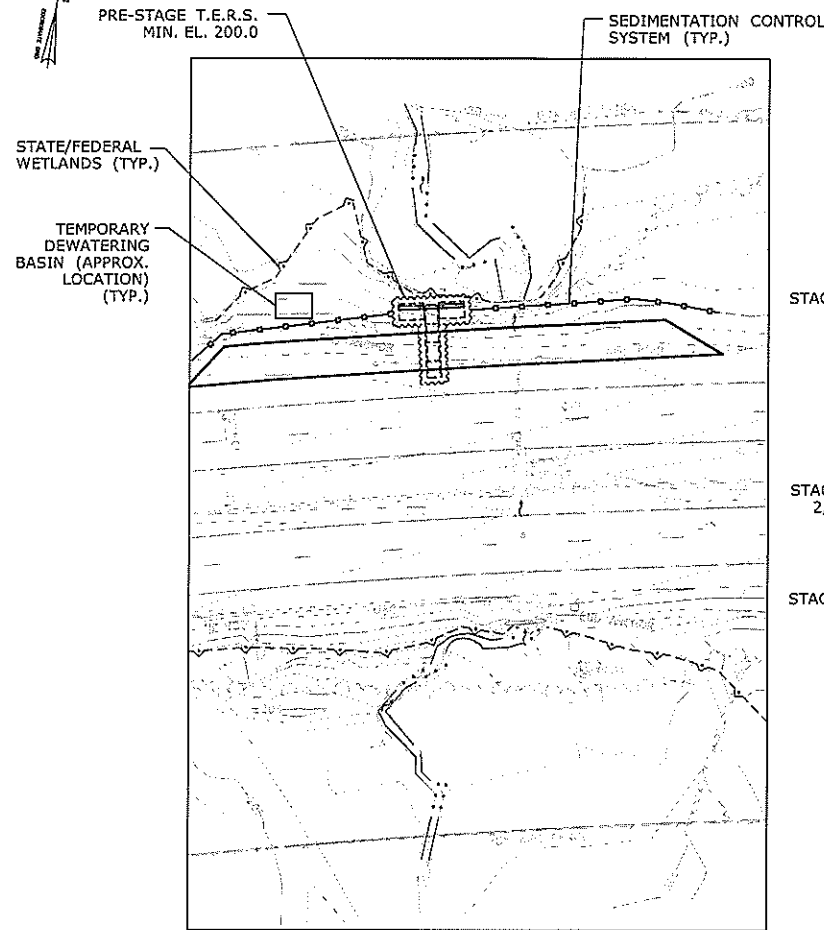


HYDRAULIC DATA	
DRAINAGE AREA	0.09 SQ. MI.
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	95 CFS
AVERAGE DAILY FLOW ELEVATION	201.0 FT.
UPSTREAM DESIGN SURFACE WATER ELEVATION	204.0 FT.
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	199.1 FT.

LONGITUDINAL SECTION
 SCALE: 1" = 10'

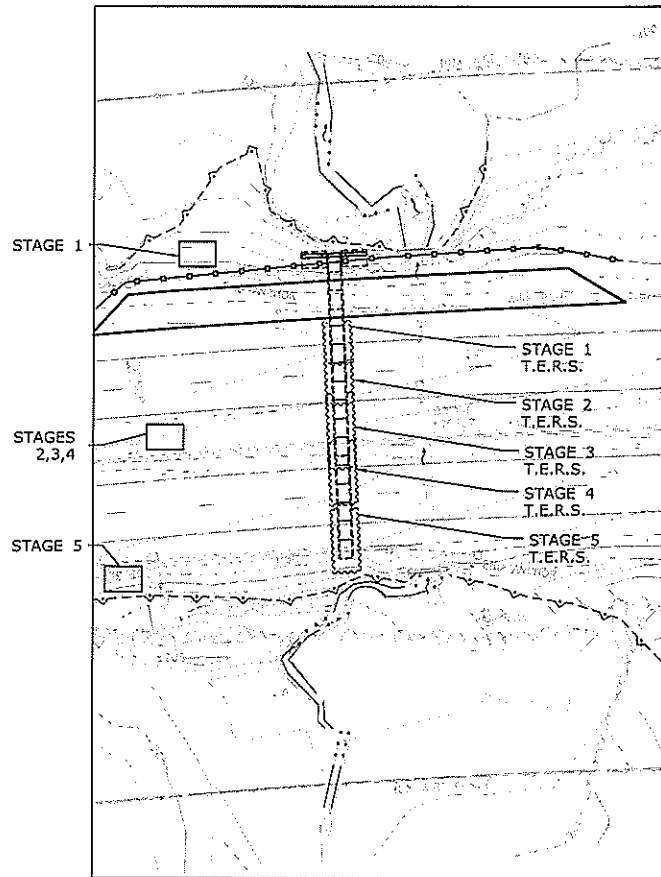
ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM		LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266
	CHECKED BY: MJM					
SCALE AS NOTED	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	FILENAME: ...\\SB_MSH_0103-0266_Br 06797_ES_PLAN.dgn	SHEET NO.			



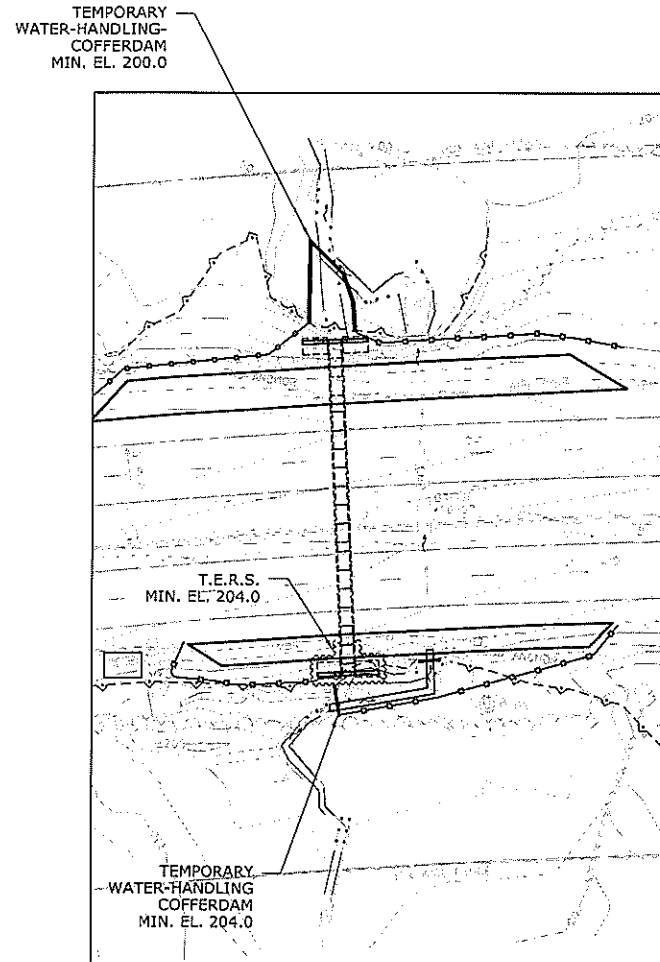
PRE-STAGE - SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.



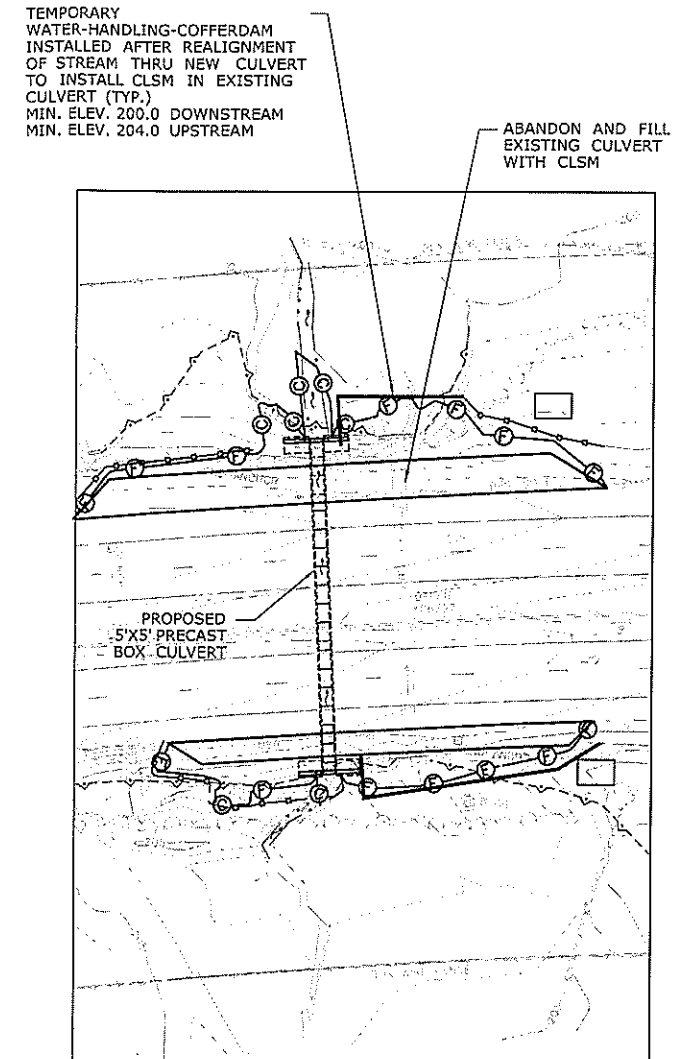
STAGE 1-5 SUGGESTED SEQUENCE

- REPEAT THESE STEPS FOR STAGES 1 THROUGH 5
1. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
 2. EXCAVATE AND INSTALL BOX CULVERT SECTIONS.
 3. REMOVE TEMPORARY EARTH RETAINING SYSTEM.



STAGE - 6 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. INSTALL TEMPORARY WATER HANDLING FACILITIES, INCLUDING WATER-HANDLING COFFERDAM, TEMPORARY 36" BYPASS PIPES.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.
7. REGRADE CHANNEL AT INLET AND OUTLET.
8. INSTALL 12" OF NATURAL STREAMBED MATERIAL ALONG THE INVERT OF THE CULVERT.
9. REMOVE TEMPORARY WATER HANDLING FACILITIES TO ALLOW STREAM THROUGH PROPOSED CULVERT.



FINAL STAGE - SUGGESTED SEQUENCE

1. INSTALL TEMPORARY WATER-HANDLING COFFERDAM
2. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM).
3. COMPLETE GRADING AS REQUIRED.
4. REMOVE TEMPORARY WATER-HANDLING COFFERDAM.
5. RESTORE TEMPORARILY DISTURBED AREAS AND INSTALL NATIVE PLANTS ACCORDING TO PMT-06.
6. REMOVE SEDIMENTATION AND EROSION CONTROLS UPON PERMANENT STABILIZATION.

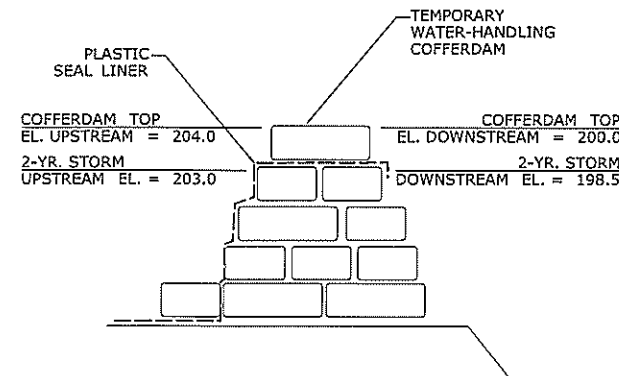
TEMPORARY HYDRAULIC DATA 06797	
AVERAGE DAILY FLOW	0.2 CFS
AVERAGE SPRING FLOW	0.3 CFS
2-YEAR FREQUENCY DISCHARGE	15 CFS
TEMPORARY DESIGN DISCHARGE	15 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	203.0 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	198.5 FT

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE EXISTING CULVERT AS SHOWN DURING CONSTRUCTION OF THE NEW STRUCTURE.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.



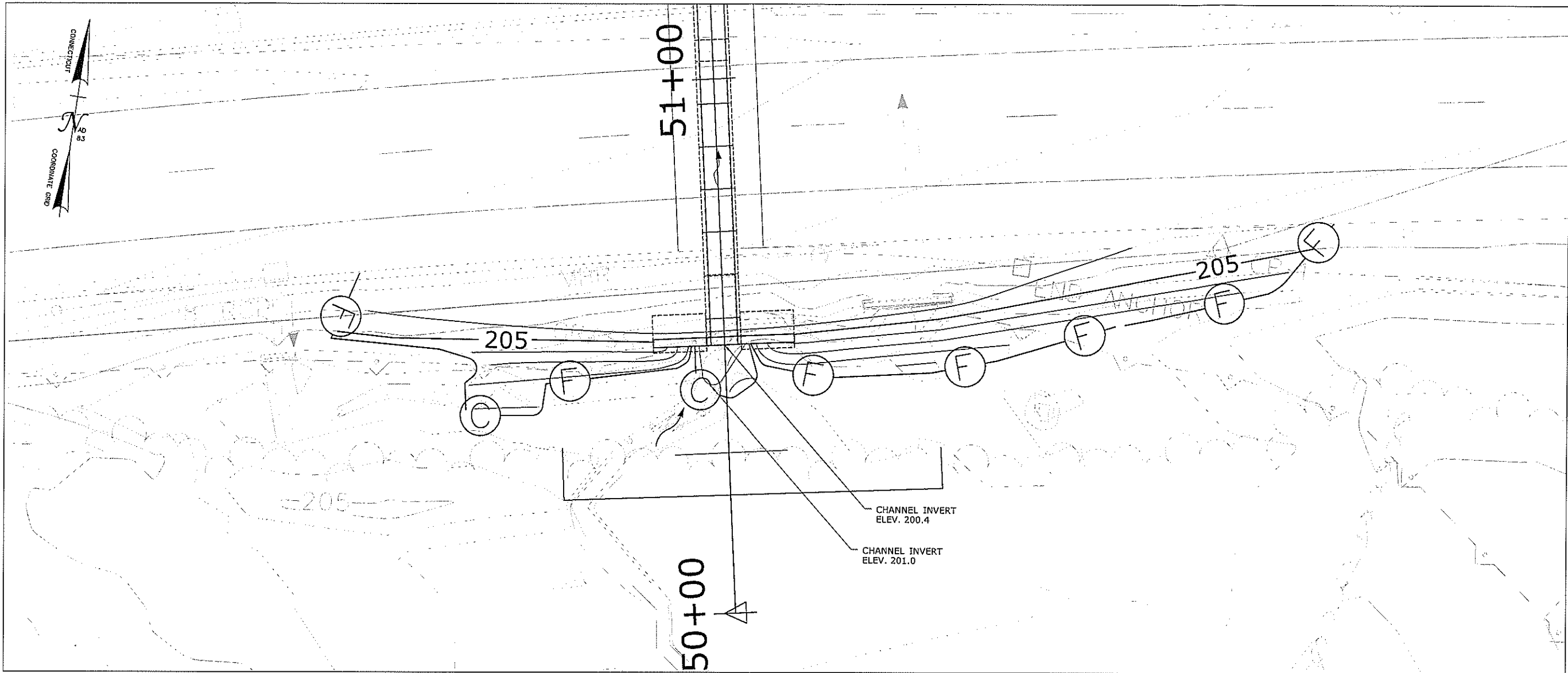
LEGEND:

- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- ○ ○ SEDIMENTATION CONTROL SYSTEM (SCS)

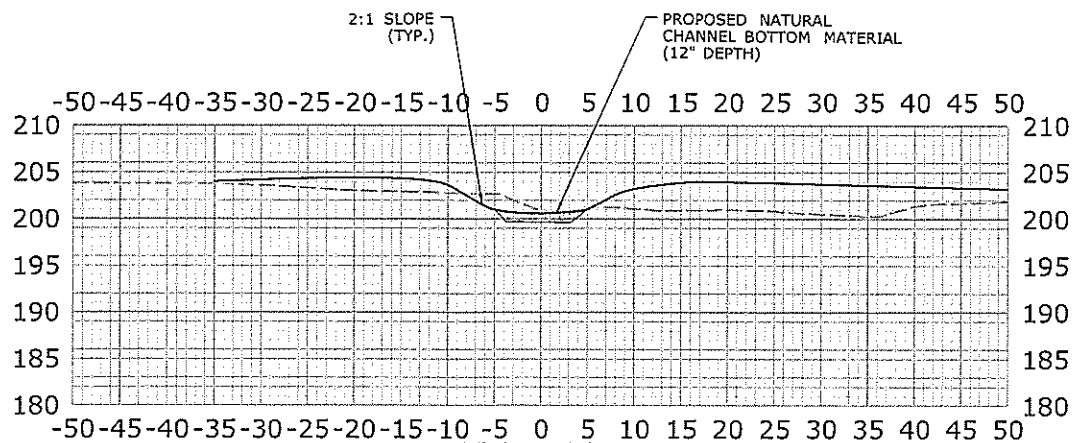
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

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REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019



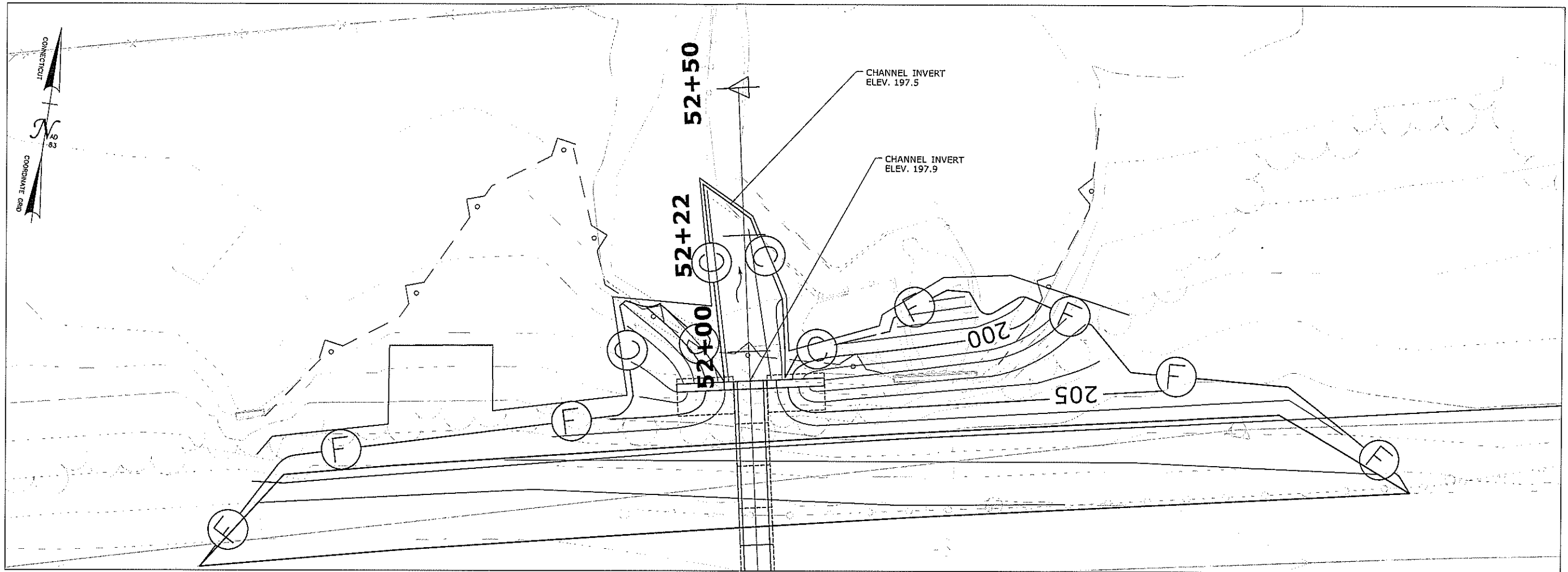
**BR. NO. 06797
UPSTREAM GRADING PLAN**



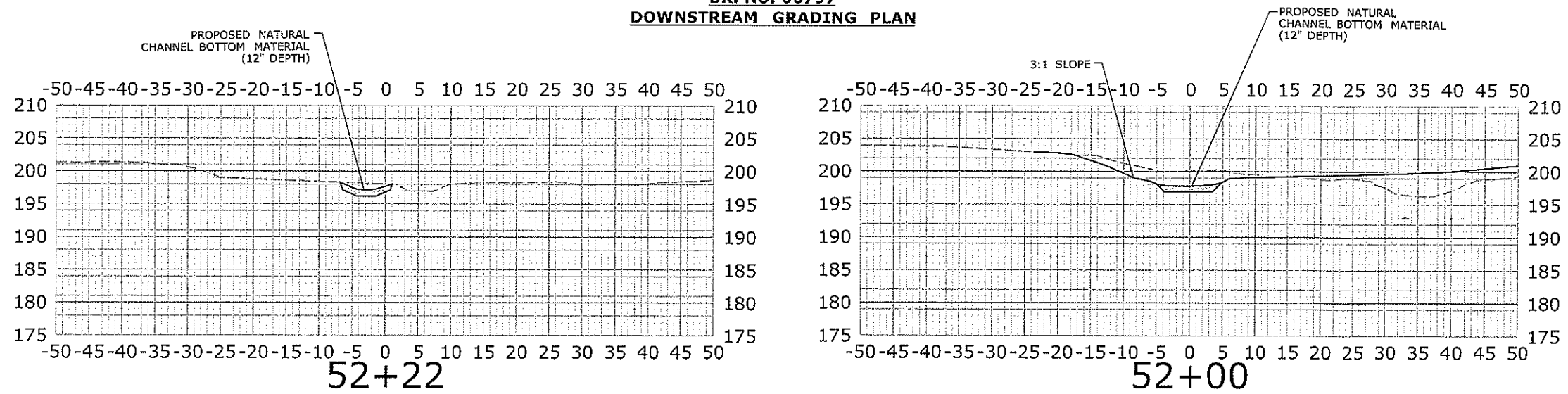
**50+50
(SECTION AT FACE OF HEADWALL)**

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT/MJM CHECKED BY: JH SCALE IN FEET 0 10 20 SCALE 1"=10'	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...IHW_MSH_0103-0256_Br 06797_GRD_FLN-01.DGN.dgn	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 303 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BRIDGE NO. 06797 UPSTREAM GRADING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-06 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019			

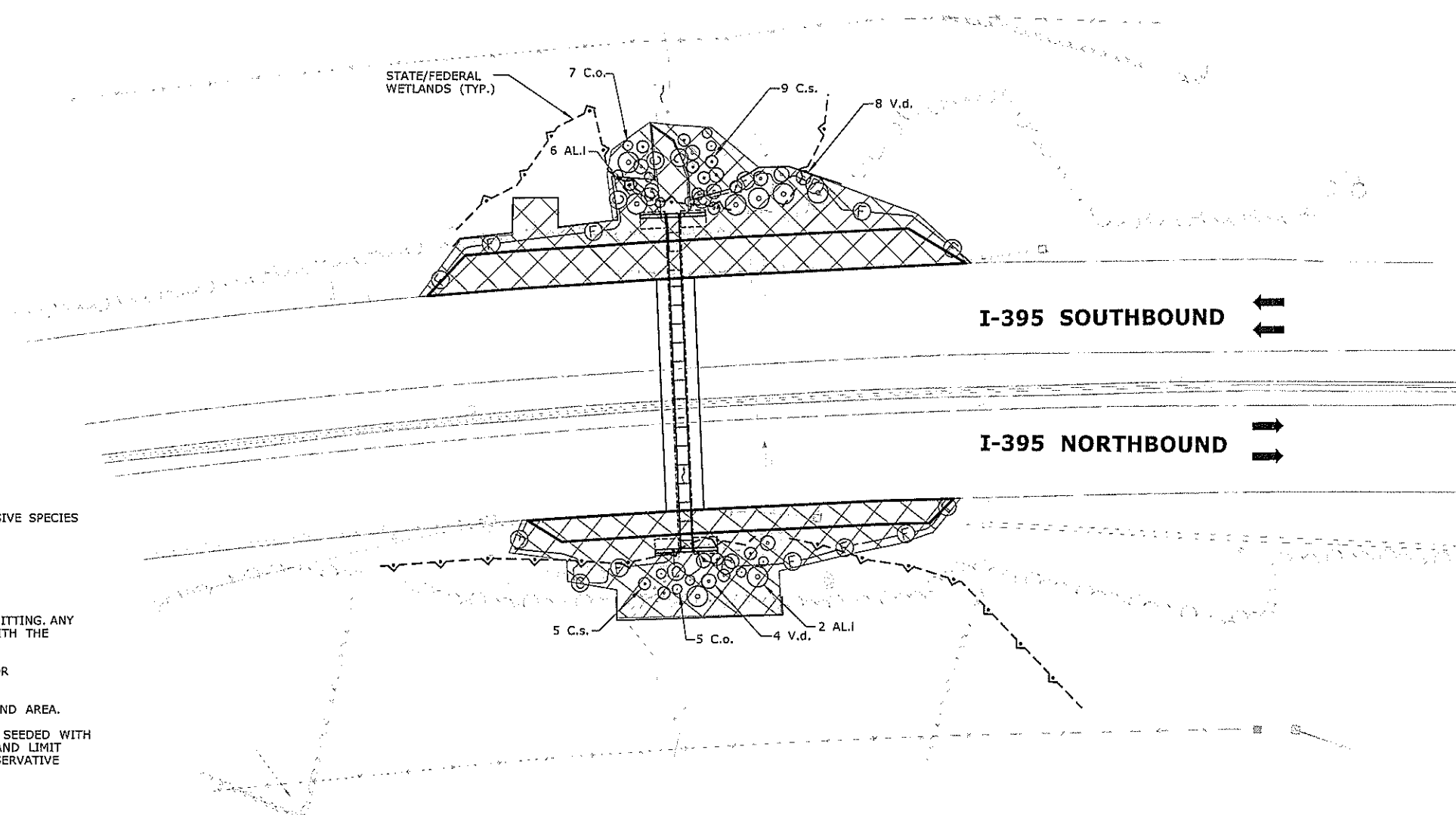
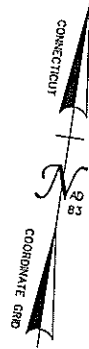


BR. NO. 06797
DOWNSTREAM GRADING PLAN



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT/MJM CHECKED BY: JH SCALE IN FEET 0 10 20 SCALE 1"=10'	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...IHW_MSH_0103-0266_Br 06797_GRD_PLN-01.DGN	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 250 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BRIDGE 06797 CULVERT DOWNSTREAM GRADING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-07 SHEET NO.	
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019				



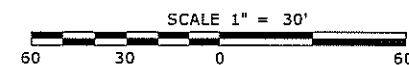
CONTROL AND REMOVAL OF INVASIVE SPECIES
(SEE NOTE 5)

NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.

PERMIT PLANT LIST

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	WETLAND INDICATOR
AL.I.	8	Speckled Alder	<i>Alnus incana</i>	18"-24" HT. B.B.	Field Located	FACW
C.s.	14	Red-Osier Dogwood	<i>Cornus sericea</i>	18"-24" HT. B.B.	Field Located	FACW
V.d.	12	Northern Arrowwood	<i>Viburnum dentatum</i>	18"-24" HT. B.B.	Field Located	FACW
C.o.	12	Common Buttonbush	<i>Cephalanthus occidentalis</i>	18"-24" HT. B.B.	Field Located	OBL



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 7/1/2019

REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 7/1/2019	DESIGNER/DRAFTER: MAM CHECKED BY: MJM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK
				PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266	DRAWING NO. PMT-08
				DRAWING TITLE: BRIDGE 06797 PERMIT PLANTING PLAN		SHEET NO.	

Attachment G
State Historic Preservation Office (SHPO) Exemption



STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Determination of Effect to Historic Properties

Author: Mark McMillan **Date:** October 20, 2015

Project: State No.: 103-266
F.A.P. No.: TBD
Project Title: Rehabilitation of Culverts
#06795, 06796, and 06797
Town: Norwich

Determination of Effect: No Historic Properties Affected

Project Description

Using federal and state funds, the Connecticut Department of Transportation (CTDOT) proposes to rehabilitate three structurally deficient culverts in Norwich. All three are single-bore asphaltic coated corrugated metal pipes installed beneath I-395. They have been listed on the Bridge Program List 28 for structures requiring major rehabilitation or replacement. The undertaking is currently in its concept level of development and a Rehabilitation Study is underway.

The range of alternatives being considered includes relining the existing pipes to replacing the structures entirely. It is possible that the rehabilitation of each culvert will be different from the other, depending on their individual conditions. No widening or other modifications to the existing configuration of I-395 is included as part of this work. Construction is anticipated to being in Spring, 2018.

Technical Review of Project

The specific conditions of each culvert vary, but each is a single cell asphalt-coated corrugated metal pipe (ACCMP) with reinforced concrete headwalls. All three culverts are categorized as Not Eligible for the National Register of Historic Places the statewide bridge inventory database maintained by CTDOT. Staff from the Office of Environmental Planning concur with this assessment.

Bridge #06795

Structure #06795 conveys Hammer Brook beneath I-395 in Norwich. Its single pipe is oval in profile, measuring 7'11" wide and 5'7" tall. The pipe is 213' long and there is 10 vertical feet of overburden fill between it and the roadbed.

Recent inspections by CTDOT's Bridge Evaluation and Safety unit have determined that Bridge #06795 is in Serious condition due to the loss of its protective coating and heavy corrosion of its pipe liner. This has resulted in vertical deformations of the pipe that is measured up to five inches in some areas. At its western inlet, the bottom plate of the liner exhibits holes up to three feet long and three inches wide.

The soils surrounding the bridge are categorized as Udorthent-Urban Land Complex within the road right of way. Predictive models find this type of sediments to be of low archaeological sensitivity that would be unlikely to yield historic or cultural information. To the east and west of the right of way are Rippowam Fine Sandy Loam and Raypool Silt Loam soils, which are considered to have high archaeological potential. There are no known archaeological sites within a mile of the culvert.

Abutting the right of way of I-395 to the west is the Bean Hill Historic District.¹ This National Register District is characterized by its collection of 18th and 19th century buildings centered around the town green. Hammer Creek runs through two properties within the district. At 21 Huntington Avenue is a 1950 Cape style cottage that is categorized as 'non-contributing' in the Bean Hill NRHP Inventory form. The parcel identified as 29 Huntington Avenue is omitted from the Inventory form. According to Norwich town records, it contains a Ranch style single family residence that was constructed in 1976.

The houses on both parcels are located at the western end of their lots. They are separated from the culvert by over 400 feet of undeveloped land. Given their non-contributing status and the buffer distance they provide between the culvert and the historic district, the proposed rehabilitation of Bridge #06795 will not foreseeably impact the historic nature of the district.

Bridge #06796

Bridge #06796 conveys Byron Brook beneath I-395. It is a 6 foot diameter ACCMP that is 65 feet long and situated beneath 20 feet of overburden. It was installed in 1955 and does not appear to have undergone any significant alterations. The culvert is in Poor condition due to deterioration of its components and a backup of water within it caused by a beaver dam downstream.

Bridge #06796 is located 2.25 miles north of Bridge #06795 in an undeveloped area of Norwich. The sediments within this culvert's area of potential effect are classified as Charlton-Chatfield Complex soils, which have a moderate level of archaeological sensitivity. This is reduced by the steep (15-45%) slope of to the west of the culvert and "very rocky" condition of the soils. There are no known archaeological sites within a mile of the culvert.

¹ National Park Service, *Bean Hill Historic District (NRHP #82001006)*, listed on December 8, 1982.

Bridge #06797

Bridge #06797 is located 1200 feet northeast of Bridge #06796. It consists of an oval ACCMP pipe that is 6' wide, 3'8" tall, and 76 feet long. It conveys an unnamed brook beneath I-395, whose roadbed is 3 feet above the top of the pipe.

There are a variety of sediments surrounding this culvert, but all are characterized as being "very stony". There are no known archaeological sites within a mile of this culvert. Given the predicted low potential of the soils in the project area and the known soil disturbances caused by the construction of I-395, there is limited potential for impacting intact archaeological resources.

Determination

The work proposed under State Project #103-266 would normally be classified as a "Bridge/Culvert Related Projects" and "Interstate Related Projects". These types of Minor Transportation Projects are typically exempt from Section 106 review under Appendix B (*Screened Undertakings Not Requiring Connecticut CTSHPO Review*) of the Section 106 Programmatic Agreement². The proximity of Bridge #06795 to the Bean Hill Historic District does not allow for the application of this exemption.

It is the professional opinion of qualified staff from CTDOT's Office of Environmental Planning that the rehabilitation of this culvert will not foreseeably impact the overall historic character of the district. In accordance with the Section 106 Programmatic Agreement, CTDOT determines that the undertaking will have "No Historic Properties Affected". However, we request a further review of the plans when the project approaches final design to confirm this determination.

No further consultation with the Connecticut State Historic Preservation Officer (CTSPHO) is required. A copy of this determination will be included in the quarterly report of Minor Transportation Projects that is submitted to CTSHPO.

Because the undertaking is within the Quinebaug-Shetucket National Heritage Corridor, a copy of this letter will be sent to The Last Green Valley. As stewards of this resource, they will have thirty days to review and comment on this undertaking.



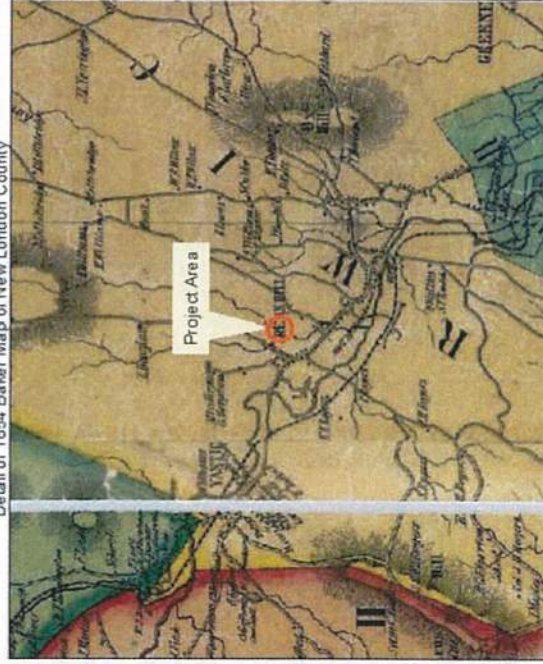
Mark McMillan
National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation

² *Programmatic Agreement among the Federal Highway Administration, the Connecticut Department of Transportation, the Connecticut State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Implementation of Minor Transportation Projects*, signed October 26, 2012. Accessible online at: www.ct.gov/culturalresources

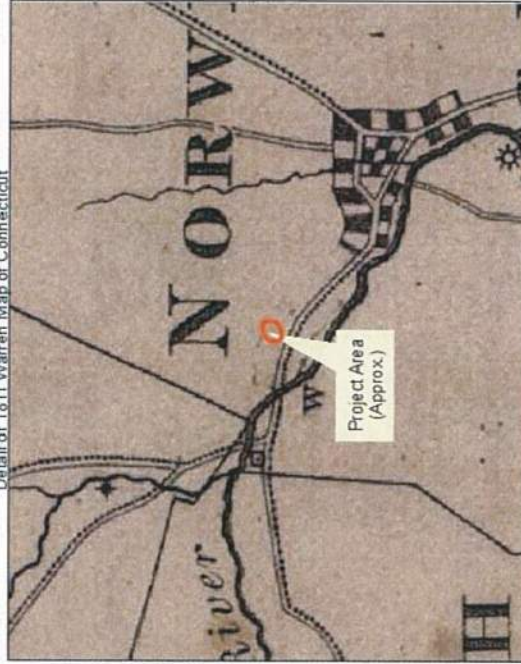
Detail of 2010 Aerial Photography



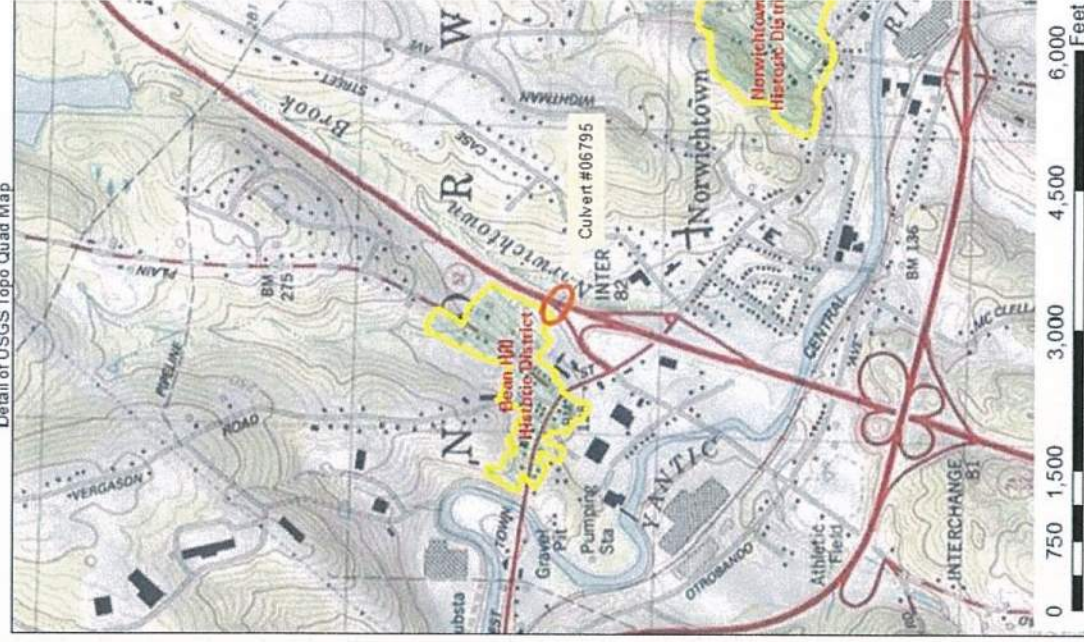
Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



Detail of USGS Topo Quad Map



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culvert #06795
Norwich

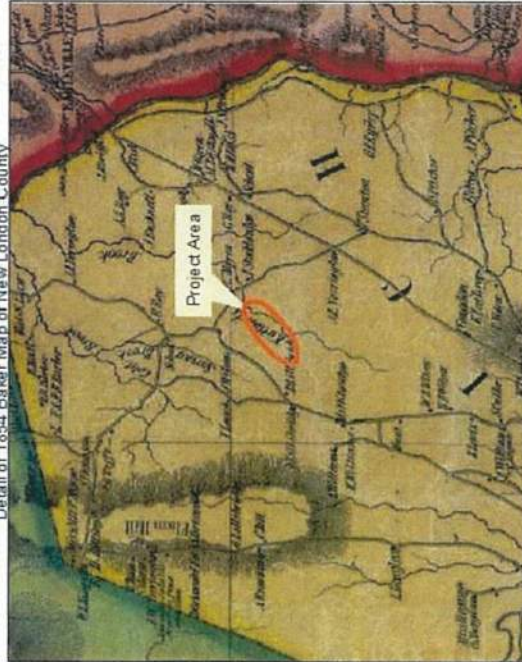


August 27, 2010

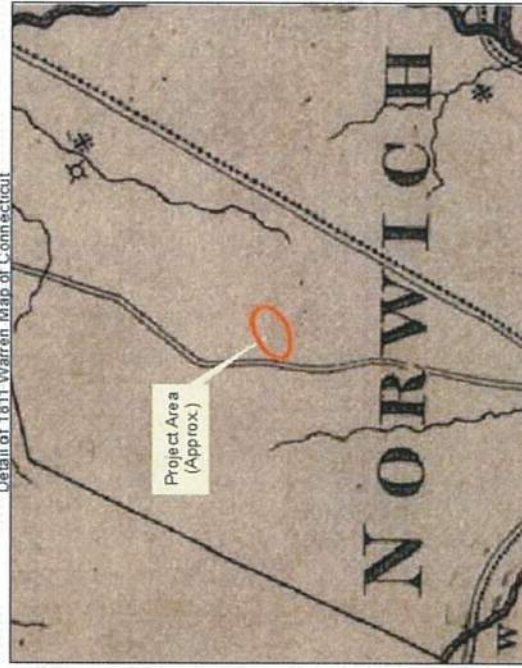
Detail of 2010 Aerial Photography



Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



Detail of USGS Topo Quad Map



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culverts
#06796 and 06797
Norwich

Predicted Archaeological
Soil Sensitivity

High	Low
Moderate	Poor
Variable	Unknown

Historic District

Cemetery/4(f) Resource

Approximate Location
of Archaeological Site

Historic
Pre-Contact
Unknown



Attachment H
Tribal Historic Preservation Office (THPO) Exemption

From: michelle.herrell@dot.gov
Sent: Tuesday, October 27, 2015 8:18 AM
To: McMillan, Mark J.
Subject: No Tribal Consultation Required FAPN TBD/SPN0103-0266, Culvert Rehab on I-395, Norwich

Hi Mark,

I have reviewed CTDOT's proposed project which involves rehabilitating culverts #06795, #06796, and #06797, which are installed beneath I-395 in Norwich, CT. The culverts are in need of major rehabilitation or replacement. As noted in your October 20, 2015 letter, the work would occur within previously disturbed existing road right-of-way. As per the THPO Section 106 Agreements with FHWA-CT Division, dated January 4, 2012 and May 14, 2013, this project would generally fall within the category of "resurfacing or repair of existing ramps or roadways within the previously disturbed right-of-way," with no historic properties affected.

With this email, and taking all these items into consideration, the FHWA-CT Division has determined that tribal consultation would not be required for this project. Should any changes be made to the scope of work for this project that would involve additional ground disturbance beyond what is currently proposed, tribal consultation would have to be reconsidered.

Michelle Herrell
Environmental Protection Specialist
Federal Highway Administration | Connecticut Division Office
628-2 Hebron Avenue, Suite 303 | Glastonbury, CT 06033
P: (860) 494-7577 | F: (860) 659-6724
michelle.herrell@dot.gov

Attachment I
Interagency Coordination Meeting Notes



DEEP / DOT

REGULATORY COORDINATION

Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. Bridge No. 06795-

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCMP) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes

2. Bridge No. 06796-

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. Bridge No. 06797-

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.

Applicant: General Public, State of Connecticut

Effective Date: August 19, 2016

Expiration Date: August 19, 2021

**DEPARTMENT OF THE ARMY
GENERAL PERMITS FOR THE
STATE OF CONNECTICUT
&
LANDS LOCATED WITHIN THE
BOUNDARIES OF AN INDIAN RESERVATION¹**

The New England District of the U.S. Army Corps of Engineers (Corps) hereby issues twenty-one (21) General Permits (GPs), listed below, for activities subject to Corps jurisdiction in waters of the United States (U.S.), including navigable waters, within boundaries of the State of Connecticut and lands located within the boundaries of an Indian reservation. These GPs are issued in accordance with Corps regulations at 33 CFR 320 - 332 [see 33 CFR 325.5(c)(1)], and authorizes activity-specific categories of work that are similar in nature and cause no more than minimal individual and cumulative adverse environmental impacts. These GPs will provide protection to the aquatic environment and the public interest while effectively authorizing activities that have no more than minimal individual and cumulative adverse environmental effects.

GENERAL CRITERIA

In order for activities to qualify for these GPs, they must meet the terms and eligibility criteria and stipulations listed in Appendix A – General Permits as well as the Appendix B General Conditions.

Projects may qualify for the following:

- Self-Verification (inland) - Self -Verification Notification Form (SVNF) is required
- Self-Verification (coastal) - SVNF NOT required. Corps relies on CT DEEP, OLISP submittals.
- Pre-Construction Notification (PCN) -
 - Inland - Application to and written approval from the Corps is required.
 - Coastal - Notification to Corps provided by CT DEEP, OLISP or by applicants as necessary. Written approval from the Corps is required.

If your project is ineligible for Self-Verification (SV), it may be screened under PCN or may require an Individual Permit. The thresholds for activities eligible for Self-Verification and PCN are defined in Appendix A. These GPs do not affect the Corps Individual Permit review process or activities exempt from Corps regulation.

¹ Indian reservation lands are considered a sovereign nation, and are therefore acknowledged separately from the State of Connecticut for purposes of this General Permit.

Connecticut General Permits

An activity is authorized under GPs 1-21 below only if that activity and the permittee satisfy all of the GP's terms and conditions.

1. Aids to navigation & temporary recreational structures
2. Repair or maintenance of existing currently serviceable, authorized or grandfathered structures/fills, removal of structures
3. Moorings
4. Pile-supported structures & floats, including boat lifts/hoists and other miscellaneous Structures & work
5. Boat ramps and marine railways
6. Utility line activities
7. Dredging, transport & disposal of dredged material, beach nourishment, rock removal & rock relocation
8. Discharges of dredged or fill material incidental to the construction of bridges
9. Shoreline and bank stabilization projects
10. Aquatic habitat restoration, establishment and enhancement activities
11. Fish and wildlife harvesting activities
12. Oil spill and hazardous material cleanup
13. Cleanup of hazardous and toxic waste
14. Scientific measurement devices
15. Survey activities
16. Aquaculture projects and fisheries
17. New/expanded developments & recreational facilities
18. Linear transportation projects – wetland crossings only
19. Stream, river & brook crossings (not including wetland crossings)
20. Energy generation and renewable energy generation facilities and hydropower projects
21. Temporary fill not associated with any other GP activities



US Army Corps of Engineers
BUILDING STRONG.

Errata sheet for the Connecticut General Permits May 21, 2019

The Corps of Engineers, New England District, has compiled this list of corrections and clarifications for the Connecticut General Permits that were issued on August 19, 2016. We may update this list periodically. Please contact Diane M. Ray at diane.m.ray@usace.army.mil or at (978-318-8831) with any questions or suggestion.

1. GP 7. Revised to allow for beach grading under the Pre-Construction Notification (PCN) process. Beach grading includes the redistribution and regrading of on-site beach sand between mean low water and the high tide line without the addition of any off-site beach sand or other material.

Beach scraping has been deleted from “not authorized under GP 7” paragraph.

2. Replaced “Applicants must also submit two copies of the following to the Corps, on a CD if available and hard copy” under Section 1 – Review Categories-Application Procedures –Inland, paragraph #3 Applying for an Authorization through the PCN process with:

Applicants must also submit one copy of the following to the Corps, on a CD if available, OR hard copy if CD is not available.

3. Replaced “Not authorized” description in Appendix A – General Permits, GP 7 with the following:

Not authorized under GP 7 are: (a) New dredging with >1000 SF of impacts to intertidal areas or saltmarsh or >100 SF of impacts to vegetated shallows; (b) Maintenance dredging and/or disposal with >1/2 acre of impacts to tidal Special Aquatic Sites (SAS); (c) new dredging where the primary purpose is sand mining for beach nourishment; (d) Rock removal and relocation for navigation >1/2 acre; or (e) blasting.

4. Added the following General Condition for clarity:

General Condition 37. Use of Multiple General Permits. The use of more than one GP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the GPs does not exceed the acreage limit of the GP as specified. For example, if a road crossing over inland waters is constructed under GP 18, with an associated utility line crossing authorized by GP 6, the maximum acreage loss of waters of the United States for the total project cannot exceed 1 acre.

5. Replace **General Condition 10 d.** as follows:

d. Federal agencies should follow their own procedures for complying with the requirements of the ESA. Non-Federal representatives designated by the Corps to conduct informal consultation or prepare a biological assessment should follow the requirements in the designation document(s) and the ESA. Federal permittees and non-Federal representatives must provide the Corps with the appropriate documentation to demonstrate compliance with those requirements. The Corps will review the documentation and determine whether it is sufficient to address ESA compliance for the GP activity, or whether additional ESA consultation is necessary. Unless it is required elsewhere in this document, a PCN is not required if: (i) another (lead) Federal agency has completed all required §7 consultation; or (ii) a non-Federal representative designated by the Corps in writing has completed all required §7 informal consultation.

6. The attached Table 1. Connecticut Water Quality Certification was edited for clarity.

TABLE 1. CONNECTICUT WATER QUALITY CERTIFICATION
Water Quality Certification – Non-Tidal Waters, Wetlands, and Watercourses *
Department of the Army - General Permits for the State of Connecticut
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	Self-Verification (SV)	Pre-Construction Notification (PCN)
	<u>WHERE GRANTED, APPENDIX E: SELF-VERIFICATION NOTIFICATION FORM AND PLANS ARE REQUIRED TO BE FILED WITH CT DEEP – See Appendix E for instructions</u>	<u>WHERE GRANTED, APPLICATION TO CT DEEP IS REQUIRED – See Section 1, II. 3. (pages 2-3) of the Army Corps GP for instructions</u>
GP 2. Repair or Maintenance of Existing Currently Serviceable, Authorized or Grandfathered Structures & Fills, Removal of Structures	<p>Granted subject to the following restriction:</p> <ul style="list-style-type: none"> Drawdown does not exceed 18 months and one growing season (April through September) <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 2. (See GP 19.)</p> <p>Culvert slip-lining is not eligible for Section 401 Water Quality Certification under GP2. (See GP 19.)</p>	<p>Granted for impacts not exceeding 0.5 acre, subject to the following restriction:</p> <ul style="list-style-type: none"> Drawdown does not exceed 18 months and one growing season (April through September) <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 2. (See GP 19.)</p>
GP 5. Boat Ramps & Marine Railways	Granted	Granted for impacts not exceeding 0.5 acre.
GP 6. Utility Line Activities	Granted	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other activities with impacts exceeding 0.5 acre require individual (regular) Section 401 Water Quality Certification.</p>
GP 9. Shoreline & Bank Stabilization Projects	<p>Granted for shoreline and banks stabilization activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for shoreline and bank stabilization activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other shoreline stabilization activities exceeding 50 feet in length are not eligible for Section 401 Water Quality Certification under SV.</p> <p>Other stream, river, or brook bank stabilization activities exceeding 50 feet in total length for one stream bank or 50 feet cumulative length for both stream banks are not eligible for Section 401 Water Quality Certification under SV.</p> <p>Activities that include the placement of fill within the streambed beyond the toe of slope of the stream bank are not eligible for Section 401 Water Quality Certification under SV</p>	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other shoreline stabilization activities exceeding 100 feet in total length require individual (regular) Section 401 Water Quality Certification.</p> <p>Other stream, river, or brook bank stabilization activities exceeding 100 feet in total length for one stream bank or 100 feet cumulative length for both stream banks require individual (regular) Section 401 Water Quality Certification.</p>

TABLE 1. CONNECTICUT WATER QUALITY CERTIFICATION
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	Self-Verification (SV)	Pre-Construction Notification (PCN)
	<u>WHERE GRANTED, APPENDIX E: SELF-VERIFICATION NOTIFICATION FORM AND PLANS ARE REQUIRED TO BE FILED WITH CT DEEP – See Appendix E for instructions</u>	<u>WHERE GRANTED, APPLICATION TO CT DEEP IS REQUIRED – See Section 1, II. 3. (pages 2-3) of the Army Corps GP for instructions</u>
GP 10. Aquatic Habitat Restoration, Establishment & Enhancement Activities	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) or by a federal environmental resource management agency that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other activities are not eligible for Section 401 Water Quality Certification under SV.</p>	Granted
GP 11. Fish & Wildlife Harvesting Activities	Granted	Granted
GP 12. Oil Spill & Hazardous Material Cleanup	Waived	Waived
GP 13. Cleanup of Hazardous & Toxic Waste	Waived	Waived
GP 14. Scientific Measurement Devices	Waived	Waived
GP 15. Survey Activities	Waived	Waived
GP 17. New/Expanded Developments & Recreational Facilities	<p>Granted, except as noted below.</p> <p>New roadway and driveway crossings in wetlands are not eligible for Section 401 Water Quality Certification under GP 17. (See GP 18.)</p> <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP17. (See GP 19.)</p>	<p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative state intra-agency screening process.</p> <p>Other activities with impacts exceeding 0.5 acre require individual (regular) Section 401 Water Quality Certification.</p> <p>New roadway and driveway crossings in wetlands are not eligible for Section 401 Water Quality Certification under GP 17. (See GP 18.)</p> <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 18. (See GP 19.)</p>

TABLE 1. CONNECTICUT WATER QUALITY CERTIFICATION
Water Quality Certification – Non-Tidal Waters, Wetlands, and Watercourses *
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	Self-Verification (SV) <u>WHERE GRANTED, APPENDIX E: SELF-VERIFICATION NOTIFICATION FORM AND PLANS ARE REQUIRED TO BE FILED WITH CT DEEP – See Appendix E for instructions</u>	Pre-Construction Notification (PCN) <u>WHERE GRANTED, APPLICATION TO CT DEEP IS REQUIRED – See Section 1, II. 3. (pages 2-3) of the Army Corps GP for instructions</u>
<p>GP 18. Linear Transportation Projects – Wetland Crossings Only</p>	<p>Granted</p> <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 18. (See GP 19.)</p>	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>All other activities with impacts exceeding 0.5 acre require individual (regular) Section 401 Water Quality Certification.</p> <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 18. (See GP 19.)</p>
<p>GP 19. Stream, River & Brook Crossings (Not Including Wetland Crossings)</p> <p>Continued on next page</p>	<p>Granted for stream, river or brook crossings that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Granted for all other stream, river, brook or other watercourse crossings by means of a BRIDGE or OPEN-BOTTOM STRUCTURE that meets the following standards:</p> <ul style="list-style-type: none"> • spans at least 1.2 times the watercourse bank full width, • allows for the continuous, uninterrupted flow of the 50-year frequency storm flows, • no riprap is placed within or across the bed of the brook; and, • appurtenant stream bank stabilization does not exceed 50 feet along any upstream or downstream bank. <p>Stream, river, brook and other watercourse crossings that do not meet the standards above are not eligible Section 401 Water Quality Certification for Self-Verification.</p> <p>Culvert slip lining is not eligible for Section 401 Water Quality Certification for Self-Verification.</p> <p>Wetland crossings are not eligible for Section 401 Water Quality Certification under GP 19. (See GP 18.)</p>	<p>Granted for stream, river or brook crossings that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>All other stream, river and brook crossings require individual (regular) Section 401 Water Quality Certification.</p> <p>Wetland crossings are not eligible for Section 401 Water Quality Certification under GP 19. (See GP 18.)</p>

TABLE 1. CONNECTICUT WATER QUALITY CERTIFICATION
Water Quality Certification – Non-Tidal Waters, Wetlands, and Watercourses *
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	Self-Verification (SV)	Pre-Construction Notification (PCN)
	<u>WHERE GRANTED, APPENDIX E: SELF-VERIFICATION NOTIFICATION FORM AND PLANS ARE REQUIRED TO BE FILED WITH CT DEEP – See Appendix E for instructions</u>	<u>WHERE GRANTED, APPLICATION TO CT DEEP IS REQUIRED – See Section 1, II. 3. (pages 2-3) of the Army Corps GP for instructions</u>
GP 19. Stream, River & Brook Crossings (Not Including Wetland Crossings)	<p>Granted for stream, river, brook or other watercourse crossings using a culvert provided:</p> <ul style="list-style-type: none"> • the tributary watershed to the culvert does not exceed 1 sq. mile (640 acres); • the culvert gradient (slope) is no steeper than the streambed gradient immediately upstream or downstream of the culvert, • for a crossing constructed using a single box or pipe arch culvert, the inverts are set not less than 12 inches below the streambed elevation • for a crossing constructed using multiple box or pipe arch culverts, the inverts of one of the boxes or pipe arch culverts are set not less than 12 inches below the elevation of the streambed, • for a crossing constructed using a pipe culvert, the inverts are set such that not less than 25% of the pipe diameter or 12 inches, whichever is less, is set below the streambed elevation, • the culvert is backfilled with natural substrate material matching upstream and downstream streambed substrate, • the structure, including inlet and outlet protection measures, does not otherwise impede the passage of fish and other aquatic organisms, and • the structure allows for continuous flow of the 50-year frequency storm flows 	
GP 21. Temporary Fill Not Associated With Any Other GP Activities	Granted	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other activities with impacts exceeding 0.25 acre require individual (regular) Section 401 Water Quality Certification.</p>

TABLE 1. CONNECTICUT WATER QUALITY CERTIFICATION
Water Quality Certification – Non-Tidal Waters, Wetlands, and Watercourses *
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*** ACTIVITIES NOT ELIGIBLE FOR SECTION 401 CERTIFICATION UNDER THIS GENERAL PERMIT CERTIFICATION**

The following activities are not eligible for Section 401 Water Quality Certification under this general permit certification and will require an individual (regular) Section 401 Water Quality Certification:

Detention or retention of stormwater in non-tidal waters, wetlands or watercourses including any watercourse or wetland crossing that by design or default functions to provide stormwater detention, and any construction of a stormwater detention or retention basin in non-tidal waters or wetlands.

Piping, boxing, enclosing or covering of a non-tidal watercourse for a purpose other than a driveway or roadway crossing.

Activities with direct, indirect or secondary impact(s) to: Special Wetlands⁽¹⁾, Threatened, Endangered, or Special Concern Species⁽²⁾, Significant Natural Communities/Critical Habitats⁽²⁾ identified by the Connecticut Natural Diversity Database.

Activities within a FEMA established floodplain that would adversely affect the hydraulic characteristics of the floodplain⁽³⁾.

DEFINITIONS

⁽¹⁾ **Special Wetlands:** Include vernal pools, bogs, fens, cedar swamps, spruce swamps, calcareous seepage swamps, and wetlands that provide habitat for threatened or endangered species or species of special concern as designated by the State of Connecticut Natural Diversity Database. The following definitions for bogs, calcareous seepage wetlands, cedar swamps, fens, spruce swamps, and vernal pools apply for the purposes of this GP:

Bog: a peat accumulating wetland dominated by sphagnum moss. Typical plant species include sphagnum moss, leatherleaf, black spruce, pitcher plant and sundew.

Calcareous Seepage Swamp: a forested wetland characterized by the discharge of groundwater with a chemistry influenced by an underlying limestone geology.

Cedar Swamp: a forested wetland characterized by the presence of Northern White Cedar or Atlantic White Cedar.

Fen: a peat accumulating wetland dominated by sedges and/or ericaceous shrubs. Typical plant species include low sedges, ericaceous shrubs, sphagnum and other mosses.

Spruce Swamp: a forested wetland characterized by the presence of Red or Black Spruce.

Vernal Pool: an often temporary body of water occurring in a shallow depression of natural or human origin that fills during spring rains and snow melt and typically dries up during summer months. Vernal pools support populations of species specially adapted to reproducing in these habitats. Such species may include wood frogs, mole salamanders (*Ambystoma* sp.), fairy shrimp, fingernail clams, and other amphibians, reptiles and invertebrates. Vernal pools lack breeding populations of fish. **All vernal pools are subject to the jurisdiction of the Connecticut Department of Energy and Environmental Protection under Connecticut Water Quality Standards.**

⁽²⁾ **Threatened, Endangered or Special Concern Species; Significant Natural Communities/Critical Habitats:** Species listed by CT DEP pursuant to Chapter 495 of the Connecticut General Statute as threatened or endangered species or species of special concern. General locations of threatened and endangered species and species of special concern, and significant natural communities/critical habitats are identified on maps published by the Connecticut Department of Energy and Environmental Protection entitled "Natural Diversity Data Base Areas" and on the CTECO Interactive Map Viewers at www.cteco.uconn.edu.

⁽³⁾ **Adverse Effect to Hydraulic Characteristics:** An adverse effect to hydraulic characteristics includes an increase in flood water surface elevation, an increase in flood flow velocity or a restriction of flood flow conveyance in a manner that would impact upstream, downstream or adjacent property.

SECTION 1

REVIEW CATEGORIES AND APPLICATION PROCEDURES FOR PROJECTS WITHIN NON-TIDAL WATERS AND WETLANDS WITHIN THE STATE OF CONNECTICUT AND LANDS LOCATED WITHIN AN INDIAN RESERVATION

I. ACTIVITIES COVERED:

The discharge of dredged or fill material into Waters of the United States, which is regulated by the Corps under Section 404 of the Clean Water Act (CWA), see 33 CFR 328.

II. REVIEW PROCESS:

1. State and Local Approvals:

In order for authorizations under these GPs to be valid and before commencing any work within Corps jurisdiction, applicants must apply for and obtain State Water Quality Certification as well as any local approvals (see **General Condition 1**):

Water Quality Certification (WQC) under Section 401 of the Federal CWA (33 USC Sec. 1341). Section 401(a)(1) of the Clean Water Act requires that applicants obtain a WQC or waiver from the state water pollution control agency which in Connecticut is the Connecticut Department of Energy and Environmental Protection (CT DEEP) or U.S. EPA for Indian reservation lands to discharge dredged or fill material into waters of the U.S. (see **attached Water Quality Certification and table**).

The CT DEEP, Inland Water Resources Division (CT DEEP IWRD) has conditionally granted WQC for Self-Verification (SV) activities in inland wetlands and waterways provided those activities meet the criteria as contained in the attached **Appendix A – General Permits** document.

The CT DEEP- IWRD has granted WQC with terms, limitations and conditions specified therein.

The CT DEEP- IWRD has waived WQC for GP 12, GP 13, GP 14, and GP 15.

The U.S. EPA granted WQC for Self-Verification and PCN activities located on lands within the boundaries of an Indian Reservation.

2. General Permit Review Categories:

a. Self-Verification – An application to the Corps is NOT required. However, submittal of the attached Self-Verification Notification Form at Appendix E to the Corps and CT DEEP, IWRD is required prior to commencement of work authorized by these GPs.

Eligibility Criteria

Activities in Connecticut and lands located within the boundaries of an Indian reservation that meet the following criteria are eligible under Self-verification of this General Permit:

- are subject to Corps jurisdiction (See **General Condition 2**),
- meet the criteria of Self-Verification in the attached **Appendix A - General Permits**, and
- meet the General Conditions of the GPs.

Project proponents seeking Self-Verification authorizations must comply with the General Conditions and other federal laws such as the National Historic Preservation Act, the Endangered Species Act (ESA) and the Wild and Scenic Rivers Act. Therefore, consultation with the Corps and/or outside experts, such as the State Historic Preservation Office and any appropriate Indian tribes, is recommended when there is a high likelihood of the presence of resources of concern.

b. Pre-Construction Notification (PCN) – An application to the Corps is required.

Projects not eligible under Self-Verification of the GPs may be screened under PCN, provided they meet the criteria as defined in the attached **Appendix A – General Permits** for PCN activities.

Eligibility Criteria

Activities in Connecticut and lands located within an Indian reservation that meet the following criteria are eligible under PCN of this General Permit:

- are subject to Corps jurisdiction (See **General Condition 2**),
- meet the criteria of PCN in the attached **Appendix A – General Permits**, and
- meet the General Conditions of the GPs.

3. Applying for an authorization through the PCN process:

Applicants must also submit two copies of the following to the Corps, on a CD if available and hard copy:

- Corps application form (ENG Form 4345) found at <http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/ObtainPermit.aspx>
- 8.5” x 11” or 11” x 17” drawings and one large-scale drawing,
- wetlands functions and values assessment,
- Federal wetland delineation documentation (data sheets),
- The CT DEEP addendum found at: http://www.ct.gov/deep/lib/deep/Permits_and_Licenses/LandUse_General_Permits/Inland_Water_General_Permits/CT_addendum_app.pdf
- Correspondence with the State Historic Preservation Office and Tribal Historic Preservation Officer indicating coordination with these entities along with a completed CT SHPO Form. The CT SHPO Form is available on the CT SHPO website under Historic Preservation – Environmental Review at http://www.cultureandtourism.org/cct/lib/cct/Project_Notification_Form_final.pdf
- a plan describing any proposed mitigation along with an Invasive Species Control Plan.

Applicants must concurrently submit three copies of the following to the CT DEEP at the address below:

- the Corps application form,
- 8.5” x 11” or 11” x 17” drawings and one large-scale drawing,
- wetlands functions and values assessment,
- Federal wetlands delineation documentation (data sheets),
- CT DEEP addendum, and
- a plan describing any proposed mitigation.

**State of Connecticut
Department of Energy & Environmental Protection
Central Permit Processing Unit
79 Elm Street
Hartford, CT 06106-5127**

NOTE: Applicants must submit all project revisions and modifications to both agencies.

The Corps will coordinate review of all PCN activities with federal and state agencies to ensure that the proposed activity results in no more than a minimal impact to the aquatic environment. To be eligible and subsequently authorized, an activity must meet the eligibility criteria in **2. General Permit Review Categories** above and result in no more than minimal impacts to the aquatic environment as determined by the Corps in conjunction with the interagency review team which consists of federal and state resource agencies. This may require project modifications involving avoidance, minimization, and/or compensatory mitigation for unavoidable impacts to ensure the net effects of a project are minimal.

Written approval from the Corps for PCN activities is required before work can commence.

Emergency Situation Procedures: 33 CFR 325.2 (e) (4) states that an “emergency” is a situation which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under standard procedures.” Notification to the Corps and CT DEEP – IWRD is required. The Corps will determine if a project qualifies as an emergency and will work with all applicable agencies to expedite authorization in emergency situations. If the project qualifies as an emergency, authorization under Self-verification or PCN of the GPs is not required.

Individual Permit Procedures: Work that is **NOT** eligible for authorization under the GPs as defined in the attached **Appendix A – General Permits**, or that does not meet the terms and conditions of the GPs, will require review under the Corps Individual Permit procedures (see 33 CFR Part 325.1). The applicant shall submit the appropriate application materials (including the Corps ENG 4345 application form) to the Corps of Engineers. General information and application forms can be obtained at the Corps web site noted in Paragraph 3 above. An individual Water Quality Certification is required from the CT DEEP, IWRD. **The application form and instructions for Section 401 Water Quality Certification are available from the Connecticut DEEP web site at http://www.ct.gov/deep/cwp/view.asp?a=2709&q=324168&depNav_GID=1643.**

TABLE 1. CONNECTICUT WATER QUALITY CERTIFICATION
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	Self-Verification (SV)	Pre-Construction Notification (PCN)
	<u>WHERE GRANTED, APPENDIX E: SELF-VERIFICATION NOTIFICATION FORM AND PLANS ARE REQUIRED TO BE FILED WITH CT DEEP – See Appendix E for instructions</u>	<u>WHERE GRANTED, APPLICATION TO CT DEEP IS REQUIRED – See Section 1, II. 3. (pages 2-3) of the Army Corps GP for instructions</u>
GP 2. Repair or Maintenance of Existing Currently Serviceable, Authorized or Grandfathered Structures & Fills, Removal of Structures	<p>Granted subject to the following restriction:</p> <ul style="list-style-type: none"> • Drawdown does not exceed 18 months and one growing season (April through September) <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 2. (See GP 19.)</p> <p>Culvert slip-lining is not eligible for Section 401 Water Quality Certification under GP2. (See GP 19.)</p>	<p>Granted for impacts not exceed 0.5 acre, subject to the following restriction:</p> <ul style="list-style-type: none"> • Drawdown does not exceed 18 months and one growing season (April through September) <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 2. (See GP 19.)</p>
GP 5. Boat Ramps & Marine Railways	Granted	Granted for impacts not exceeding 0.5 acre.
GP 6. Utility Line Activities	Granted	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other activities with impacts exceeding 0.5 acre require individual (regular) Section 401 Water Quality Certification.</p>
GP 9. Shoreline & Bank Stabilization Projects	<p>Granted for shoreline and banks stabilization activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for shoreline and bank stabilization activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other shoreline stabilization activities exceeding 50 feet in length are not eligible for Section 401 Water Quality Certification under SV.</p> <p>Other stream, river, or brook bank stabilization activities exceeding 50 feet in total length for one stream bank or 50 feet cumulative length for both stream banks are not eligible for Section 401 Water Quality Certification under SV.</p> <p>Activities that include the placement of fill within the streambed beyond the toe of slope of the stream bank are not eligible for Section 401 Water Quality Certification under SV</p>	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other shoreline stabilization activities exceeding 100 feet in total length require individual (regular) Section 401 Water Quality Certification.</p> <p>Other stream, river, or brook bank stabilization activities exceeding 100 feet in total length for one stream bank or 100 feet cumulative length for both stream banks require individual (regular) Section 401 Water Quality Certification.</p>

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	Self-Verification (SV) <u>WHERE GRANTED, APPENDIX E: SELF-VERIFICATION NOTIFICATION FORM AND PLANS ARE REQUIRED TO BE FILED WITH CT DEEP – See Appendix E for instructions</u>	Pre-Construction Notification (PCN) <u>WHERE GRANTED, APPLICATION TO CT DEEP IS REQUIRED – See Section 1, II. 3. (pages 2-3) of the Army Corps GP for instructions</u>
GP 10. Aquatic Habitat Restoration, Establishment & Enhancement Activities	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) or by a federal environmental resource management agency that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other activities are not eligible for Section 401 Water Quality Certification under SV.</p>	Granted
GP 11. Fish & Wildlife Harvesting Activities	Granted	Granted
GP 12. Oil Spill & Hazardous Material Cleanup	Waived	Waived
GP 13. Cleanup of Hazardous & Toxic Waste	Waived	Waived
GP 14. Scientific Measurement Devices	Waived	Waived
GP 15. Survey Activities	Waived	Waived
GP 17. New/Expanded Developments & Recreational Facilities	<p>Granted, except as noted below.</p> <p>New roadway and driveway crossings in wetlands are not eligible for Section 401 Water Quality Certification under GP 17. (See GP 18.)</p> <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP17. (See GP 19.)</p>	<p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative state intra-agency screening process.</p> <p>Other activities with impacts exceeding 0.5 acre require individual (regular) Section 401 Water Quality Certification.</p> <p>New roadway and driveway crossings in wetlands are not eligible for Section 401 Water Quality Certification under GP 17. (See GP 18.)</p> <p>Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 18. (See GP 19.)</p>

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	Self-Verification (SV)	Pre-Construction Notification (PCN)
	<u>WHERE GRANTED, APPENDIX E: SELF-VERIFICATION NOTIFICATION FORM AND PLANS ARE REQUIRED TO BE FILED WITH CT DEEP – See Appendix E for instructions</u>	<u>WHERE GRANTED, APPLICATION TO CT DEEP IS REQUIRED – See Section 1, II. 3. (pages 2-3) of the Army Corps GP for instructions</u>
GP 18. Linear Transportation Projects – Wetland Crossings Only	Granted Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 18. (See GP 19.)	Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP. Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process. All other activities with impacts exceeding 0.5 acre require individual (regular) Section 401 Water Quality Certification. Stream, river, brook or other watercourse crossings are not eligible for Section 401 Water Quality Certification under GP 18. (See GP 19.)
GP 19. Stream, River & Brook Crossings (Not Including Wetland Crossings) Continued on next page	Granted for stream, river or brook crossings that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP. Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process. Granted for all other stream, river, brook or other watercourse crossings by means of a BRIDGE or OPEN-BOTTOM STRUCTURE that meets the following standards: <ul style="list-style-type: none"> • spans at least 1.2 times the watercourse bank full width, • allows for the continuous, uninterrupted flow of the 50-year frequency storm flows, • no riprap is placed within or across the bed of the brook; and, • appurtenant stream bank stabilization does not exceed 50 feet along any upstream or downstream bank. Stream, river, brook and other watercourse crossings that do not meet the standards above are not eligible Section 401 Water Quality Certification for Self-Verification. Culvert slip lining is not eligible for Section 401 Water Quality Certification for Self-Verification. Wetland crossings are not eligible for Section 401 Water Quality Certification under GP 19. (See GP 18.)	Granted for stream, river or brook crossings that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP. Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process. All other stream, river and brook crossings require individual (regular) Section 401 Water Quality Certification. Wetland crossings are not eligible for Section 401 Water Quality Certification under GP 19. (See GP 18.)

TABLE 1. CONNECTICUT WATER QUALITY CERTIFICATION
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	Self-Verification (SV) <u>WHERE GRANTED, APPENDIX E: SELF-VERIFICATION NOTIFICATION FORM AND PLANS ARE REQUIRED TO BE FILED WITH CT DEEP – See Appendix E for instructions</u>	Pre-Construction Notification (PCN) <u>WHERE GRANTED, APPLICATION TO CT DEEP IS REQUIRED – See Section 1, II. 3. (pages 2-3) of the Army Corps GP for instructions</u>
GP 19. Stream, River & Brook Crossings (Not Including Wetland Crossings)	<p>Granted for stream, river, brook or other watercourse crossings using a culvert provided:</p> <ul style="list-style-type: none"> • the tributary watershed to the culvert does not exceed 1 sq. mile (640 acres); • the culvert gradient (slope) is no steeper than the streambed gradient immediately upstream or downstream of the culvert, • for a crossing constructed using a single box or pipe arch culvert, the inverts are set not less than 12 inches below the streambed elevation • for a crossing constructed using multiple box or pipe arch culverts, the inverts of one of the boxes or pipe arch culverts are set not less than 12 inches below the elevation of the streambed, • for a crossing constructed using a pipe culvert, the inverts are set such that not less than 25% of the pipe diameter or 12 inches, whichever is less, is set below the streambed elevation, • the culvert is backfilled with natural substrate material matching upstream and downstream streambed substrate, • the structure, including inlet and outlet protection measures, does not otherwise impede the passage of fish and other aquatic organisms, and • the structure allows for continuous flow of the 50-year frequency storm flows 	
GP 21. Temporary Fill Not Associated With Any Other GP Activities	Granted	<p>Granted for activities that receive written approval from the Connecticut Department of Energy and Environmental Protection (CT DEEP) through a formal cooperative state interagency screening process jointly conducted by the Connecticut Department of Transportation (CT DOT) and CT DEEP.</p> <p>Granted for activities conducted or funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) that receive written approval through a formal cooperative CT DEEP intra-agency screening process.</p> <p>Other activities with impacts exceeding 0.25 acre require individual (regular) Section 401 Water Quality Certification.</p>

TABLE 1. CONNECTICUT WATER QUALITY CERTIFICATION
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*** ACTIVITIES NOT ELIGIBLE FOR SECTION 401 CERTIFICATION UNDER THIS GENERAL PERMIT CERTIFICATION**

The following activities are not eligible for Section 401 Water Quality Certification under this general permit certification and will require an individual (regular) Section 401 Water Quality Certification:

Detention or retention of stormwater in non-tidal waters, wetlands or watercourses including any watercourse or wetland crossing that by design or default functions to provide stormwater detention, and any construction of a stormwater detention or retention basin in non-tidal waters or wetlands.

Piping, boxing, enclosing or covering of a non-tidal watercourse for a purpose other than a driveway or roadway crossing.

Activities with direct, indirect or secondary impact(s) to: Special Wetlands⁽¹⁾, Threatened, Endangered, or Special Concern Species⁽²⁾, Significant Natural Communities/Critical Habitats⁽²⁾ identified by the Connecticut Natural Diversity Database.

Activities within a FEMA established floodplain that would adversely affect the hydraulic characteristics of the floodplain⁽³⁾.

DEFINITIONS

⁽¹⁾ **Special Wetlands:** Include vernal pools, bogs, fens, cedar swamps, spruce swamps, calcareous seepage swamps, and wetlands that provide habitat for threatened or endangered species or species of special concern as designated by the State of Connecticut Natural Diversity Database. The following definitions for bogs, calcareous seepage wetlands, cedar swamps, fens, spruce swamps, and vernal pools apply for the purposes of this GP:

Bog: a peat accumulating wetland dominated by sphagnum moss. Typical plant species include sphagnum moss, leatherleaf, black spruce, pitcher plant and sundew.

Calcareous Seepage Swamp: a forested wetland characterized by the discharge of groundwater with a chemistry influenced by an underlying limestone geology.

Cedar Swamp: a forested wetland characterized by the presence of Northern White Cedar or Atlantic White Cedar.

Fen: a peat accumulating wetland dominated by sedges and/or ericaceous shrubs. Typical plant species include low sedges, ericaceous shrubs, sphagnum and other mosses.

Spruce Swamp: a forested wetland characterized by the presence of Red or Black Spruce.

Vernal Pool: an often temporary body of water occurring in a shallow depression of natural or human origin that fills during spring rains and snow melt and typically dries up during summer months. Vernal pools support populations of species specially adapted to reproducing in these habitats. Such species may include wood frogs, mole salamanders (*Ambystoma* sp.), fairy shrimp, fingernail clams, and other amphibians, reptiles and invertebrates. Vernal pools lack breeding populations of fish. **All vernal pools are subject to the jurisdiction of the Connecticut Department of Energy and Environmental Protection under Connecticut Water Quality Standards.**

⁽²⁾ **Threatened, Endangered or Special Concern Species; Significant Natural Communities/Critical Habitats:** Species listed by CT DEP pursuant to Chapter 495 of the Connecticut General Statute as threatened or endangered species or species of special concern. General locations of threatened and endangered species and species of special concern, and significant natural communities/critical habitats are identified on maps published by the Connecticut Department of Energy and Environmental Protection entitled "Natural Diversity Data Base Areas" and on the CTECO Interactive Map Viewers at www.cteco.uconn.edu.

⁽³⁾ **Adverse Effect to Hydraulic Characteristics:** An adverse effect to hydraulic characteristics includes an increase in flood water surface elevation, an increase in flood flow velocity or a restriction of flood flow conveyance in a manner that would impact upstream, downstream or adjacent property.

SECTION 2:
**REVIEW CATEGORIES & APPLICATION PROCEDURES FOR PROJECTS WITHIN
TIDAL, COASTAL AND NAVIGABLE WATERS WITHIN THE STATE OF
CONNECTICUT**

Connecticut's coastal area is statutorily defined as: all lands and waters within the municipalities of Greenwich, Stamford, Darien, Norwalk, Westport, Fairfield, Bridgeport, Stratford, Shelton, Milford, Borough of Woodmont, Orange, West Haven, New Haven, Hamden, North Haven, East Haven, Branford, Guilford, Madison, Clinton, Westbrook, Deep River, Chester, Essex, Borough of Fenwick, Old Saybrook, Lyme, Old Lyme, East Lyme, Waterford, New London, Montville, Norwich, Preston, Ledyard, Groton (city, Town and Long Point Borough), Mystic and Stonington (Town & Borough) [Section 22a-94(a) CGS].

Navigable Waters: Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. The Connecticut River has been determined to be a navigable water of the United States. [Refer to Title 33 CFR Part 329]

I. ACTIVITIES COVERED:

- Work and structures that are located in, under or over any navigable water of the U.S. (defined at 33 CFR 329) that affect the course, location, condition, or capacity of such waters; or the excavating from or depositing material in navigable waters. (Regulated by the Corps under Section 10 of the Rivers and Harbors Act of 1899);
- The discharge of dredged or fill material into waters of the U.S. (defined at 33 CFR 328), which is regulated by the Corps under Section 404 of the Clean Water Act (CWA)
- The transportation of dredged material for the purpose of disposal in the ocean. The Corps regulates these activities under Section 103 of the Marine Protection, Research and Sanctuaries Act. See 33 CFR 324.

II. REVIEW PROCESS:

1. Connecticut Department of Energy & Environmental Protection, Office of Long Island Sound Programs (DEEP OLISP) approvals:

In order for authorizations under these GPs to be valid and before commencing any work within Corps jurisdiction, applicants are responsible for applying for and obtaining any of the following required State or local approvals (see **General Condition 1**):

Water Quality Certification (WQC) Issuance or waiver under Section 401 of the Federal CWA (33 USC Section 1341). Section 401(a)(1) of the Clean Water Act requires that applicants obtain a WQC or waiver from the state water pollution control agency (CT DEEP) or EPA for Indian reservation lands to discharge dredged or fill material into waters of the U.S.

Coastal Zone Management Consistency (CZM) - Concurrence under Section 307 of the Federal CZM Act of 1972, as amended. Section 307(c) of the CZM of 1972, as amended, requires applicants to obtain a certification or waiver from CT DEEP OLISP that the activity complies with the state's CZM program for activities affecting a state's Coastal Area.

Project proponents involving dredging/excavation and associated disposal within the Byram River must also coordinate with NY DOS directly to obtain a certification or waiver that the activity complies with NYDOS' CZM program. Also, all projects with disposal at any of the Long Island Sound Disposal Sites require NY DOS CZM consistency. Additional information can be found at their website: <http://www.dos.ny.gov/opd/programs/consistency/>.

2. Corps Authorizations:

a. Self-Verification (SV) – Applicants are not required to submit an Application or Appendix E to the Corps. Instead, DEEP OLISP will forward copies of application packages and their approvals to the Corps on a weekly basis. If the Corps determines that a project meets this category, the Corps will forward verification of eligibility to the applicant.

Eligibility Criteria

Activities in Connecticut and lands located within the boundaries of an Indian reservation may proceed without application or notification to the Corps if they:

- are subject to Corps jurisdiction
- meet the definition of Self-Verification in **Appendix A - General Permits**, and
- meet the General Conditions of the GPs

Note: Activities subject to Corps jurisdiction that are NOT regulated by the DEEP OLISP will be subject to the Pre-Construction Notification (PCN) screening requirements of the GPs as noted below.

Project proponents seeking eligibility under the SV category must comply with the General Conditions of the GPs and other federal laws such as the National Historic Preservation Act, the Endangered Species Act (ESA) and the Wild and Scenic Rivers Act. Therefore, consultation with the Corps and/or outside experts such as the State Historic Preservation Office and any appropriate Indian tribes is recommended when there is a likelihood of the presence of resources of concern.

b. Pre-Construction Notification (PCN) (notification/application and written authorization required)

Projects not eligible under the SV category of the GPs may be screened under PCN category, provided they meet the criteria.

Eligibility Criteria

Activities in Connecticut and lands located within the boundaries of an Indian reservation that meet the following criteria **require written approval from the Corps**:

- are subject to Corps jurisdiction,
- meet the definition of PCN in this Section, and
- meet the General Conditions of the GPs

3. Applying for authorization through the PCN process:

a. CT DEEP, OLISP regulated activities

Structures and Dredging Permit Applications: Applicants/agents shall submit to the Corps, a copy of the DEEP Permit Consultation Form for U.S. Army Corps of Engineers Review along with project plans. The Corps will then coordinate this information with the interagency review team (see paragraph 4 below) and then return the form to applicants/agents for their submission to DEEP OLISP.

Certificates of Permission (COPs), General Permits (GPs) and Modifications: OLISP will forward copies of application packages and approvals to the Corps. If a project is determined to meet any of the PCN activities and is complete, the Corps will coordinate these projects with the interagency review team. If the Corps determines that an Individual permit or additional information is required, the Corps will coordinate directly with the applicant/agent.

NOTE: For projects which involve dredging and open water disposal - Applicants/agents must submit requests for sampling plans to the DEEP, OLISP and the Corps simultaneously, along with other required information specific to dredging/open water disposal, a detailed open water disposal site alternative analysis, and a completed New York State, Department of State (NYS DOS) Federal Consistency Assessment Form found at <http://nyswaterfronts.com/downloads/pdfs/fcaf2.pdf>. Please see our website at <http://www.nae.usace.army.mil/Regulatory/> for a list of all required additional information.

b. Aquaculture activities regulated by the Connecticut Department of Agriculture

This refers to marine- and land-based aquaculture activities, including associated structures regulated by the Department of Agriculture, Bureau of Aquaculture (DA/BA), Connecticut General Statutes Section 22-11h.

Applicants should apply directly to the DA/BA using the Joint Application for Aquaculture form found at: http://www.nae.usace.army.mil/reg/Permits/CT_AquacultureApplication.pdf. The DA/BA will forward a copy of the aquaculture application package to the Corps, the State of Connecticut Department of Energy & Environmental Protection's (CT DEEP) Boating Division, Marine Fisheries Division, Office of Long Island Sound Programs (OLISP), and CT DEEP, Inland Water Resources Division (IWRD) for activities impacting inland waters.

These application packages for marine-based activities will be screened by the Corps, the Federal resource agencies, and the CT DEEP, OLISP with input from the CT DEEP Boating and Marine Fisheries Divisions. Screening will also initiate review of the application by the CT DEEP OLISP for Coastal Zone Management consistency concurrence. The CT DEEP OLISP will make a determination on the completeness of the application for CZM consistency review and/or the eligibility of the activity for state aquaculture permit exemption within 30 days from the date of the screening meeting.

4. Review Procedures:

The Corps will coordinate review of all PCN activities with federal and state agencies (interagency review team), as necessary. To be eligible and subsequently authorized, an activity must meet the eligibility criteria listed above and result in no more than minimal impacts to the aquatic environment as determined by the Corps. This may require project modifications involving avoidance, minimization, and/or compensatory mitigation for unavoidable impacts to ensure the net effects of a project are minimal. Applicants are responsible for applying for the appropriate state and local approvals. Authorizations under these GPs are not valid until all required CT DEEP, OLISP authorizations are granted.

Emergency Situation Procedures: 33 CFR 325.2 (e)(4) states that an “emergency” is a situation which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under standard procedures.” Notification to the Corps is required. The Corps will determine if a project qualifies as an emergency and will work with all applicable agencies to expedite authorization in emergency situations. If the project qualifies as an emergency, authorization under these General Permits is not required.

Individual/Standard Permit Procedures: Work that is not eligible under PCN activities as described therein or that does not meet the terms and general conditions of the GPs, will require the submission of an application to the Corps for an Individual Permit (see 33 CFR Part 325.1). The applicant should submit the appropriate application form and materials at the earliest possible date. General information and application forms can be obtained at our website at <http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/ObtainPermit.aspx> or by calling us. Individual WQC and CZM consistency concurrence are required, when applicable, from the State of Connecticut before Corps issuance of an individual permit. Individual Water Quality Certification must be obtained from EPA for activities on lands located within the boundaries of an Indian reservation. The Corps encourages applicants to concurrently apply for a Corps Individual Permit and state permits.

APPENDIX A – GENERAL PERMITS

GP 1. AIDS TO NAVIGATION & TEMPORARY RECREATIONAL STRUCTURES (Section 10; navigable waters of the United States)

The placement of aids to navigation and regulatory markers which are approved by and installed in accordance with the requirements of the U.S. Coast Guard (see 33 CFR, chapter I, subchapter C, part 66)

Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
<p>Aids to navigation and regulatory markers that are not located within Corps Federal Navigation Projects (FNPs*).</p> <p>Temporary buoys, markers, floats, etc. for recreational use during specific events, provided they are not located within Corps FNPs and are removed within 30 days after use is discontinued.</p> <p>No structures in Submerged Aquatic Vegetation</p> <p>*FNPs are comprised of Federal Channels, anchorages and turning basins. Please click on the link below for more information: http://www.nae.usace.army.mil/Missions/Navigation/Connecticut-Projects/</p>	<p>Work not eligible for SV.</p> <p>Aids to navigation or temporary markers, floats, etc. that are within a Corps FNP.</p> <p>Temporary markers, floats, etc. that are not to be removed within 30 days.</p>

GP 2. REPAIR OR MAINTENANCE OF EXISTING CURRENTLY SERVICEABLE, AUTHORIZED OR GRANDFATHERED* STRUCTURES & FILLS, REMOVAL OF STRUCTURES (Section 10 & 404; tidal and non-tidal waters of the U.S.)

Repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. Includes removal of structures and fill. **Not authorized under GP 2:** (a) Permanent impacts >1/2 acre in tidal and non-tidal waters and/or wetlands, >1000 SF in tidal Special Aquatic Site (SAS) other than vegetated shallows, or >100 SF in tidal vegetated shallows.

Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
<p>≤5,000 s.f. of impacts in non-tidal waters & wetlands.</p> <p>No fill in tidal waters & wetlands.</p> <p>Bulkhead replacement via installation of new bulkhead within 18” of existing bulkhead & backfill.</p> <p>Drawdown of impoundment for dam/levee repair provided it does not exceed 18 months and one growing season (April through September)</p> <p>Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project or within the boundaries of the structure or fill.</p> <p>Any bank stabilization measures not directly associated with the structure requires a separate authorization under GP 9.</p> <p>Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary discharges, such as sandbag cofferdams, access fills, etc. are necessary for construction activities or dewatering of construction sites.</p> <p>Temporary fills must consist of materials and be placed in a manner, that will not be eroded by expected high flows. They must be removed in their entirety and the affected areas returned to pre-construction elevations and must be re-vegetated as appropriate.</p> <p>Work to previously approved tide gates with a Corps-approved operation and maintenance plan and tide gates not affecting the hydraulic regime.</p> <p>No impacts in Special Aquatic Sites (SAS) – see definitions.</p> <p>No slip lining or culvert relining that changes invert elevation.</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1. Removal of bridge structures in navigable waters are covered under GP 8, if the Coast Guard issues a bridge permit. 2. Stream, river, brook or other watercourse crossings are not eligible under GP 2 (See GP 19). 	<p>Work not eligible for SV.</p> <p>Removal of accumulated sediments and debris in the vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) and/or the placement of new or additional riprap, minimum necessary to protect the structure.</p> <p>The removal of accumulated sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. Excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer.</p> <p>Drawdown of impoundment for dam/levee repair provided it does not exceed 18 months and one growing season (April through September)</p> <p>*Grandfather dates include work performed & structures installed before 1968 & fill placed before 1975 for Corps purposes only.</p>

GP 3. MOORINGS (Section 10; navigable waters of the U. S.)

New private, non-commercial, non-rental, single-boat moorings & temporary moorings including moorings to facilitate construction or dredging; minor relocation of previously authorized moorings and mooring field expansions, boundary reconfigurations or modifications of previously authorized mooring fields and maintenance and replacement of moorings.

Not authorized under GP 3 are: Moorings within Federal Navigation channels.

Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
<p>1. Private, non-commercial, non-rental, single-boat moorings and temporary moorings including moorings that facilitate construction or dredging provided:</p> <p>No new moorings located in Federal anchorages;</p> <p>No new moorings located in Special Aquatic Sites (SAS);</p> <p>No new moorings located in shellfish beds;</p> <p>Authorized by local harbormaster/town;</p> <p>When existing, authorized moorings in SAS are going to be replaced, they shall be replaced with low impact mooring technology that prevents mooring chains from resting or dragging on the bottom substrate at all tides and helical anchors, or equivalent SAS protection systems.</p> <p>2. Minor relocation of previously authorized moorings, provided:</p> <p>Authorized by the local harbormaster/town;</p> <p>Not located in SAS;</p> <p>Not located in Federal anchorages.</p>	<p>Work not eligible for SV.</p> <p>Moorings associated with an existing boating facility*.</p> <p>Private moorings without harbormaster or local approval.</p> <p>Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits of a Federal Anchorage. The buffer zone is equal to 3 times the authorized depth of that channel.</p> <p>*Boating Facility: Facilities that provide for a fee, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockminiums, etc.</p> <p>Locating new individual moorings in SAS, including eelgrass, should be avoided to the maximum extent practicable. If SAS cannot be avoided, plans should show elastic mooring systems that prevent mooring chains from resting or dragging on the bottom substrate at all tides and helical anchors, or equivalent SAS protection systems, where practicable. For moorings that appear to impact SAS, the Corps may require an eelgrass survey.</p>

GP 4. PILE-SUPPORTED STRUCTURES & FLOATS, INCLUDING BOAT LIFTS/HOISTS & OTHER MISCELLANEOUS STRUCTURES & WORK (Section 10; navigable waters of the U.S.)

New, expansions, reconfigurations or modifications of structures for navigation access including floats, stairs, and boat/float lifts.

Not authorized under GP 4 are: (a) fill or excavation; (b) no structures within Federal Navigation channels; or (c) structures associated with a NEW boating facility*.

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Private residential structures with a length limit not to exceed 40' beyond mean high water and to a depth of -4' mean low water and limited to 4' in width. The fixed pier component of the dock located in tidal wetlands shall be constructed such that the lowest horizontal member of the fixed pier is no lower than five (5) feet off the surface of any underlying wetland area.

Floats must be supported at least 18" above the intertidal and shallow sub-tidal substrate during all tidal cycles.

No structures located within Submerged Aquatic Vegetation

No structures or floats can be located within the buffer zone (3x the authorized depth of the FNP) of the horizontal limits of FNPs.

No structures or floats can extend across >25% of the waterway width at mean low water.

No new structures within 25' of riparian property line extensions.

No new structures or floats associated with boating facilities.

No new pile-supported structures within Shellfish Concentration Areas as designated by the Connecticut Department of Environmental Protection, Coastal Area Management Program under CGS Sec. 22a-90

Reconfiguration of existing authorized structures; private or commercial, provided those structures do not extend beyond the existing perimeter of the facility or encroach into Special Aquatic Sites.

Work not eligible for SV.

New structures within an existing boating facility, provided those structures do not extend beyond the existing perimeter of the facility.

Structures or work in or affecting tidal or navigable waters that are not defined under any other GP activity.

Structures that are located within 25 feet of riparian property line extensions unless the properties are owned by the same owner. If so, the Corps may require a letter of no objection from the abutter(s).

****Boating Facility: Facilities that provide for a fee, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockominiums, etc.***

GP 5. BOAT RAMPS & MARINE RAILWAYS (Sections 10 and 404; tidal and non-tidal waters of the U.S.) Activities required for the construction of boat ramps and marine railways, including excavation and fill.

Not authorized under GP 5: (a) Permanent and temporary fill >1/2 acre of non-tidal waters and/or wetlands, (b) permanent and temporary impacts >1/2 acre in tidal waters; >1000 SF in tidal SAS other than vegetated shallows, or >100 SF in tidal vegetated shallows; or (c) dredging in navigable waters of the U.S. (see GP 7)

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

No work in tidal waters and wetlands of the United States.

≤5,000 SF of non-tidal waters and/or wetland fill (permanent and temporary).

No work April 1 through June 30 in non-tidal waters that support diadromous fish species.

Work not eligible for SV.

Work occurs in tidal waters and wetlands of the United States.

Boat ramps are located within 25 feet of riparian property line extensions unless the properties are owned by the same owner. If so, the Corps may require a letter of no objection from the abutter(s).

GP 6. UTILITY LINE ACTIVITIES (Sections 10 & 404; tidal & non-tidal waters of the U.S.)

Activities required for (a) The construction, maintenance, relocation, repair, & removal of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for utility lines; (b) The construction, maintenance or expansion of utility line substation facilities associated with a power/utility line in non-tidal waters; and (c) The construction and maintenance of foundations for overhead utility line towers, poles, and anchors provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible. This GP authorizes the construction of access roads to facilitate construction of the above activities provided the activity, in combination with all other activities included in one single and complete project, does not cause the permanent loss of greater than 1 acre of non-tidal waters of the U.S*. Impacts resulting from mechanized pushing, dragging or other similar activities that redeposit excavated soil material shall be figured into the area limit determination.

Not authorized under GP 6: (a) Permanent and temporary fill >1 acre of non-tidal waters and/or wetlands*, (b) permanent and temporary impacts >1/2 acre in tidal waters; >1000 SF in tidal Special Aquatic Sites other than vegetated shallows, or >100 SF in tidal vegetated shallows; or (c) blasting or storage of equipment in wetlands.

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

No work in, over or under tidal waters.

No outfalls.

≤5,000 SF of non-tidal waters and/or wetland fill (permanent and temporary).

Intake structures that are dry hydrants used exclusively for firefighting activities with no stream impoundments.

No silt producing activities from April 1 through June 30 in non-tidal waters that support diadromous fish species.

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 5,000 SF threshold and should be removed as soon as work is completed.

Work not eligible for SV.

Overhead utility lines constructed over Section 10 waters and submarine utility lines that are routed in or under such waters.

**See Table 1 Connecticut Water Quality Certification (CT WQC) in Section 1 for additional details on thresholds.*

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 1 acre threshold and should be removed as soon as work is completed.

NOTE: Temporary fills necessary to conduct the utility line activity are also allowed, provided the utility line activity is **within** Corps jurisdiction. Material resulting from trench excavation may be temporarily sidecasted into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. If the utility line activity is not within Corps jurisdiction but temporary fill will be placed in Corps jurisdiction, then see **GP 21** for temporary fills, etc.

GP 7. DREDGING (Section 10; navigable waters of the U.S.), TRANSPORT & DISPOSAL OF DREDGED MATERIAL (Sections 10, 404 & 103; tidal waters of the U.S.), BEACH NOURISHMENT (Sections 10 & 404; tidal waters of the U.S.); ROCK REMOVAL (Section 10, navigable waters of the U.S.) & ROCK RELOCATION (Sections 10 & 404; tidal waters of the U.S.)

New, improvement* and maintenance** dredging, including: (a) Disposal of dredged material at a confined aquatic disposal, beach nourishment, near shore, designated open water or ocean water disposal site, provided the Corps finds the dredged material to be suitable for such disposal; (b) Beach nourishment not associated with dredging; (c) Rock removal and relocation for navigation.

Not authorized under GP 7 are: (a) New dredging with >1000 SF of impacts to intertidal areas or saltmarsh or > 100 SF of impacts to vegetated shallows; (b) Maintenance dredging and/or disposal with >1/2 acre of impacts to tidal Special Aquatic Sites (SAS); (c) new dredging where the primary purpose is sand mining for beach nourishment; (d) Beach scraping; (e) Rock removal and relocation for navigation >1/2 acre; or (f) blasting.

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

No work in non-tidal waters or wetlands.

Work not eligible for SV.

Maintenance dredging (with any amount of yardage) provided:

Maintenance dredging not eligible for SV; improvement dredging and new dredging.

Contained upland disposal;

Disposal options include upland disposal, open water disposal, confined aquatic disposal cells (CAD cells), near-shore disposal or beach nourishment.

Proper siltation controls used & maintained to prevent runback into waterway/wetland;

No impacts to SAS, intertidal areas or shellfish beds;

****Improvement is dredging to deeper depths in areas previously dredged or authorized.***

Not located within 100' of vegetated shallows or shellfish areas;

*****Maintenance dredging includes areas and depths previously authorized by the Corps and dredged.***

No work in the Connecticut River; and

Work occurs from October 1 through January 31.

Rock/boulder relocation with ≤200 SF of impacts and no impacts to SAS.

No rock removal.

GP 8. DISCHARGES OF DREDGED OR FILL MATERIAL INCIDENTAL TO THE CONSTRUCTION OF BRIDGES (Sections 10 & 404; navigable waters of the U.S.)

Discharges of dredged or fill material incidental to the construction and modification of bridges across navigable waters of the U.S., including cofferdams abutments, foundation seals, piers, approach fills, and temporary construction and access fills **provided that the USCG authorizes the construction of the bridge structure under Section 9 of the Rivers and Harbors Act of 1899 or other applicable laws.** A USCG Authorization Act Exemption or a STURRA (144h) exemption do not constitute USCG authorization.

Not authorized under GP 8 are causeways.

Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
Discharges of dredged or fill material incidental to the construction and modification of bridges. No fill in Special Aquatic Sites. No fill in the Connecticut River.	Work not eligible for SV.

GP 9. SHORELINE & BANK STABILIZATION PROJECTS (Sections 10 & 404; tidal and non-tidal waters of the U.S.) Bank stabilization activities necessary for erosion protection along the banks of lakes, ponds, streams, estuarine and ocean waters, and any other open waters. Includes bulkheads, seawalls, riprap, revetments or slope protection & similar structures as well as vegetative planting, soil bioengineering or alternative techniques that are a combination of the two (e.g. living shorelines), specifically for the purpose of shoreline protection. Not authorized under GP 9 are: (a) Bank stabilization >500 LF* in total length including both stream banks; (b) Permanent and temporary impacts >1/2 acre in tidal waters, >1000 SF in tidal Special Aquatic Sites (SAS) other than vegetated shallows, or >100 SF in tidal vegetated shallows. (c) Stream channelization or relocation activities; or (d) breakwaters, groins and jetties.	
Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
<p>Coastal shoreline & bank stabilization projects ≤ 200 linear feet; and other stream, river, or brook bank stabilization projects ≤ 200 linear feet (includes total for more than one stream bank) provided:</p> <p>≤ 1 cubic yard of fill per linear foot placed between the high tide line (HTL) and mean low water (MLW) or ≤ 1 cubic yard of fill per linear foot placed waterward of ordinary high water (OHW).</p> <p>No discharge of fill material within SAS, including mudflats, tidal wetlands, Submerged Aquatic Vegetation and/or shellfish beds.</p> <p>Soft stabilization measures such as bioengineered fiber roll revetments or equivalent, shall be used wherever practicable.</p> <p>No vertical stone structures or embankments angled steeper than 1V: 1H. No new bulkheads.</p> <p>No fill within the streambed.</p> <p>Unconfined work, not including installation and removal of cofferdams, is limited to June 30 through September 30 in non-tidal waters supporting diadromous fish.</p> <p>Unconfined work, not including installation and removal of cofferdams, in other non-tidal waters is limited to the low-flow period June 1 through September 30.</p> <p>Work occurring behind a cofferdam may occur at any time.</p> <p><i>*See Table 1 CT WQC in Section 1 for additional details on thresholds.</i></p>	<p>Work not eligible for SV.</p> <p>The slope of the structure is steeper than 1V:3H in lakes/ponds; and 1V:1H in non-tidal streams and tidal waters and streams.</p> <p>Fill waterward of the HTL in coastal waters including alternative stabilization techniques that are a combination of soft and hard shoreline stabilization techniques that will affect SAS, change the natural shoreline configuration or alter natural or ecological processes.</p> <p><i>*See Table 1 CT WQC in Section 1 for additional details on thresholds.</i></p>

GP 10. AQUATIC HABITAT RESTORATION, ESTABLISHMENT & ENHANCEMENT

ACTIVITIES (Sections 10 and 404; tidal and non-tidal waters of the U.S.) Activities in waters of the United States associated with the restoration, enhancement and establishment of non-tidal and tidal wetlands and riparian areas, including invasive, non-native or nuisance species control; the restoration and enhancement of non-tidal streams and other non-tidal open waters; the relocation of non-tidal waters, including non-tidal streams & associated wetlands for reestablishment of a natural stream morphology and reconnection of the floodplain; the restoration and enhancement of shellfish, finfish and wildlife; and the rehabilitation or enhancement of tidal streams, tidal wetlands and tidal open waters; provided those activities result in net increases in aquatic resource functions and services.

Not authorized under GP 10 are: (a) Conversions of wetlands to open water, except for the excavation of new salt pannes and (b) Artificial reefs.

Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
<p>Special Aquatic Site planting and transplanting ≤100 SF in tidal waters.</p> <p>No new ditching to eliminate mosquito breeding habitat.</p> <p>No thin layer deposition.</p> <p>No fill for purposes of converting marsh to upland.</p> <p>Placement of seed shellfish, spatted-shell or cultch in tidal waters for the restoration or enhancement of existing, publicly-managed, recreational shellfish beds provided there is no placement in or impacts to SAS and does not result in degradation of habitat for other aquatic resources.</p> <p>≤5,000 SF of non-tidal waterway and/or non-tidal wetland fill provided the activity is supported in writing by a state or non-Corps Federal environmental resource management agency.</p> <p>No stream channelization.</p>	<p>Work not eligible for SV</p> <p>Pro-active salt marsh restoration work that includes draining of ponded dieback areas through excavation of runnels with handheld tools or low-impact ground equipment; blocking or unclogging of historic mosquito ditches to restore tidal flushing; excavation of new salt pannes to increase shorebird and waterfowl foraging habitat and placing excavated materials on the marsh surface for establishing suitable vegetative beds.</p> <p>Pond or lake reestablishment or restoration.</p> <p>Water impoundments.</p> <p>Dam removals.</p> <p>Integrated Marsh Management in tidal wetlands for combined wetland enhancement and mosquito control and reduction.</p>

GP 11. FISH & WILDLIFE HARVESTING ACTIVITIES (Sections 10 and 404; tidal and non-tidal waters of the U.S.)

Activities in waters of the United States associated with fish and wildlife harvesting devices including pound nets, crab traps, crab dredging, eel pots, lobster traps, duck blinds, and clam and oyster digging, fish aggregating devices, and small fish attraction devices such as open water fish concentrators (sea kites, etc.).

Not authorized by GP 11 are: (a) Artificial reefs, impoundment(s) or semi-impoundment(s) of water; (b) Permanent and temporary impacts >1/2 acre in tidal waters, >1000 SF in tidal Special Aquatic Sites (SAS) other than vegetated shallows, or >100 SF in tidal vegetated shallows; and (c) Shellfish dredging, either mechanical or hydraulic in SAS.

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Activities associated with fish and wildlife harvesting devices including pound nets, crab traps, crab dredging, eel pots, lobster traps, duck blinds, clam and oyster digging, small fish aggregating and attraction devices such as open water fish concentrators (sea kites, etc.).

No permanent impacts to SAS, including salt marshes and Submerged Aquatic Vegetation (SAV).

No structures, cages or traps located in SAS.

Work not eligible for SV

Devices located in tidal SAS, including salt marsh and SAV.

GP 12. OIL SPILL & HAZARDOUS MATERIAL CLEANUP (Sections 10 and 404; tidal and non-tidal waters of the U.S.): **a.** Activities conducted in response to a discharge or release of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300) including containment, cleanup, and mitigation efforts, provided activities are done under either **(i)** The Spill Prevent, Control & Countermeasure Plan require by 40 CFR 112.3; **(ii)** The direction or oversight of the Federal on-site coordinator designated by 40 CFR 300; or **(iii)** Any approved existing State, regional or local contingency plan provided that the Regional Response Team concurs with the proposed response efforts or does not object to the response effort. **b.** Activities required for the cleanup of oil releases in waters of the U.S. from electrical equipment that are governed by EPA’s polychlorinated biphenyl (PCB) spill response regulations at 40 CFR 761. **c.** Booms placed in tidal waters. **d.** Use of structures & fills for spill response training exercises. Special Aquatic Sites (SAS) must be restored in place to pre-impact elevations.

Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
<p>1. Activities that are conducted in accordance with a. or b. above.</p> <p>2. Booms placed in navigable waters for hazardous and toxic waste containment, absorption and prevention, provided they are removed upon completion of the cleanup.</p> <p>3. Temporary impacts for spill response training exercises are $\leq 5,000$ SF in non-tidal waters and $\leq 1,000$ SF in tidal waters, and temporary structures in tidal waters with no impacts to SAS and in place for ≤ 30 days.</p> <p>Note: For activities in non-tidal waters of the U.S., permittees have up to two weeks following commencement of these activities to submit the Self-verification form (Appendix E).</p>	<p>Work not eligible for SV.</p> <p>1. The activity is planned or scheduled, not an emergency response, and will cause turbidity or sediment resuspension in tidal waters or streams.</p> <p>2. Permanent structures or impacts for spill response training exercises.</p>

GP 13. CLEANUP OF HAZARDOUS & TOXIC WASTE (Sections 10 and 404; tidal and non-tidal waters of the U.S.) Specific activities to effect the containment, stabilization or removal of hazardous or toxic waste materials, including court ordered remedial action plans or related settlements which are performed, ordered or sponsored by a government agency with established legal or regulatory authority*. Special Aquatic Sites must be restored in place to pre-impact elevations.

Not authorized under GP 13 are: (a) the establishment of new disposal sites; or (b) the expansion of existing sites used for the disposal of hazardous or toxic waste.

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Permanent and temporary impacts are $\leq 5,000$ SF in non-tidal waters and wetlands.

Booms placed in navigable waters for oil and hazardous substance containment, absorption and prevention, provided they are removed upon completion of the cleanup.

Notes: For activities in non-tidal waters of the U.S., permittees have up to two weeks following commencement of these activities to submit the Self-verification form (Appendix E).

Work not eligible for SV.

Permanent and temporary impacts are $> 5,000$ SF in non-tidal waters and wetlands.

Work in navigable waters of the U.S. other than booms placed for hazardous and toxic waste containment, absorption and prevention.

**Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA, are not required to obtain permits under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act.*

GP 14. SCIENTIFIC MEASUREMENT DEVICES (Sections 10 and 404; tidal and non-tidal waters of the U.S.) Scientific devices for measuring and recording scientific data, such as staff gauges, tide and current gauges, meteorological stations, water recording and biological observation devices, water quality testing and improvement devices, and similar structures. Also eligible are small temporary weirs and flumes constructed primarily to record water quantity and velocity provided the discharge is less than 25 cubic yards.

Not authorized under GP 14 are: (a) Permanent and temporary impacts >1 acre in non-tidal waters and wetlands; and (b) Permanent and temporary impacts >1/2 acre in tidal waters, >1000 SF in tidal Special Aquatic Sites (SAS) other than vegetated shallows, or >100 SF in tidal vegetated shallows.

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Permanent and temporary impacts are $\leq 1,000$ SF in non-tidal waters and wetlands.

No impacts in non-tidal SAS, other than non-tidal wetlands.

No fill in tidal waters and/or wetlands.

No impacts in tidal Submerged Aquatic Vegetation.

Devices in tidal waters that do not restrict movement of aquatic organisms and will not adversely affect the course, condition or capacity of a waterway.

Work not eligible for SV.

NOTE: Upon completion of the use of the device to measure and record scientific data, the measuring device, and any other structures or fills associated with that device (e.g., foundations, anchors, buoys, lines, etc.), must be removed to the maximum extent practicable.

GP 15. SURVEY ACTIVITIES (Sections 10 and 404; tidal and non-tidal waters of the U.S.)

Survey activities such as soil borings, core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, exploratory trenching* and historic resources surveys.

Not authorized under GP 15 are: (a) Permanent and temporary fill >1 acre of non-tidal waters and/or wetlands, and (b) permanent and temporary impacts >1/2 acre in tidal waters; >1000 SF in tidal Special Aquatic Sites other than vegetated shallows or >100 SF in tidal vegetated shallows.

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Permanent and temporary impacts ≤5,000 SF in non-tidal waters and wetlands.

No impacts, other than soil borings or core sampling, in tidal waters.

No permanent structures or drilling and discharge of excavated material from test wells for oil and gas exploration allowed.

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 5,000 SF threshold and should be removed as soon as work is completed.

** For the purposes of this GP, the term “exploratory trenching” means mechanical land clearing of the upper soil profile to expose bedrock or substrate, for the purpose of mapping or sampling the exposed material.*

Work not eligible for SV.

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 1 acre threshold and should be removed as soon as work is completed.

NOTE: The area in which the exploratory trench is dug must be restored to its preconstruction elevation upon completion of the work and must not drain a water of the United States. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench.

GP 16. AQUACULTURE PROJECTS & FISHERIES (Sections 10 and 404; navigable waters of the U.S.) The installation of buoys, floats, racks, trays, nets, lines or other structures in navigable waters for the containment and cultivation of indigenous species of shellfish and seaweed/kelp. Also authorized are anchored upweller floats, small-scale shellfish hatchery seawater intake/discharge structures, and discharges of dredged or fill material associated with cultivation such as the placement of cultch or spatted-shell on bottom.

Depth of cultch or spatted-shell must comply with Special Conditions in Section 5, Part (h), items (1) through (7) of [CT DEEP, General Permit for Coastal Maintenance \(DEEP-OLISP-GP2015-02\)](#) and must not result in visible degradation of habitat for other aquatic resources. All structures must be permitted by State of Connecticut Navigation Safety/Boating Access Unit and marked in conformance with applicable State or U.S. Coast Guard Aids to Navigation. **NOTE: All facilities must be installed and operated in compliance with the attached Appendix C Aquaculture Conditions**

Not authorized under GP 16 are impacts to Special Aquatic Sites, including Submerged Aquatic Vegetation.

Self-Verification (SV) Eligible	Pre-Construction Notification (PCN) Required
<p>Placement of seed shellfish, spatted-shell or cultch for commercial shellfish aquaculture on leased grounds when performed in compliance with the conditions in Section 5 h. of the CT DEEP General Permit for Coastal Maintenance (DEEP-OLISP-GP-2015-02).</p> <p>The installation of temporary (< six months) structures for research, educational or experimental aquaculture gear impacting ≤1,000 SF for indigenous species under the direct supervision of the Dept. of Agricultural, Bureau of Aquaculture provided there is no adverse effect to navigation.</p> <p>Suspended cages or bags located wholly below and within the footprint of an existing <u>authorized</u> fixed or floating structure in water depths ≤ 10 feet MLW; provided no loose lines and there is a vertical clearance of at least 2 feet between the bottom of the gear and the sea floor at mean low water.</p> <p>Shellfish upweller floats not to exceed 160 sf (anchored/berthed only, no piling installation), with a vertical clearance of at least 2 feet between the bottom of the gear and the sea floor at mean low water, cannot be located within the buffer of a Federal Navigation Project.</p>	<p>Work not eligible for SV.</p> <p>Vertical-drop longlines and suspended gear for the culture of shellfish or other marine organisms, such as kelp and seaweed.</p> <p>Cages, trays, racks, netting or other structures on the ocean bottom or floating on the water surface used to contain, cultivate or depurate shellfish.</p> <p>For additional information, please see “A Guide for Marine Aquaculture Permitting in Connecticut” for guidance and application materials found at: http://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/CT/AquaculturePermitGuide.pdf</p> <p>Intake and discharge structure with a diameter ≤ 3 inches, for the withdrawal and discharge of water to support small-scale shellfish land-based hatchery with negative impact on source or discharge waters.</p> <p>Activities that involve a change from authorized gear for bottom culture to floating or suspended gear.</p> <p>Boundaries of Submerged Aquatic Vegetation may be required to be located/surveyed in the field. See Corps website for guidance: http://www.nae.usace.army.mil/Portals/74/docs/regulatory/JurisdictionalLimits/SubmergedAquaticVegetationSurveyGuidance(Updated7-12-2016).pdf</p>

GP 17. NEW/EXPANDED DEVELOPMENTS & RECREATIONAL FACILITIES (Section 404; non-tidal waters of the U.S.) Discharges of dredged or fill material for the construction or expansion of developments and/or recreational facilities. This GP authorizes attendant features that are necessary for the use such as parking lots, garages, and yards. Fill area includes all temporary and permanent fill, and regulated discharges associated with excavation.

Not authorized under GP 17 are: (a) Permanent impacts that are >1 acre* in non-tidal waters and wetlands; (b) Stormwater treatment or detention systems, or subsurface sewerage disposal systems in waters of the U.S.; and (c) New roadway and driveway crossings in non-tidal waters and/or wetlands. (See **GPs 18 & 19**)

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Permanent and temporary impacts $\leq 5,000$ SF of non-tidal waters and/or wetlands provided no impacts to Special Aquatic Sites other than wetlands (e.g. riffle and pool stream habitat, shellfish beds).

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 5,000 SF threshold and should be removed as soon as work is completed.

Work not eligible for SV.

**See Table 1 CT WQC in Section 1 for additional details on thresholds.*

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 1 acre threshold and should be removed as soon as work is completed.

GP 18. LINEAR TRANSPORTATION PROJECTS – WETLAND CROSSINGS ONLY

(Section 404; non-tidal waters of the U.S.) Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., driveways, roads, highways, railways, trails, airport runways, and taxiways) and attendant features.

Not authorized under GP 18 are: (a) Permanent and temporary impacts for any single and complete project that are >1 acre* or (b) Stream, river, or brook crossing projects (see **GP 19**)

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Permanent and temporary impacts ≤5,000 SF of non-tidal wetland fill provided:

No work in non-tidal Special Aquatic Sites other than wetlands.

No slip lining or culvert relining that changes invert elevation.

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 5,000 SF threshold and should be removed as soon as work is completed.

Work not eligible for SV.

**See Table 1 CT WQC in Section 1 for additional details on thresholds.*

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 1 acre threshold and should be removed as soon as work is completed.

GP 19. STREAM, RIVER & BROOK CROSSINGS (NOT INCLUDING WETLAND

CROSSINGS) (Sections 10 and 404; tidal and non-tidal waters of the U.S.) Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., driveways, roads, highways, railways, trails, airport runways, and taxiways) and attendant features, provided that work is performed in accordance with Connecticut General Permit Stream Crossing Best Management Practices to the extent practicable - See Appendix G.

Not authorized under GP 19 are: (a) Permanent impacts for any single and complete projects that are >1 acre in non-tidal waters and wetlands*, >1/2 acre in tidal waters of the U.S., >1000 SF in tidal Special Aquatic Sites (SAS) other than vegetated shallows or >100 SF in tidal vegetated shallows; (b) Temporary impacts >1 acre in tidal waters, >5000 SF in tidal SAS other than vegetated shallows, or >1000 SF in vegetated shallows; or (c) Wetland Crossings (see **GP 18**).

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

No impacts to tidal waters and/or wetlands.

Work not eligible for SV.

Permanent and temporary impacts ≤5,000 SF of non-tidal waters and wetlands provided for stream, river, brook crossings by means of a Bridge or Open-Bottom Structure that meets the following standards: 1. Spans at least 1.2 times the watercourse bank full width, 2. Allows for the continuous, uninterrupted flow of the 50-year frequency storm flows, and 3. No riprap is placed within or across the bed of the brook, and appurtenant stream bank stabilization does not exceed 50 feet along any upstream or downstream bank.

**See Table 1 CT WQC in Section 1 for additional details on thresholds.*

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 1 acre threshold and should be removed as soon as work is completed.

Permanent and temporary impacts ≤5,000 SF of non-tidal waters and wetlands provided for stream, river, brook crossings by means of a culvert provided the tributary watershed to the culvert does not exceed 1 sq. mile (640 acres)*

No open trench excavation in flowing waters.

Unconfined, in-stream work, not including installation and removal of cofferdams, is limited to the low-flow period, June 1 through September 30 unless CT DEEP requires different resource-driven time of year restriction.

Work occurring behind a cofferdam may occur at any time.

No stream relocations; no dams or dikes; no new culvert crossings of perennial streams. No slip lining or culvert relining that changes invert elevation.

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 5,000 SF threshold and should be removed as soon as work is completed.

**See Table 1 CT WQC in Section 1 for additional details on thresholds.*

GP 20. ENERGY GENERATION & RENEWABLE ENERGY GENERATION FACILITIES (Sections 10 and 404; tidal waters of the U.S.) & HYDROPOWER PROJECTS (Sections 10 and 404; tidal waters of the U.S.) Structures and work in navigable waters of the U.S. and discharges of dredged or fill material into tidal waters of the U.S. for the construction, expansion, modification or removal of: **(a)** Land-based renewable energy production facilities, including attendant features; **(b)** Water-based wind or hydrokinetic renewable energy generation pilot projects and their attendant features; and **(c)** Discharges of dredged or fill material associated with hydropower projects.

Attendant features may include, but are not limited to, land-based collection and distribution facilities, control facilities, and parking lots. For each single and complete project in **(b)** above, no more than 10 generation units (e.g., wind turbines or hydrokinetic devices) are authorized in navigable waters of the U.S.

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Not allowed under SV.

For land-based facilities, impacts are:

Permanent impacts $\leq 1/2$ acre in tidal waters; or ≤ 100 SF in tidal vegetated shallows or $\leq 1,000$ SF in other tidal Special Aquatic Sites (SAS).

Temporary impacts ≤ 1 acre in tidal waters; $\leq 1,000$ SF in vegetated shallows and $\leq 5,000$ SF in other tidal SAS.

For water-based wind or hydrokinetic renewable energy generation pilot projects, and hydropower projects permanent and temporary impacts are:

$\leq 1/2$ acre in tidal waters.

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 1 acre threshold and should be removed as soon as work is completed.

GP 21. TEMPORARY FILL NOT ASSOCIATED WITH ANY OTHER GP ACTIVITIES

(Section 404; non-tidal waters of the U.S.) Temporary discharges, such as sandbag/earth cofferdams, access fills, etc., necessary for construction activities or dewatering of construction sites.

Not authorized under GP 21: Temporary impacts >1 acre in non-tidal waters and wetlands*

Self-Verification (SV) Eligible

Pre-Construction Notification (PCN) Required

Temporary impacts ≤5,000 SF of temporary non-tidal waters and/or non-tidal wetland.

Work not eligible for SV.

**See Table 1 CT WQC in Section 1 for additional details on thresholds.*

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 5,000 SF threshold and should be removed as soon as work is completed.

NOTE: Construction mats of any area necessary to conduct activities do not count towards the 1 acre threshold and should be removed as soon as work is completed.

APPENDIX B - GENERAL CONDITIONS

1. Other Permits. Permittees must obtain other Federal, State, or local authorizations required by law. Applicants are responsible for applying for and obtaining all required State or local approvals. Work that is not regulated by the State, but is subject to Corps jurisdiction, may be eligible for these General Permits (GPs).

2. Federal Jurisdiction.

a. Applicability of the GPs shall be evaluated with reference to Federal jurisdictional limits. Applicants are responsible for ensuring that the limits depicted satisfy the Federal criteria defined at 33 CFR 328 “Waters of the United States.” and 33 CFR 329 “Navigable Waters of the United States”

NOTE: Waters of the U.S. include the subcategories “navigable waters of the United States.” and “wetlands.”

b. Pre-Construction Notification (PCN) Eligible projects require an application to the Corps which must include a delineation of wetlands, other special aquatic sites, and other waters such as lakes and ponds and perennial, intermittent, and ephemeral streams that are on the project site. Wetland delineations must be prepared in accordance with the current federal method required by the Corps. For Corps Wetland Delineation Manual, regional supplements and data sheets, and the National List of Plant Species that Occur in Wetlands, visit our website at <http://www.nae.usace.army.mil/Missions/Regulatory.aspx> and then click on “Jurisdiction and Wetlands”. The Natural Resources Conservation Service (NRCS) publishes the current hydric soil definition, criteria and lists which can be found at <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>. For the Field Indicators for Identifying Hydric Soils in New England, visit: www.neiwpc.org/hydricsoils.asp.

3. Mitigation (Avoidance, Minimization, and Compensatory Mitigation)

a. Activities must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States (U.S.) to the maximum extent practicable at the project site (i.e., on site). Consideration of mitigation (avoiding, minimizing, rectifying, reducing, or compensating) is required to the extent necessary to ensure that the adverse effects to the aquatic environment are no more than minimal.

b. Applicants should consider riparian/forested buffers for stormwater management and low impact development (LID) best management practices (BMPs) to reduce impervious cover and manage stormwater to minimize impacts to the maximum extent practicable.

c. Compensatory mitigation¹ for effects to waters of the U.S., including direct, secondary and temporal², will generally be required for projects with permanent impacts that exceed the SV area limits, and may be required for temporary impacts that exceed the SV area limits, to offset unavoidable impacts which remain after all appropriate and practicable avoidance and minimization has been achieved and to ensure that the adverse effects to the aquatic environment are no more than minimal. Proactive restoration projects or temporary impact work with no secondary effects may generally be excluded from this requirement.

The Corps **Connecticut In-Lieu Fee Program** allows Corps permittees, as compensation for their project impacts to aquatic resources of the United States in Connecticut pursuant to Section 404 of the Clean Water Act, to make monetary payment *in-lieu* of permittee-responsible mitigation. Information is provided at <http://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx> >>Mitigation>>Connecticut In-Lieu Fee Program. Please note that this only applies to Corps required mitigation and additional Connecticut DEEP mitigation may be required.

4. Discretionary Authority. Notwithstanding compliance with the terms and conditions of this permit, the Corps retains discretionary authority to require an Individual Permit review based on concerns for the aquatic environment or for any other factor of the public interest [33 CFR 320.4(a)]. This authority is invoked on a case-by-case basis whenever the Corps determines that the potential consequences of the proposal warrant Individual Permit review based on the concerns stated above. This authority may be invoked for projects with

¹ Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR 332. See also the New England District Compensatory Mitigation Guidance at <http://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx>

² Temporal loss: The time lag between the losses of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site(s) (33 CFR 332.2).

cumulative adverse environmental effects that are more than minimal, or if there is a special resource or concern associated with a particular project. Whenever the Corps notifies an applicant that an Individual Permit may be required, authorization under these GPs is voided and no work may be conducted until a Corps Individual Permit is obtained or until the Corps notifies the applicant that further review has demonstrated that the work may be reviewed under these GPs.

5. Single and Complete Projects. The term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. The GPs shall not be used for piecemeal work and shall be applied to single and complete projects.

a. For non-linear projects, a single and complete project must have independent utility. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed, even if the other phases were not built, can be considered as separate single and complete projects with independent utility.

b. Unless the Corps determines the activity has independent utility, all components of a single project and/or all planned phases of a multi-phased project (e.g., subdivisions should include all work such as roads, utilities, and lot development) shall be treated together as constituting one single and complete project.

c. For linear projects such as power lines or pipelines with multiple crossings, a “single and complete project” is all crossings of a single water of the U.S. (i.e. single waterbody) at a specific location. For linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly-shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately. If any crossing requires a PCN review or an individual permit review, then the entire linear project shall be reviewed as one project under PCN or the individual permit procedures.

6. Corps Property and Federal Projects.

a. In addition to any authorization under these GPs, proponents must contact the Corps Real Estate Division at (978) 318-8585 for work occurring on or potentially affecting Corps properties and/or Corps-controlled easements to initiate reviews and determine what real estate instruments are necessary to perform work. Permittees may not commence work on Corps properties and/or Corps-controlled easements until they have received any required Corps real estate documents evidencing site-specific permission to work.

b. Any proposed temporary or permanent modification or use of a Federal project (including but not limited to a levee, dike, floodwall, channel, anchorage, seawall, bulkhead, jetty, wharf, pier or other work built but not necessarily owned by the United States), or any use which would obstruct or impair the usefulness of the Federal project in any manner, and/or would involve changes to the authorized Federal project’s scope, purpose, and/or functioning, is not eligible for SV and will also require review and approval by the Corps pursuant to 33 USC 408. Where Section 408 is applicable, a decision on a Department of the Army general permit application will not be rendered prior to the decision on a Section 408 request.

7. National Lands. Activities that impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary or any area administered by the National Park Service, U. S. Fish and Wildlife Service (USFWS) or U.S. Forest Service are not eligible for SV.

8. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g. National Park Service, U.S. Forest Service, Bureau of Land Management, U. S. Fish and Wildlife Service).

As of July 15, 2016, affected rivers in Connecticut include: the West Branch of the Farmington River from Colebrook to Canton (designated river); the Eightmile River and tributaries in Salem, Lyme and East Haddam (designated river); and the Lower Farmington River from Canton to Windsor (study river – including its tributary Salmon Brook). Additional information can be found at: <http://www.rivers.gov/connecticut.php>

9. Historic Properties.

a. No undertaking shall cause effects (defined at 33 CFR 325 Appendix C and 36 CFR 800) on properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places³, including previously unknown historic properties within the permit area, unless the Corps or another Federal action agency has satisfied the consultation requirements of Section 106 of the National Historic Preservation Act (NHPA). The State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO) and the National Register of Historic Places can assist with locating information on: i) previously identified historic properties; and ii) areas with potential for the presence of historic resources, which may require identification and evaluation by qualified historic preservation and/or archaeological consultants in consultation with the Corps and the SHPO and/or THPO(s).

b. For activities eligible for SV (inland projects), proponents must ensure and document that the activity will not cause effects as stated in 9(a).

c. Proponents must submit a PCN to the Corps as soon as possible if the authorized activity may cause effects as stated in 9(a) to ensure that the Corps is aware of any potential effects of the permitted activity on any historic property that the consultation requirements of Section 106 of NHPA are satisfied.

d. All PCN (inland projects): i) show notification to the SHPO and applicable THPO(s)⁴ for their identification of historic properties, ii) state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties, and iii) include any available documentation from the SHPO or THPO(s) indicating that there are or are not historic properties affected. Starting consultation early in project planning can save proponents time and money.

e. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

10. Federal Threatened and Endangered Species.

a. No activity is authorized which: a) is likely to directly or indirectly jeopardize the continued existence of any listed or proposed species or result in the destruction or adverse modification of designated or proposed critical habitat, as identified under the Federal Endangered Species Act (ESA); b) result in take of a listed species or adversely modifies designated critical habitat; or c) violates the ESA.

b. For listed species or critical habitat under U. S. Fish and Wildlife Service (USFWS) jurisdiction, a PCN is required when a proposed project may affect a listed species or designated critical habitat. To ensure compliance with the Endangered Species Act, project proponents must request an 'Official Species List' from the USFWS IPaC website <http://ecos.fws.gov/ipac> <http://ecos.fws.gov/ipac>>. This USFWS IPaC website will record the request and immediately email the list to you. Include the list with all applications. An activity is SV eligible if the Official Species List states the northern long-eared bat (NLEB) (*Myotis septentrionalis*) is present BUT the activity: i) will not remove trees ≥ 3 inches dbh; ii) is not within the "buffer" of a NLEB hibernacula or maternity roost tree; and iii) does not involve work on an existing dam, riprap or bridges.

³ The majority of historic properties are not listed on the National Register of Historic Places and may require identification and evaluation by qualified historic preservation and/or archaeological consultants in consultation with the Corps and the SHPO and/or THPO(s).

⁴ Appendix D, #3 Historic Resources, provides contact information and each tribe's "area of concern."

c. For listed species or habitat under NMFS jurisdiction, the Corps will coordinate with NMFS as appropriate for all work eligible for SV that may have an effect on listed species or habitat; therefore SV eligible project proponents are not required to check for listed species or habitat for their projects.

d. Federal applicants should follow their own procedures for complying with the requirements of the ESA. Work may be eligible for SV if another Federal agency has satisfied the requirements of Section 7 of the ESA. Upon request, permittees must provide the Corps with the appropriate documentation to demonstrate compliance with those requirements.

11. Pile Removal and Related Time of Year Restrictions

a. Derelict, degraded or abandoned piles and sheet piles in navigable waters, except for those inside of existing work footprints for piers, must be completely removed or cut and/or driven to 3 feet below the substrate to prevent interference with navigation and in some cases to remove polluting materials. Existing creosote piles in the project area that are affected by project activities should be completely removed. In areas of fine-grained substrates, piles must be removed by the direct, vibratory or clamshell pull method⁵ to minimize turbidity and sedimentation impacts. Removed piles shall be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands, their substrate or mudflats.

b. Piles should either be installed between November 1 and March 15 **OR** must use a soft start each day of pile driving, building up power slowly from a low energy start-up over a period of 20-40 minutes to provide adequate time for fish and marine mammals to leave the vicinity. The buildup of power should occur in uniform stages to provide a constant increase in output. Bubble curtains can be used to reduce sound pressure levels during vibratory or impact hammer pile driving.

12. Navigation.

a. No activity may cause more than a minimal adverse effect on navigation.

b. Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the U.S.

c. Any structure or work that extends closer to the horizontal limits of any Corps Federal Navigation Project than a distance of three times the project's authorized depth shall be subject to removal at the owner's expense prior to any future Corps dredging or the performance of periodic hydrographic surveys. This is applicable to SV and PCN.

d. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.

e. The permittee understands and agrees that if future U.S. operations require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

f. An application to the Corps is required for all work in, over or under an FNP or its buffer zone unless otherwise indicated in Appendix A.

⁵ **Direct Pull:** Each piling is wrapped with a choker cable or chain that is attached at the top to a crane. The crane then pulls the piling directly upward, removing the piling from the sediment. **Vibratory Pull:** The vibratory hammer is a large mechanical device (5-16 tons) that is suspended from a crane by a cable. The vibrating hammer loosens the piling while the crane pulls up. **Clamshell Pull:** This can remove intact, broken or damaged pilings. The clamshell bucket is a hinged steel apparatus that operates like a set of steel jaws. The bucket is lowered from a crane and the jaws grasp the piling stub as the crane pulls up. The size of the clamshell bucket is minimized to reduce turbidity during piling removal.

13. Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest; (c) damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit; (d) design or construction deficiencies associated with the permitted work; (e) damage claims associated with any future modification, suspension, or revocation of this permit.

14. Heavy Equipment in Wetlands. Operating heavy equipment other than fixed equipment (drill rigs, fixed cranes, etc.) within wetlands shall be minimized, and such equipment shall not be stored, maintained or repaired in wetlands, to the maximum extent practicable. Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground pressure (typically <3 psi), or it shall be placed on swamp/construction/timber mats (herein referred to as “construction mats”) that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. Construction mats are to be placed in the wetland from the upland or from equipment positioned on swamp mats if working within a wetland. Dragging construction mats into position is prohibited. Other support structures that are capable of safely supporting equipment may be used with written Corps authorization. Similarly, the permittee may request written authorization from the Corps to waive use of mats during frozen or dry conditions. An adequate supply of spill containment equipment shall be maintained on site. Construction mats should be managed in accordance with the following construction mat best management practices:

- Mats should be in good condition to ensure proper installation, use and removal.
- Where feasible, mats should be carried and not dragged unless they are being used as a grading implement.
- Where feasible, place mats in a location that would minimize the amount needed for the wetlands crossing.
- Minimize impacts to wetland areas during installation, use, and removal.
- Install adequate erosion & sediment controls at approaches to mats to promote a smooth transition to, and minimize sediment tracking onto, swamp mats.
- In most cases, construction mats should be placed along the travel area so that the individual boards are resting perpendicular to the direction of traffic. No gaps should exist between mats. Place mats far enough on either side of the resource area to rest on firm ground.
- Provide standard construction mat BMP details to work crews.

15. Temporary Fill.

a. Temporary fill, construction mats and corduroy roads shall be **entirely** removed as soon as they are no longer needed to construct the authorized work. Temporary fill shall be placed in its original location or disposed of at an upland site and suitably contained to prevent its subsequent erosion into waters of the U.S.

b. All temporary fill and disturbed soils shall be stabilized to prevent its eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable. Temporary fill must be placed in a manner that will prevent it from being eroded by expected high flows.

c. Unconfined temporary fill authorized for discharge into waters of the U.S. shall consist of material that minimizes impacts to water quality (e.g. washed stone, stone, etc.).

d. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Materials shall be placed in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.

e. Construction debris and/or deteriorated materials shall not be located in waters of the U.S.

16. Restoration of Inland Wetland Areas.

a. Upon completion of construction, all disturbed wetland areas (the disturbance of these areas must be authorized) shall be stabilized with a wetland seed mix containing only plant species native to New England and shall not contain any species listed in the “Invasive and Other Unacceptable Plant Species” Appendix D in the “New England District Compensatory Mitigation Guidance” found at <http://www.nae.usace.army.mil/Portals/74/docs/regulatory/Mitigation/CompensatoryMitigationGuidance.pdf>

b. The introduction or spread of invasive plant species in disturbed areas shall be controlled. If swamp or timber mats are to be used, they shall be thoroughly cleaned before re-use.

c. In areas of authorized temporary disturbance, if trees are cut they shall be cut at or above ground level and not uprooted in order to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.

d. Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation, which under no circumstances shall be higher than the pre-construction elevation. Original condition means careful protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized.

17. Coastal Bank Stabilization. Projects involving construction or reconstruction/maintenance of bank stabilization structures within Corps jurisdiction should be designed to minimize environmental effects, effects to neighboring properties, scour, etc. to the maximum extent practicable. For example, vertical bulkheads should only be used in situations where reflected wave energy can be tolerated. This generally eliminates bodies of water where the reflected wave energy may interfere with or impact on harbors, marinas, or other developed shore areas. A revetment is sloped and is typically employed to absorb the direct impact of waves more effectively than a vertical seawall. It typically has a less adverse effect on the beach in front of it, abutting properties and wildlife. For more information on this topic, go to the Corps Coastal Engineering Manual (supersedes the Shore Protection Manual), located at <http://chl.ercd.usace.army.mil>. Select “Products/ Services,” “Publications.” Part 5, Chapter 7-8, a (2) c.

18. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the U.S. during periods of low-flow or no-flow, or during low tides.

19. Aquatic Life Movements & Management of Water Flows.

a. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity’s primary purpose is to impound water. Unless otherwise stated, activities impounding water in a stream require a PCN to ensure impacts to aquatic life species are avoided and minimized. All permanent and temporary crossings of waterbodies (e.g., streams, wetlands) shall be:

i. Suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species; and

ii. Properly aligned and constructed to prevent bank erosion or streambed scour both adjacent to and inside the culvert. Permanent and temporary crossings of wetlands shall be suitably culverted, spanned or bridged in such a manner as to preserve hydraulic and ecological connectivity between the wetlands on either side of the road.

b. To avoid adverse impacts on aquatic organisms, the low flow channel/thalweg shall remain unobstructed during periods of low flow, except when it is necessary to perform the authorized work.

c. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or

manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

20. Discharge of Pollutants. All activities involving any discharge of pollutants into waters of the U.S. authorized under these GPs shall be consistent with applicable water quality standards, effluent limitations, standards of performance, prohibitions, and pretreatment standards and management practices established pursuant to the CWA (33 U.S.C. 1251), and applicable state and local laws. If applicable water quality standards, limitations, etc., are revised or modified during the term of this permit, the authorized work shall be modified to conform with these standards within 6 months of the effective date of such revision or modification, or within a longer period of time deemed reasonable by the District Engineer in consultation with the Regional Administrator of the EPA. Applicants may presume that state water quality standards are met with issuance of the Section 401 WQC (Applicable only to the Section 404 activity).

21. Spawning, Breeding, and Migratory Areas

a. Jurisdictional activities and impacts such as excavations, discharges of dredged or fill material, and/or suspended sediment producing activities in jurisdictional waters that provide value as fish migratory areas, fish and shellfish spawning or nursery areas, or amphibian and migratory bird breeding areas, during spawning or breeding seasons shall be avoided and minimized to the maximum extent practicable.

b. Jurisdictional activities in waters of the U.S. that provide value as breeding areas for migratory birds must be avoided to the maximum extent practicable. The permittee is responsible for obtaining any “take” permits required under the USFWS’s regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the USFWS to determine if such “take” permits are required for a particular activity.

22. Storage of Seasonal Structures. Coastal structures, such as pier sections and floats, that are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location, located above mean high water (MHW) and **not** in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW.

23. Environmental Functions and Values. The permittee shall make every reasonable effort to carry out the construction or operation of the work authorized herein in a manner that minimizes any adverse impacts on existing fish, wildlife, and the environmental functions to the extent practicable. The permittee will discourage the establishment or spread of plant species identified as non-native invasive species by any federal or state agency.

24. Vernal Pools.

a. Only vernal pools that meet the current definition of waters of the U.S. are regulated by the Corps.

b. Direct and indirect adverse effects to all vernal pools (VPs), including their envelopes and critical terrestrial habitats (VP Management Areas), shall be avoided and minimized to the maximum extent practicable. Site clearing, grading, and construction activities associated with a regulated activity in the VP Management Area may cause these adverse effects to the VP.

c. When any regulated activities occur within 750 feet of a vernal pool, the following management practices must be followed for all work within any VP Management Area (750’ of a VP’s edge) *in order to qualify for SV*:

i. No disturbance within the VP Depression or VP Envelope (area within 100 feet of the VP Depression’s edge)– does not apply to temporary impact associated with construction mats in previously disturbed areas of existing utility projects or linear transportation projects provided there is a Vegetation Management Plan that avoids, minimizes and mitigates impacts to aquatic resources.

ii. Maintain a minimum of 75% of the Critical Terrestrial Habitat (area within 100-750 feet of the VP Depression’s edge) as unfragmented forest with at least a partly-closed canopy of overstory trees to provide shade, deep litter and woody debris;

iii. Maintain or restore forest corridors connecting wetlands and significant vernal pools;

iv. Minimize forest floor disturbance;

- v. Maintain native understory vegetation and downed woody debris; and
- vi. Cape Cod style-curbings or no curbing options shall be used on new roads to facilitate amphibian passage.

d. A PCN is required for any regulated activity within 750' of a vernal pool when all work within the VP Management Area does not comply with the SV requirements in (c) above. Information on directional buffers in accordance with the VP Directional Buffer Guidance document may be provided in order to demonstrate minimal impact and avoid compensation requirements. Conservation of the un-impacted area within the VP Management Area will often be required.

25. Invasive Species.

a. The introduction, spread, or the increased risk of invasion of invasive plant or animal species on the project site, into new or disturbed areas, or areas adjacent to the project site caused by the site work shall be avoided. Hence, swamp and timber mats shall be thoroughly cleaned before reuse.

b. Unless otherwise directed by the Corps, all applications for PCN inland projects proposing fill in Corps jurisdiction shall include an Invasive Species Control Plan. Additional information can be found at www.hort.uconn.edu/cipwg/

26. Permit/Authorization Letter On-Site. For PCN projects, the permittee shall ensure that a copy of these GPs and the accompanying authorization letter are at the work site (and the project office) whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of Corps jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means these GPs, including General Conditions and the authorization letter (including its drawings, plans, appendices and other attachments) and also includes permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire authorization letter, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

27. Inspections. The permittee shall allow the Corps to make periodic inspections at any time deemed necessary in order to ensure that the work is being or has been performed in accordance with the terms and conditions of this permit. The Corps may also require post-construction engineering drawings for completed work or post-dredging survey drawings for any dredging work.

28. Maintenance. The permittee shall maintain the activity authorized by these GPs in good condition and in conformance with the terms and conditions of this permit. This does not include maintenance of dredging projects. Maintenance dredging is subject to the review thresholds in Appendix A – General Permit #7 as well as any conditions included in a written Corps authorization. Maintenance dredging includes only those areas and depths previously authorized and dredged. Some maintenance activities may not be subject to regulation under Section 404 in accordance with 33 CFR 323.4(a) (2).

29. Property Rights. These GPs do not convey any property rights, either in real estate or material, or any exclusive privileges, nor does it authorize any injury to property or invasion of rights or any infringement of federal, state, or local laws or regulations.

30. Transfer of GP Verifications. When the work authorized by these GPs are still in existence at the time the property is transferred, the terms and conditions, including any special conditions, will continue to be binding on the entity or individual who received the authorization, as well as the new owner(s) of the property. If the permittee sells the property associated with a General Permit authorization, the permittee may transfer the General Permit authorization to the new owner by submitting a letter to the Corps to validate the transfer. A

copy of the General Permit authorization letter must be attached to the letter, and the letter must include the following statement: "The terms and conditions of these General Permits, including any special conditions, will continue to be binding on the new owner(s) of the property". This letter should be signed by both the seller and new property owner(s).

31. Modification, Suspension, and Revocation. This permit and any individual authorizations issued thereof may either be modified, suspended, or revoked in whole or in part pursuant to the policies and procedures of 33 CFR 325.7; and any such action shall not be the basis for any claim for damages against the United States.

32. Special Conditions. The Corps may impose other special conditions on a project authorized pursuant to this general permit that are determined necessary to minimize adverse environmental effects or based on any other factor of the public interest. These may be based on concerns from CT DEEP or a Federal resource agency. Failure to comply with all conditions of the authorization, including special conditions, will constitute a permit violation and may subject the permittee to criminal, civil, or administrative penalties and/or restoration.


33. False or Incomplete Information. If the Corps makes a determination regarding the eligibility of a project under this permit, and subsequently discovers that it has relied on false, incomplete, or inaccurate information provided by the permittee, the authorization will not be valid, and the U.S. government may institute appropriate legal proceedings.

34. Abandonment. If the permittee decides to abandon the activity authorized under this General Permit, unless such abandonment is merely the transfer of property to a third party, he/she may be required to restore the area to the satisfaction of the Corps.

35. Enforcement cases. These GPs do not apply to any existing or proposed activity in Corps jurisdiction associated with an on-going Corps or EPA enforcement action, until such time as the enforcement action is resolved or the Corps determines that the activity may proceed independently without compromising the enforcement action.

36. Duration of Authorization. These GPs expire five years from the date issued as listed at the top of the cover sheet. Activities authorized by these GPs that have either commenced (i.e., are under construction) or are under contract to commence in reliance upon this authorization will have an additional year from the expiration date to complete the work. The permittee must be able to document to the Corps' satisfaction that the project was under construction or under contract by the expiration date of these GPs. If work is not completed within the one year extended timeframe, the permittee must contact the Corps. The Corps may issue a new authorization provided the project meets the terms and conditions of the CT GPs in effect at the time.

Activities authorized under these GPs will remain authorized until the GP expires, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.2(e)(2). Activities completed under the SV or PCN authorizations of these GPs will continue to be authorized after its expiration date.



Jennifer L. McCarthy
Chief, Regulatory Division

19 Aug 16

Date

APPENDIX C

GENERAL PERMIT 16 - STANDARD AQUACULTURE TERMS AND CONDITIONS

DEPARTMENT OF THE ARMY/STATE OF CONNECTICUT

2016 Connecticut General Permit

1. Aquaculture activities under this General Permit as identified within Appendix 2, Section F are subject to the current General Permit Conditions and Requirements of the Connecticut General Permit.
2. All gear, including buoys shall be marked and maintained in a manner that will make it identifiable to the specific aquaculture project/lease.
3. Before the authorized structures are installed the project proponent **must** contact the CT DEEP Boating Division, Navigation Safety/Boating Access Unit, P.O. Box 280, 333 Ferry Road, Old Lyme, CT 06371-0280 to either obtain a waiver as to the need to install gear-area boundary marker buoys or submit a permit application and receive authorization for Regulatory Markers ([Link to Regulatory Marker Permit](#)). If CT DEEP Boating regulation does not apply, the applicant shall contact the U.S. Coast Guard (USCG), First District; Aids to Navigation Branch at 408 Atlantic Avenue, Boston, MA 02110-3350 (800-848-3942) to coordinate the proper buoy markers. The permittee shall install and maintain lights, markings and other features as the CT DEEP/USCG requires. Note: Documentation of this coordination will be necessary for existing operations that seek reconfigurations and/or new approvals for structures from the Dept. of Army and for authorizations from the CT DA/BA.
4. Gear may not be located over or within beds of submerged aquatic vegetation (SAV) such as eelgrass or turtle grass, and coastal wetlands (salt marsh), nor shall such beds or vegetated marsh areas be damaged or removed. Routine lease activity including cage maintenance, washing etc. shall not occur within 25 feet of the edge of beds of SAV.
5. All gear shall be designed and deployed in such a manner as to limit, to the greatest extent practicable, negative impacts on avian resources such as, but not limited to, shore birds, wading birds or members of the waterfowl group. This is meant to include nesting, feeding or resting activities by migratory birds identified at 50 CFR 10.13.
6. Installation of structures, their mooring tackle and lines and any attendant vessels shall not create a hazard or interfere with existing navigation uses in the waterway, and structures shall be set back from the Federal Navigation Project (FNP) a distance of at least 200 feet. A list of Connecticut FNP projects can be obtained from the U.S Army Corps of Engineers website <http://www.nae.usace.army.mil/Missions/Navigation/Connecticut-Projects/>

APPENDIX C

GENERAL PERMIT 16 - STANDARD AQUACULTURE TERMS AND CONDITIONS

DEPARTMENT OF THE ARMY/STATE OF CONNECTICUT

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7. The right of the public to traverse or utilize the waters not physically occupied by authorized structures and/or moored vessels within the areal limits of the authorized gear perimeter shall not be impeded.
8. The placement of cultch shall comply with all of the Special Conditions in Section 5, part (h), items (1) through (7) of the Connecticut DEEP, General Permit for Coastal Maintenance (DEEP-OLISP-GP2015-02) as listed below:
 - Such placement of cultch shall only be conducted by a licensed shellfish operator in beds or areas designated for shellfishing under section 26-194 or section 26-242 of the General Statutes.
 - Such placement of cultch shall be conducted only in appropriate locations for colonization by oysters, based upon factors of salinity, water quality, water circulation patterns and substrate composition.
 - Such placement of cultch shall not be conducted in areas of tidal wetlands or submerged aquatic vegetation beds.
 - (Prior to the commencement of such placement of cultch, such licensed shellfish operator obtains all required authorizations from the Department of Agriculture Bureau of Aquaculture and Laboratory and the local shellfish commission, as applicable.
 - Prior to the commencement of such placement of cultch, such licensed shellfish operator obtains permission in writing from the owner or lessee of such shellfish bed or area.
 - Such placement of cultch shall be conducted in such a manner that it does not exceed a layer of cultch on the seafloor greater than 12" in depth.
 - Such placement of cultch shall be conducted such that the placement does not exceed 1,500 bushels per acre of seafloor.

APPENDIX C

GENERAL PERMIT 16 - STANDARD AQUACULTURE TERMS AND CONDITIONS

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9. The permittee shall be responsible to remove all gear and associated equipment within any leased or designated shellfish area in the event that the operator surrenders or loses the right to its use. ¹
10. The subject aquaculture activity shall not discernibly interfere with natural sedimentation and erosion processes.
11. Suspended cages or nets for the rearing or grow out of shellfish are permitted as Self Verification, provided they are located wholly below and within the footprint of an existing, authorized fixed or floating structure and provided there is a vertical clearance of at least 2 feet between the bottom of the gear and the sea floor at MLW. The structures that the gear will be adhered to must be in conformance with the structures permit for that "site."
12. Aquaculture projects authorized herein shall not interfere with public shore access at or below mean high water or interfere with the access to any riparian or littoral property.
13. The following conditions may be required as Special Conditions of an authorization to protect Federally-listed, protected sea turtles:
 - a. All gear, including buoys shall be marked and maintained in a manner that will make it identifiable to the specific aquaculture project/lease.
 - b. The length of the buoy line shall not exceed 23.1 feet (10% of the maximum water depth at MHHW at the lease site)
 - c. The gear sites shall be visited by an attendant surface vessel at least once a week, site conditions permitting.

¹ In some situations, a performance bond may be required.

APPENDIX C

GENERAL PERMIT 16 - STANDARD AQUACULTURE TERMS AND CONDITIONS

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2016 Connecticut General Permit

- d. If any listed species of sea turtle is observed to be entangled or otherwise interacting with the facility structure, the permittee (or onboard staff) shall immediately contact the Mystic Aquarium & Institute for Exploration, Marine Mammal and Sea Turtle Stranding Program Hotline at 860-572-5955 x107 and notify the NOAA Fisheries 24-hour Hotline at (866) 755-6622. The permittee should also contact the NOAA Fisheries Protected Resources Division, Sea Turtle Stranding & Disentanglement Coordinator at (978) 282-8470 or NERStranding.staff@noaa.gov.
- e. The permittee shall keep the enclosed Sea Turtle Handling and Resuscitation Requirements in a visible location on the attendant vessels at all times. If a sea turtle is entangled in the authorized aquaculture gear and comatose or inactive (but not dead), resuscitation should be attempted by following these procedures.

APPENDIX D

CONTACTS FOR CONNECTICUT GENERAL PERMIT:

1. FEDERAL

U.S. Army Corps of Engineers

New England District, Regulatory Division
696 Virginia Road
Concord, Massachusetts 01742-2751
(800) 343-4789 or (978) 318-8335
(978) 318-8303 - fax

National Park Service

North Atlantic Region
15 State Street
Boston, Massachusetts 02109
(617) 223-5203
(*Wild & Scenic Rivers*)

Federal Endangered Species (F&WS):

U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087
(603) 223-2541

Federal Endangered Species & EFH (NMFS)

National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930
Phone: (978) 281-9102
(978) 281-9301 - fax

U.S. Environmental Protection Agency, Region I

5 Post Office Square, Suite 100
Boston, Massachusetts 02109
(617) 918-2000

Department of Agriculture

Bureau of Aquaculture
P. O. Box 97
190 Rogers Avenue
Milford, Connecticut 06460
(203) 874-0696

2. STATE OF CONNECTICUT

Department of Energy & Environmental Protection

(Coastal Projects)

Office of Long Island Sound Programs
79 Elm Street
Hartford, Connecticut 06106-5127
(860) 424-3034

(Aquaculture Projects)

Connecticut Department of Agriculture
Bureau of Aquaculture & Laboratory
PO Box 97
Milford, CT 06460
(203) 874-0696

(Inland Projects)

Inland Water Resources Division
79 Elm Street
Hartford, Connecticut 06106-5127
(860) 424-3019

(State Endangered Species)

Bureau of Natural Resources
Wildlife Division
Natural Diversity Data
Base
79 Elm Street
Hartford, Connecticut 06106-5127
(860) 424-3011

(Mashantucket Pequot Tribal Nation)

Department of Natural Resources Protection &
Regulatory Affairs
550 Trolley Line Boulevard
P. O. Box 3202
Mashantucket, Connecticut 06338-3202

3. HISTORIC RESOURCES

Tribal Historic Preservation Officers

Mashantucket Pequot Tribal Nation
Marissa Turnbull, THPO
550 Trolley Line Boulevard
P. O. Box 3202
Mashantucket, Connecticut 06338-3202
Phone (860) 396-6887
Fax (860) 396-6914

Mohegan Tribe of Indians of Connecticut
James Quinn, Tribal Historic Preservation Officer
13 Crow Hill Rd.
Uncasville, CT 06382

Phone (860) 862-6393
Fax (860) 862-6395

Mohegan Tribe of Indians of Connecticut
Compliance and Regulations Department
13 Crow Hill Road
Uncasville, CT 06382

Archaeological Information

State Historic Preservation Office
Department of Economic and Community Development
Catherine Labadia, Deputy State Historic Preservation Officer
One Constitution Plaza, 2nd Floor
Hartford, Connecticut 06103-6103
(860) 256-2800 (main)
(860) 256-2764 (direct)

4. ORGANIZATIONAL WEBSITES

U. S. Army Corps of Engineers – New England District

www.nae.usace.army.mil/missions/regulatory.aspx

U. S. Army Corps of Engineers Headquarters www.usace.army.mil (click “Services for the Public”)

U.S. Environmental Protection Agency www.epa.gov/owow/wetlands/

National Marine Fisheries Service www.nmfs.noaa.gov

U.S. Fish and Wildlife Service www.fws.gov

National Park Service www.nps.gov/rivers/index.html/

Federal Emergency Management Agency www.fema.gov

Connecticut Dept. of Energy & Environmental Protection <http://www.ct.gov/deep/site/default.asp>

Connecticut Dept. of Agriculture, Bureau of Aquaculture & Laboratory
<http://www.ct.gov/doag/cwp/view.asp?a=3768&q=451508&doagNav=>

U.S. Environmental Protection Agency, Region 1 – Low Impact Development-practices and state-specific resources, including CT DEP Stormwater Quality Manual www.epa.gov/ne/topics/water/lid.html

U.S. Environmental Protection Agency – Green Infrastructure website www.epa.gov/greeninfrastructure



**US Army Corps
of Engineers**®
New England District

Appendix E: Self-Verification Notification Form

This form is required for all **non-tidal projects in Connecticut**, but **not** required if work is done within boundaries of Mashantucket Pequot or Mohegan Tribal Lands. **Before** work commences, complete **all** fields (write “none” if applicable); attach project plans (not required for projects involving the installation of construction mats only); and any state or local approval(s); and send to:

Permits & Enforcement Branch B
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751
or cenae-r@usace.army.mil

and

CT DEEP
Inland Water Resources Division
79 Elm Street
Hartford, CT 06106-5127

State or local Permit Number: _____
Date of State or local Permit: _____
State/local Project Manager: _____

Permittee: _____
Address, City, State & Zip: _____
Phone(s) and Email: _____

Contractor: _____
Address, City, State & Zip: _____
Phone(s) and Email: _____

Consultant/Engineer/Designer: _____
Address, City, State & Zip: _____
Phone(s) and Email: _____

Wetland/Soil Scientist Consultant: _____
Address, City, State & Zip: _____
Phone(s) and Email: _____

Project Location (provide detailed description & locus map): _____

Address, City, State & Zip: _____
Latitude/Longitude Coordinates: _____
Waterway Name: _____
Project Purpose (include all aspects of the project including those not within Corps jurisdiction):

Work Description: _____

Work will be done under the following GP(s) (check all that have associated impacts):

 GP. 2 - Repair or maintenance of authorized or grandfathered structures/fills

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 5 - Boat ramps/marine railways

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 6 - Utility line activities (include calculations for each single & complete crossing

- attach additional sheet if necessary)

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 9 - Shoreline and bank stabilization projects

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 10 - Aquatic habitat restoration, establishment and enhancement activities

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 11 - Fish & wildlife harvesting, enhancement and attraction devices and activities

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 12 - Oil Spill and Hazardous material cleanup

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 13 - Cleanup of hazardous and toxic waste

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 14 - Scientific measurements devices

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 15 - Survey activities

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

 GP. 17 - New/expanded developments & recreational facilities

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

_____ GP. 18 - Linear transportation projects- wetland crossings only (include calculations for each single & complete crossing - attach additional sheet if necessary)

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

_____ GP. 19 - Stream, river & brook crossings – not including wetland crossings (include calculations for each single & complete crossing – attach additional sheet if necessary)

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

_____ GP. 21 - Temporary fill not associated with any other GP activities

Area of total wetland impacts: temporary _____SF permanent _____SF

Area of total waterway impacts: temporary _____SF permanent _____SF

Does your project include any secondary effects? Yes _____ No _____

(Secondary effects include, but are not limited to non-tidal waters or wetlands drained, flooded, fragmented, or mechanically cleared resulting from a single and complete project. See Appendix F - Definitions.) If YES, describe here: _____

Proposed Work Dates: Start: _____ Finish: _____

Your name/signature below, as permittee, confirms that your project meets the self-verification criteria and that you accept and agree to comply with the applicable terms and conditions in the Connecticut General Permits.

Signature of Permittee

Date

APPENDIX F - DEFINITIONS

Artificial Reef: A structure which is constructed or placed in waters for the purpose of enhancing fishery resources and commercial and recreational fishing opportunities.

Boating facilities: These provide, rent or sell mooring space, such as marinas, boat/yacht clubs, boat yards, dockminiums, town facilities, dockminiums, etc. Not classified as boating facilities are piers shared between two abutting properties or town mooring fields that charge an equitable user fee based on the actual costs incurred.

Construction mats: Construction, swamp and timber mats (herein referred to as “construction mats”) are generic terms used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes. A timber mat consists of large timbers bolted or cabled together.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some minor maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Dredged material & discharge of dredged material: These are defined at 33 CFR 323.2(c) and (d). The term dredged material means material that is excavated or dredged from waters of the United States.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

Expansions: Work that increases the footprint of fill, depth of basin or drainage feature, structures or floats, or slip capacity.

Fill material & discharge of fill material: These are defined at 33 CFR 323.2(e) and (f). The term fill material is defined as material placed in waters of the U.S. where the material has the effect of either replacing any portion of a water of the U.S. with dry land or changing the bottom elevation of any portion of a water of the U.S.

Federal navigation projects (FNPs): These areas are maintained by the Corps; authorized, constructed and maintained on the premise that they will be accessible and available to all on equal terms; and are comprised of Corps Federal anchorages, Federal channels and Federal turning basins. Information, including the limits, is provided at <http://www.nae.usace.army.mil/Missions/Navigation.aspx>

FNP Buffer Zone: The buffer zone of a Corps FNP is equal to three times the authorized depth of the FNP. For additional information see <http://www.nae.usace.army.mil/Missions/Navigation/Connecticut-Projects/>

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Individual Permit: A Department of the Army authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the procedures of 33 CFR 322, or a specific project involving the proposed discharge(s) in accordance with the procedures of 33 CFR 323, and in accordance with the procedures of 33 CFR 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR 320.

Living Shoreline: A term used to describe a combination of mostly naturally derived materials including plants, shell and rock or manufactured rock-like surfaces that are used along a shoreline exhibiting erosion to dissipate wave energy and to collect naturally deposited sediment.

Maintenance: Maintenance does not include any modification that changes the character, scope, or size of the original fill design.

Navigable waters of the United States: Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. The Connecticut River has been determined to be a Navigable water of the United States. Refer to Title 33 CFR Part 329.

Ordinary High Water Mark (OHW): A line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas. See 33 CFR 328.3(e).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: reestablishment and rehabilitation.

Secondary effects: These are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. Information about secondary effects on aquatic ecosystems shall be considered prior to the time final Section 404 action is taken by permitting authorities. Some examples of secondary effects on an aquatic ecosystem are a) aquatic areas drained, flooded, fragmented, or mechanically cleared, b) fluctuating water levels in an impoundment and downstream associated with the operation of a dam, c) septic tank leaching and surface runoff from residential or commercial developments on fill, and d) leachate and runoff from a sanitary landfill located in waters of the U.S. See 40 CFR 230.11(h).

Shellfish dredging: Shellfish dredging typically consists of a net on a frame towed behind a boat to capture shellfish and leave the sediment behind. Dredges may skim the surface, utilize hydraulic jets, toothed rakes or suction apparatus.

Special aquatic sites: These include inland and saltmarsh wetlands, mud flats, vegetated shallows (submerged aquatic vegetation), sanctuaries and refuges, coral reefs, and riffle and pool complexes. These are defined at 40 CFR 230.3 and listed in 40 CFR 230 Subpart E.

Stream bed: The substrate of the stream channel between the OHW marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the streambed, but outside of the OHW marks, are not considered part of the streambed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Temporary impacts: Temporary impacts include waters of the U.S. that are temporarily filled, flooded, excavated, drained or mechanically cleared because of the regulated activity.

Tide gates: Structures such as duckbills, flap gates, manual and self-regulating tide gates, etc. that regulate or prevent upstream tidal flows.

Utility Line: Any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, data, and telegraph messages, and radio and television communication. The term utility line does not include activities that drain a water of the U.S., such as drainage tile or French drains, but it does apply to pipes conveying drainage from another area.

Vegetated shallows: Permanently inundated areas that under normal circumstances support communities of rooted aquatic vegetation, such as eelgrass and widgeon grass (*Rupia maritima*) in marine systems (doesn't include salt marsh) as well as a number of freshwater species in rivers and lakes. Note: These areas are also commonly referred to as submerged aquatic vegetation (SAV).

Vernal pools (VPs): Vernal pools (VPs): For the purposes of these GPs, VPs are depressional wetland basins that typically go dry in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In most years, VPs support one or more of the following obligate indicator species: wood frog, spotted salamander, blue-spotted salamander, marbled salamander, Jefferson's salamander and fairy shrimp. However, they should preclude sustainable populations of predatory fish. VP areas are:

- Depression (includes the VP depression up to the spring or fall high water mark, and includes any vegetation growing within the depression),
- Envelope (area within 0-100 feet of the VP depression's edge), and
- Critical terrestrial habitat (area within 100-750 feet of the VP depression's edge).

The envelope and critical terrestrial habitat protect the water quality of the breeding site (e.g., providing shade, leaf litter, and coarse woody material) and support the non-larval life-cycle stages of amphibian species. Note: The Corps may determine that a waterbody should not be designated as a VP based on available evidence.

Weir: A barrier across a river designed to alter the flow characteristics. In most cases, weirs take the form of a barrier, smaller than most conventional dams, across a river that causes water to pool behind the structure (not unlike a dam) and allows water to flow over the top. Weirs are commonly used to alter the flow regime of the river, prevent flooding, measure discharge and help render a river navigable.

Waters of the United States.: Waters of the United States are defined in Title 33 CFR Part 328. These waters include more than navigable waters of the U.S. and are the waters where permits are required for the discharge of dredged or fill material pursuant to Section 404 of the Clean Water Act. Waters of the U.S. include jurisdictional wetlands.



Design and construction guidance may be found in the U.S. Forest Service stream simulation manual, “Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings”¹. Section 5.3.3 Headcutting Potential and 6.2 Design of the Stream-Simulation Channel Bed are particularly relevant. Sections 7.5.2.3 Construction Methods and 8.2.11 Stream-Simulation Bed Material Placement both show important steps in the project construction. Chapter 6.1 is relevant for proper alignment and construction to prevent bank erosion or streambed scour.

Permanent Crossings in Tidal Streams

These are relevant for new and replacement crossings and culvert extensions.

1. Match the velocity, depth, cross-sectional area, and substrate of the existing stream outside the crossing, if it exists, and size crossings such that they do not restrict tidal flow over the full natural tide range seaward of the crossing. The Corps will typically require a low lying property analysis to ensure flooding is not a concern.
2. Construct crossings in dry conditions.

Permanent Crossings in Non-Tidal Streams

These are relevant for new and replacement crossings and culvert extensions.

1. Span² streams or size culverts or pipe arches such that they are wider than bankfull width (BFW). Spans are strongly preferred as they avoid or minimize disruption to the streambed, and avoid entire streambed reconstruction and maintenance inside the culvert or pipe arch (see 4, 5 & 7 below), which may be difficult in smaller structures. The span width of bridges, box culverts and arches at bankfull elevation should be ≥ 1.2 times BFW where practicable. In many cases bankfull width is not necessarily interchangeable with the elevation of ordinary high water.³
2. Embed culverts or pipe arches below the grade of the streambed. This is not required when ledge/bedrock and/or utilities prevents embedment, in which case spans are preferred. The following depths are recommended to prevent streambed washout, and ensure compliance and long-term success:
 - a. ≥ 1 -2 feet for box culverts and pipe arches⁴, or
 - b. ≥ 1 -2 feet and at least 25% for round pipe culverts.
3. Match the culvert gradient (slope) with the stream channel profile.
4. Construct crossings carrying normal flows with a natural bottom substrate within the structure matching the characteristics of the substrate in the natural stream channel and the banks

¹ www.nae.usace.army.mil/missions/regulatory.aspx >> “[Stream and River Continuity](#).”

² For the purposes of this GP, spans are bridges, three-sided box culverts, open-bottom culverts or arches that span the stream. The use of bridge piers or similar supports does not prevent a structure from being considered as a span.

³ BFW corresponds with “bankfull stage” and this should be field delineated in accordance with the U.S. Forest Service documents: a) [U.S. Forest Service stream simulation manual](#)¹; b) “[Stream Channel Reference Sites: An Illustrated Guide to Field Technique](#)” (Harrelson, et al. 1994); and c) “[A Guide to Identification of Bankfull Stage in the Northeastern United States](#)”.

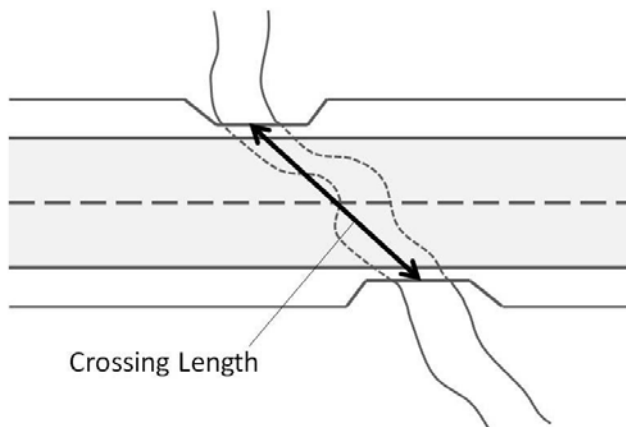
⁴ For 2(a) and 2(b), deeper embedment depths may be needed if there are elements of the constructed stream bed that are greater than 15 inches in diameter.

(mobility, slope, stability, confinement, grain and rock size) at the time of construction and over time as the structure has had the opportunity to pass substantial high flow events.

5. Construct crossings with appropriate bed forms and streambed characteristics so that water depths and velocities are comparable to those found in the natural channel at a variety of flows at the time of construction and over time. In order to provide appropriate water depths and velocities at a variety of flows and especially low flows, it is usually necessary to reconstruct the streambed (sometimes including a low flow channel), or replicate or preserve the natural channel within the structure. Otherwise, the width of the structure needed to accommodate higher flows will create conditions that are too shallow at low flows. The grain and rock size, and arrangement of streambed materials within the structure should be in accordance with (4) above. Flows could go subsurface within the structure if only large material is used without smaller material filling the voids.

6. *Openness > 0.82 feet (0.25 meters)*

Openness is the cross-sectional area of a structure opening divided by its crossing length when measured in consistent units (e.g. feet). For a box culvert, openness = (height x width)/ length.



For crossing structures with multiple cells or barrels, openness is calculated separately for each cell or barrel. At least one cell or barrel must meet the appropriate openness standard. The embedded portion of a culvert is not included in the calculation of cross-sectional area for determining openness.⁵

Openness > 0.82 feet is recommended to make the structure more likely to pass small, riverine wildlife such as turtles, mink, muskrat and otter that may tend to

avoid structures that appear too constricted. This openness standard is too small to accommodate large wildlife such as deer, bear, and moose. Structures that meet this openness standard are much more likely than traditional culverts to pass flood flows and woody debris that would otherwise obstruct water passage. It is likely that most structures that meet all the other general standards will also meet this openness standard. However, for some very long structures it may be impractical or impossible to meet this standard.

7. Construct banks on each side of the stream inside the span that match the horizontal profile of the existing stream and banks outside the span. To prevent failure, all constructed banks should have a height to width ratio of no greater than 1:1.5 (vertical:horizontal) unless the stream is naturally incised. Tie the banks into the up and downstream banks and configure them to be stable during expected high flows. Use materials that match the up and downstream banks (avoid the use of angular riprap and armored slopes, except where necessary for structural reasons, in which case they should be top-dressed with natural stream bed material). Construct a wildlife shelf on at least one of the banks. The constructed banks (with a wildlife shelf) will allow for terrestrial passage for wildlife and prevent flow from being focused to one side and

⁵ An Openness Ratio Spreadsheet shows how to calculate the open area for embedded pipe culverts to meet the 0.82 standard for openness. See www.nae.usace.army.mil/missions/regulatory.aspx >> Stream and River Continuity.

scouring the bed, especially against the structure's sidewall which may undermine the footings in the case of spans.

Temporary Crossings in Non-Tidal Streams

Temporary crossings shall consist of spans, culverts, construction mats or fords designed and constructed as follows:

1. All temporary crossings:
 - a. Impacts to the streambed or banks require restoration to their original condition (see U.S. Forest Service stream simulation manual referenced on page 1 of this document for stream simulation restoration methods). Use geotextile fabric or other appropriate bedding for stream beds and approaches where practicable to ensure restoration to the original grade.
 - b. Avoid excavating the stream or embedding crossings.
2. Culverts:
 - a. Install energy dissipating devices downstream if necessary to prevent scour.
3. Stream fords: Equipment may ford streams when: it is not feasible to construct a span or culvert (e.g., streams having no or low banks, emergency situations); the natural stream bed and banks consist of ledge, rock or sand that prevents disturbance and turbidity; and there is a stable, gradual approach.
4. Spans: Anchor spans where practicable so they do not wash out during high water.
5. Construction mats: Build construction mat stream crossings in accordance with the Construction Mat BMPs, specifically the Wetland/Stream Channel Crossing section. See www.nae.usace.army.mil/missions/regulatory.aspx >> [State General Permits](#) >> Connecticut General Permit Documents.



Date September 20, 2019

Diane M. Ray, Chief
Regulatory and Enforcement Branch B
U.S. Army Corps of Engineers
New England District
CENAE-RDB
696 Virginia Road
Concord, MA 01742-2751

Thomas Maziarz
Bureau Chief of Policy Planning
State of Connecticut Department of Transportation
2800 Berlin Turnpike, P.O. Box 317546
Newington, CT 06131-7546

SUBJECT: DEEP License #: 201908105-PCN
Rehabilitation of Culvert #06795, I-395 over Hammer Brook, Norwich

Dear Mr. Maziarz:

Please find attached a copy of your subject license and relevant enclosures which are being issued pursuant to your application of July 2, 2019. Your attention is directed to the conditions of the license. All work must conform to that which is specifically authorized.

Any work in regulated areas of the State which has not been authorized by a valid license is a violation of state law and subject to enforcement action by the Department of Energy & Environmental Protection and the Office of the Attorney General.

Your initiation of authorized activities will be relied upon as your agreement to comply with the terms and conditions of the license.

If you have not already done so, you should contact your local Planning and Zoning Office and the U. S. Army Corps of Engineers to determine local and federal permit requirements on your project, if any. Write the Corps' New England District, Regulatory Branch, 696 Virginia Road, Concord, MA 01742-2751; <http://www.nae.usace.army.mil/> or call 1-800-343-4789.

If you should have any questions or concerns, please contact me at (860) 424-3233, or john.natale@ct.gov.

Sincerely,

John Natale, Analyst
Land & Water Resources Division
Bureau of Water Protection & Land Reuse

201908105-PCN

Encl(s): License # 201908105-PCN

cc: File 201908105-PCN

cc (via email): Peter A. Nystrom, Mayor, City of Norwich: pnystrom@cityofnorwich.org
Steve Gephard, CT DEEP Fisheries Division: steve.gephard@ct.gov



Connecticut Department of Energy and Environmental Protection License*

USACE CT GP - Pre-Construction Notification Approval

Licensee(s): Connecticut Department of
Transportation

Licensee Address(s): 2800 Berlin Turnpike
Newington, CT 06131-7546

License Number(s): 201908105-PCN

Municipality: Norwich

Project Description: Replacement of Bridge #06795

Project Address/Location: I-395 over Hammer Brook

Waters: Hammer Brook

**Authorizing CT Statute(s)
and/or Federal Law:** Section 401 CWA (33 USC 1341)

**Applicable Regulations of
CT State Agencies:** 22a-426-1 to 9

Agency Contact: Land & Water Resources Division,
Bureau of Water Protection & Land Reuse, 860-424-3019

License Expiration: Upon expiration of the U.S. Army Corps of Engineers Section 404
permit for the same activity.

Project Site Plan Set: *Connecticut Department of Transportation, Environmental Permit
Plans for State Project No. 103-266, I-395 Over Hammer Brook
(Site No. 1) in the City of Norwich, 8 sheets, prepared by Louis
Berger US, Inc., updated through June 26, 2019.*

License Enclosures: WQC CT GP Conditions

*Connecticut's Uniform Administrative Procedure Act defines License to include, "the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . ."

Authorized Activities:

The Licensee is hereby authorized to conduct the following work as described in application # 201908105-PCN and as depicted on any site plan sheets / sets cited herein:

1. Rehabilitate culvert #06795 by installing a 4-inch thick concrete invert lining within the culvert, applying an asphaltic coating to the remaining interior portions of the culvert; and by installing headwalls, wingwalls and cutoff walls at the inlet and outlet;
2. Install a 15-foot X 15-foot pre-formed rip-rap scour hole at the outlet to improve fisheries habitat.
3. The following wetland and waterway impacts are authorized: wetland impacts of 1,600 square feet (temporary) and 1,900 square feet (permanent); and waterway impacts of 400 square feet (temporary) and 1,400 square feet (permanent).

Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.
2. Fisheries mitigation for this project shall be conducted at the Meshomasic State Forest in East Hampton, Connecticut, and shall consist of the replacement of an existing culvert conveying Mott Hill Brook under Del Reeves Road with an open-bottom structure, with the goal of restoring upstream fish habitat and instream habitats for the wild brook trout population, and providing stream connectivity to over 1.68 miles of upstream habitats. The Connecticut Department of Energy and Environmental Protection (DEEP) shall obtain the required State and federal permits for the project, and the Connecticut Department of Transportation (DOT) shall provide project funding, per the Memorandum of Agreement (MOA) between the DEEP and DOT, which was signed by both parties in May of 2018.

Issued under the authority of the Commissioner of Energy and Environmental Protection on:

September 20, 2019
Date



Brian P. Thompson
Division Director
Land & Water Resources Division

**Section 401 Water Quality Certification Conditions for Department of the Army (Corps of Engineers)
General Permits for the State of Connecticut**

1. **Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.
2. **Expiration of Certificate.** The Section 401 Water Quality Certifications contained herein shall be valid until such time as the Department of the Army General Permits for the State of Connecticut expires or is modified, suspended, revoked or reissued.
3. **Compliance with Certificate.** All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Any regulated activities carried out at the site, including but not limited to, construction of any structure, excavation, fill, obstruction, or encroachment, that are not specifically identified and authorized herein shall constitute a violation of this certificate and may result in its modification, suspension, or revocation. In carrying out the certified discharge(s) authorized herein, the permittee shall not store equipment or construction material, or discharge any material including without limitation, fill, construction materials or debris in any wetland or watercourse on or off site unless specifically authorized by this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this certificate.
4. **Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner.
5. **Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, incomplete or inaccurate, this certificate may be modified, suspended or revoked.
6. **Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:
 - a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;
 - b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24 hours) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;
 - c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;
 - d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;

- e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;
- f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.
- g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.
- h. Immediately informing the Commissioner's Inland Water Resources Division at (860) 424-3019 and the U.S. Army Corps of Engineers at (978) 318-8879, of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the following information:
 - (i) the provision(s) of this certificate that has been violated;
 - (ii) the date and time the violation(s) was first observed and by whom;
 - (iii) the cause of the violation(s), if known
 - (iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
 - (v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
 - (vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
 - (vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with condition 7 of this certificate.

For information and technical assistance, contact the DEEP Land and Water Resources Division at (860) 424-3019.

7. Unconfined Instream Work; Installation and Removal of Confining Structures.

- Unconfined instream work is limited to the period June 1 through September 30.
- Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.

- The removal of such confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.
- The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.
- Once a work area has been confined, in-water work within the confined area is allowed any time of the year.

8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

9. **Submission of Documents.** The date of submission to the Commissioner of any document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

Director, Land and Water Resources Division
Bureau of Water Protection and Land Reuse
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

May 29, 2020

Regulatory Division
File Number: NAE-2019-01746
CT DEEP File Number: 201908105-PCN

Kimberly Lesay
Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, Connecticut 06131
Kimberly.Lesay@ct.gov

Dear Kimberly Lesay:

We have reviewed your application to conduct culvert maintenance work. This project is located in three separate waterways along I-395 in Norwich, Connecticut, and further described as follows:

Repair of culvert 06795 carrying Hammer Brook beneath I-395. The project requires impacts to the surrounding wetlands for the rehabilitation of Bridge No. 06795. The project consists of installing a 4-inch thick reinforced concrete lining along the full length of the culvert invert. Concrete cut-off and return walls will be constructed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the culvert in order to maintain the existing headwater elevation. At the inlet, salvaged natural streambed material will be regraded to raise the streambed to the new invert elevation. A preformed riprap scour hole will be placed at the outlet to prevent additional scour. The construction of permanent access roads is required to access the culvert. These access roads will have minor impacts to the adjacent wetlands. All temporary disturbed areas will be revegetated after the completion of construction. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06795 I-395 Over Hammer Brook, (Site No. 1)," on 8 sheets, and dated "6/25/2019."

Repair of culvert 06796 carrying Byron Brook beneath I-395. The project requires impact to the channel and surrounding wetlands for the repair of the existing culvert. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54-inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Salvaged natural streambed material will be used to grade the streambed to the new invert elevation. The construction of permanent access roads is required to access the culvert. These access roads will have some temporary and permanent impacts to the adjacent wetlands. All temporary disturbed areas will be revegetated after the completion of construction. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06796 I-395 Over Byron Brook, (Site No. 2)," on 7 sheets, and dated "6/24/2019."

Repair of culvert 06797 carrying UNT beneath I-395. The project requires impacts to the channel for the replacement of the existing culvert. Work within the UNT will include installation of new culvert and its cut-off walls, flared wingwalls, and beveled opening at the inlet. Salvaged natural streambed material will be placed at the culvert inlet and outlet. The new proposed box culvert will contain 1 foot of natural streambed material. The brook will be regraded and realigned to its original course before the construction of I-395. The existing culvert will be discontinued and filled with low strength material. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06797 I-395 Over Unnamed Brook, (Site No. 3)," on 8 sheets, and dated "6/27/2019."

Based on the information you have provided, we verify that the activity is authorized under General Permit No. 19 of the enclosed August 19, 2016 Federal permit known as the Connecticut General Permits (GPs).

Please review the enclosed GPs and general conditions carefully to be sure that you and whoever does the work understand its requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with any special condition provided above and all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on August 19, 2021. You must commence or have under contract to commence the work authorized herein by August 19, 2021, and complete the work by August 19, 2022. If not, you must contact this office to determine the need for further authorization *before* beginning or continuing the activity. We recommend that you contact us *before* this authorization expires to discuss reissuance. Please contact us immediately to discuss modification of this authorization if you change the plans or construction methods for work within our jurisdiction. We must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

The Connecticut Department of Energy & Environmental Protection (DEEP) has issued a Water Quality Certification (WQC) for this project, as required under Section 401 of the Clean Water Act, based on their review of the project.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Please contact Alex Kostra, of my staff, at (978) 318-8651 if you have any questions.

Sincerely,

Handwritten signature of Kevin R. Kotelly in black ink.

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosure:

cc:

CT DEEP, Chief, Land & Water Resources Division, john.natale@ct.gov

Nate Margason, U.S. EPA, Region 1, Boston, Massachusetts, margason.nathan@epa.gov

860-594-2931

July 02, 2019

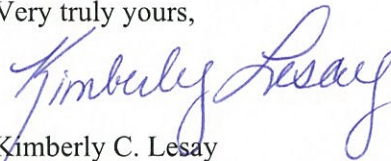
Ms. Susan Lee
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Subject: State Project No. 103-266
Bridge No. 06795: Interstate 395 over Hammer Brook
City of Norwich

Dear Ms. Lee,

Enclosed please find the Section 404 permit application for the General Permit 19 – Stream, River and Brook Crossings for your review and approval. An application for a 401 Water Quality Certification (via the Connecticut Addendum) was previously submitted to the Connecticut Department of Energy and Environmental Protection under a separate cover letter for processing. Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at 860-594-2157.

Very truly yours,



Kimberly C. Lesay
Transportation Assistant Planning Director
Bureau of Policy and Planning

Attachments

cc: Nathan Margason – USEPA

Naomi C. Hodges/nch

bcc: Kimberly Lesay

Andrew H. Davis – Chris W. Samorajczyk – Alexander T. Finch

Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin

Robert E. Obey – Eileen Ego (District 2 Construction)

Donald P. Wurst – Aaron J. Foster (CME)

U.S. Army Corps of Engineers (USACE)
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
 33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -
 OMB No. 0710-0003
 Expires: 01-08-2018*

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at . Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website:

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
--------------------	----------------------	------------------	------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - Connecticut Department of Transportation E-mail Address - Kimberly.Lesay@ct.gov	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- 2800 Berlin Turnpike City - Newington State - CT Zip - 06131 Country - USA	9. AGENT'S ADDRESS: Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax 860-594-2931 860-594-3028	10. AGENTS PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

 SIGNATURE OF APPLICANT

 DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) Rehabilitation of Bridge No. 06795 carrying Hammer Brook beneath I-395 located in Norwich, Connecticut	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Hammer Brook	14. PROJECT STREET ADDRESS (if applicable) Address N/A on Interstate-395
15. LOCATION OF PROJECT Latitude: °N 41°33'22.73" Longitude: °W 72° 6'16.35"	City - Norwich State- CT Zip- 06360
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID N/A Municipality Section - Township - Range -	

17. DIRECTIONS TO THE SITE

The project site is situated immediately north of Interchange 14, in Norwich, Connecticut. The culvert inlet is approximately 715 feet northeast from the Courtyard by Marriott, which is located at 181 W Town Street, Norwich, CT. Directions from the US Army Corps of Engineers New England District Main Office include: MA-2A E to I-95 S. Then take exit 25 to I-90 W. Take exit 10 toward MA-12 N, and keep right at the fork to merge onto I-395 S. The culvert is near exit 14 (toward CT-2 W/CT-32 N).

18. Nature of Activity (Description of project, include all features)

Please See Attached.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of this project is to address the structural deficiencies identified in inspection. Bridge No. 06795 is considered to be structurally deficient due to presence of perforations and section loss along the invert and distortion to corrugated steel pipe arch culvert. The bridge is also considered hydraulically inadequate due to the 2.5 feet of headwater above natural conditions. The deterioration of the structure requires rehabilitation.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

The project requires impacts to the surrounding wetlands for the rehabilitation of Bridge No. 06795. This project consists of installing a 4 inch thick reinforced concrete lining along the full length of the culvert invert. Constructing concrete cut-off and return walls will be constructed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the culvert in order to maintain the existing headwater elevation. At the inlet, salvaged natural streambed material will be regraded to raise the streambed to the new invert elevation. A preformed riprap scour hole will be placed at the outlet to prevent additional scour. The construction of permanent access roads is required to access the culvert. These access roads will have minor impacts to the adjacent wetlands. All temporarily disturbed areas will be revegetated after the completion of construction. A planting plan has been included on PMT-08 of the Environmental Permit Plans.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type	Type	Type
Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards

Please See Attached.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Please See Attached.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Please See Attached.

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- CY Norwich Hotel LLC (181 West Town Street, Norwich, CT) 440 Bedford St

City - Lexington State - MA Zip - 02420

b. Address- City of Norwich Deborah Tennant School (30 Case Street, Norwich, CT) 100 Broadway

City - Norwich State - CT Zip - 06360

c. Address- Rogulski, Amy L (21 Huntington Avenue, Norwich, CT) 321 Ross Hill Road

City - Lisbon State - CT Zip - 06351

d. Address- Emma Ferdinand A and Emma Raechel R (29 Huntington Avenue, Norwich, CT) 31 Huntington Avenue

City - Norwich State - CT Zip - 06360

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CTDEEP	PGP Addendum		Concurrently		
CTDOT	FMC - General	N/A	2019-01-29	2019-02-26	
CTDEEP	Water Res. Const. GP		Post PCN Approval		

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Keith Hill, Director, for Thomas Maziarz 7/1/2019
 SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ACOE Block 18: Nature of Activity

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06795 Culvert Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

Bridge No. 06795 is approximately 7.91 feet wide by 5.58 feet high asphalt-coated corrugated metal pipe (ACCOMP) arch culvert that conveys Hammer Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Hammer Brook under Project No. 327-01. The total structure length of the bridge is 213 feet and the culvert is located under approximately 10 feet of fill. There are no existing headwalls or wingwalls. Bridge No. 06795 is situated north of the I-395 southbound Exit 14 off-ramp. This structure is situated below six lanes of traffic. There are two northbound lanes, and one on-ramp lane, as well as two southbound lanes, and one off-ramp. The existing culvert is rated to be structurally deficient due to the presence of corrosion, section loss, and distortion to the pipe. The existing barrel of the steel pipe arch culvert exhibits loss of asphalt coating and heavy laminar rust at and below the springline. The existing ACCOMP structure results in approximately 2.5 feet of backwater at the approach cross-section and is hydraulically inadequate. This proposed culvert rehabilitation is part of State Project No. 103-266 and is to be repaired and relined in conjunction with Bridge Nos. 06796 and 06797, also located along I-395.

Hammer Brook has a drainage area of 0.73 square miles. The watercourse lies within the Yantic River Regional Basin No. 3900 and in the Thames River Major Basin No. 3. The watershed is located in the western portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land, and agricultural fields (CLEAR Land Use 2015). Wetlands are adjacent to the Hammer Brook watercourse at the inlet and outlet of Bridge No. 06795. These wetlands contain muck soils, scrub-shrub wetland plant species, and broad-leaved deciduous plants. Hammer Brook flows west to east. At the outlet, Hammer Brook acts as a tributary and joins Norwichtown Brook, which runs further south along the I-395 northbound embankment and ultimately discharges into the Yantic River. The project utilizes the 50-year design storm as it is considered a small structure according to the Drainage Manual.

The project proposes to cast-in-place 4 inch thick reinforced concrete lining along the full length of the culvert invert. The inlet and outlet of the pipe will be cut back approximately 8 feet to the full pipe section. Concrete headwalls, cutoff walls, and flared wingwalls will be constructed at both ends of the culvert to reduce scour and improve the flow of the brook. The proposed length of the structure from headwall to headwall is 197 feet. The proposed headwalls will be approximately 12 feet in length by 12 feet in height. The flared wingwalls will be approximately 6 feet in length and 12 feet in height. The proposed cutoff wall will be approximately 10 feet in length and 4 feet in height. A preformed riprap scour hole will be placed at the culvert outlet to prevent scour as well as raise the streambed to the new invert elevation. Salvaged natural streambed material will be regraded at the inlet to raise the streambed to the new invert elevation. At the inlet of the culvert, rounded corners of the headwall will be constructed to facilitate flow through the culvert as well as maintain the existing headwater elevation. Asphaltic coating will be applied along the remaining portion of the pipe, not lined by concrete, to minimize corrosion and increase durability. In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed on the upstream and downstream sides of the culvert. The downstream access road includes a temporary staging

area. Subsequent to construction, temporarily impacted areas will be revegetated, as appropriate. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The proposed roadway width, alignment and profile will match all existing conditions. The proposed lining reduces the hydraulic opening by approximately 9%. The model results for the 50-year storm event show that the reduction in the hydraulic opening with proposed improvements at the inlet results in decreased water surface elevations upstream of the crossing. Immediately upstream of the crossing is a private hotel and a developed parking lot. Currently, the right overbank spillway floods to the developed hotel parking lot. The proposed conditions will continue to flood the nearby hotel parking lot; however, the proposed structure will result in an 11% decrease in flow over the spillway when compared to existing conditions. The proposed water surface elevations are not expected to adversely impact existing structures on properties adjacent to the project site. The culvert inlet will provide adequate freeboard of approximately 9.8 feet to the I-395 roadway. The project is scheduled to be constructed in spring of 2020. It is anticipated to be completed in one construction season.

Construction Sequencing

The project site will require the construction of permanent construction access roads to allow materials and heavy construction equipment to access the culvert. Access roads will be constructed at the upstream and downstream sides, which will require clearing and grubbing as well as some permanent impacts to wetlands. A sedimentation and erosion control system will be installed along the access roads and employed throughout all phases of construction. To minimize traffic impacts on I-395, the work zone adjacent to I-395 will be contained to the shoulder of both the northbound and southbound lanes. Off-peak temporary shoulder and/or lane closures may be used for equipment or construction personnel to enter and exit the access roads, as required. The lining and construction at the inlet and outlet of Bridge No. 06795 will require the installation of temporary water-handling-cofferdams and temporary dewatering of portions of Hammer Brook within the project area.

The construction is anticipated to take place in two stages. In Stage 1, a temporary water handling bypass pipe will be installed along one side of the entire length of the culvert and temporary water-handling cofferdams will be placed at the inlet and outlet of the structure. Water will be confined to the temporary bypass pipe. During this stage the entire pipe will be power-washed and voids filled. The water from the power-washing operations will be completely contained and pumped to a settling basin. Once the existing pipe is cleaned, half of the culvert invert to be lined with the proposed 4 inches of concrete in the dry. During Stage 1, the temporary water-handling cofferdams will allow for the proposed cut-off wall, wingwalls, and headwalls to be installed in the dry at the inlet and outlet. In Stage 2, the bypass pipe will be relocated to the other side of the culvert so that the remaining portion of the culvert invert may be lined. A preformed riprap scour hole will be placed at the culvert outlet to prevent additional scour. Salvaged natural streambed material will be regraded at the inlet to raise the streambed to the new culvert invert elevation. Once construction is completed the temporary water-handling equipment will be removed restoring flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatered groundwater to a temporary sedimentation basin located in an upland area. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. All temporarily disturbed areas will be restored at the completion of construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The sedimentation and erosion control system shall be removed upon permanent stabilization. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control

Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Additional permits being sought include a State of Connecticut Addendum to the Army Corps of Engineers General Permit and a CTDEEP General Permit for Water Resources Construction Activities. A CTDOT Flood Management General Certification has been issued for this project.

ACOE Block 21: Types of Material Being Discharged and Amount of Each Type in Cubic Yards

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06795 Culvert Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

Type of Material	Amount Discharged	Comment
Embankment Fill	15 CY	For the construction of the access roads
Streambed Material	4 CY	To grade the streambed to the new culvert invert elevation at the inlet
Granular Fill	4.5 CY	For the construction of the riprap scour hole
Concrete Lining	24 CY	To provide a 4 inch layer along the length of the culvert invert
Processed Aggregate	62 CY	For the construction of the cutoff walls
Intermediate Rip-Rap	9 CY	For the construction of the riprap scour hole and to grade the culvert invert elevation at the outlet

ACOE Block 22: Surface Area in Acres of Wetlands or Other Waters Filled

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
 Rehabilitation of Bridge 06795 Carrying Hammer Brook under Interstate 395
 Norwich, Connecticut

The proposed project results in 1,900 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads, the placement of the preformed riprap scour hole at the outlet and associated channel grading, as well as the construction at the inlet and outlet of the culvert. In order to place the material into the regulated areas, heavy machinery and equipment will be required. The project results in 1,400 square feet (0.03 acres) of permanent watercourse impacts. This number accounts for the lining of the culvert, the construction of the headwalls, wingwalls, cutoff walls at the inlet and outlet, and placement of riprap at the outlet and associated channel grading. Though this is described as a permanent impact, the watercourse will remain. The project will not result in permanent conversion of watercourse to upland. Temporary impacts include the area necessary for the water handling and tree clearing. Temporary impact to the wetlands is 1,600 square feet (0.04 acres) and to the watercourse is 400 square feet (0.01 acres). The total wetland and watercourse impact is 5,300 square feet (0.12 acres). Impacts are described within the table below:

Bridge No. 06795 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	1,600 sqft (0.04 ac)	400 sqft (0.01 ac)	2,000 sqft (0.05 ac)
Permanent	1,900 sqft (0.04 ac)	1,400 sqft (0.03 ac)	3,300 sqft (0.08 ac)
Total	3,500 sqft (0.08 ac)	1,800 sqft (0.04 ac)	5,300 sqft (0.12 ac)

ACOE Block 23: Description of Avoidance, Minimization, and Compensation

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06795 Culvert Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of proposed impacts. These design elements include, utilizing a water handling system for the flow of Hammer Brook during construction, placing riprap at the outlet of the culvert to prevent scour and to grade the streambed to the new invert elevation, as well as the construction of flared concrete wingwalls at the inlet and outlet, and a rounded entrance at the inlet of the culvert to improve the flow of the brook. Salvaged natural streambed material will be placed at the inlet of the culvert to grade the streambed to the new invert elevation. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers, and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed construction access roads and staging areas. Although the project counts areas within the culvert and at the inlet and outlet as permanent impact, those areas will remain watercourse following the completion of the project. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The proposed project could not incorporate any onsite fisheries mitigation due to potential flooding on to private property. As a result, offsite mitigation has been coordinated to offset adverse fisheries impacts as a result of the invert lining of Bridge No. 06795. The selected offsite mitigation is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed mitigation location will provide channel connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both upstream and downstream of the structure. The proposed work involves the replacement of the existing perched and undersized culvert with a timber bridge on Del Reeves Road. This mitigation proposes to conserve the native brook trout population. The MOA between CTDOT and DEEP Inland Fisheries has been attached to the regulatory permit applications. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

ATTACHMENTS

Attachment A: Location Maps

- USGS Map
- Aerial Map

Attachment B: Site Permit Plans

Attachment C: Site Photos

Attachment D: Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

Attachment E: Northern Long Eared Bat Consultation

Attachment F: CTDEEP Fisheries Approval and Memorandum of Agreement (MOA)

Attachment G: State Historic Preservation Office (SHPO) Exemption

Attachment H: Tribal Historic Preservation Office (THPO) Exemption

Attachment I: FEMA FIRMette and Inundation Maps

Attachment J: Interagency Coordination Meeting Notes

Attachment A

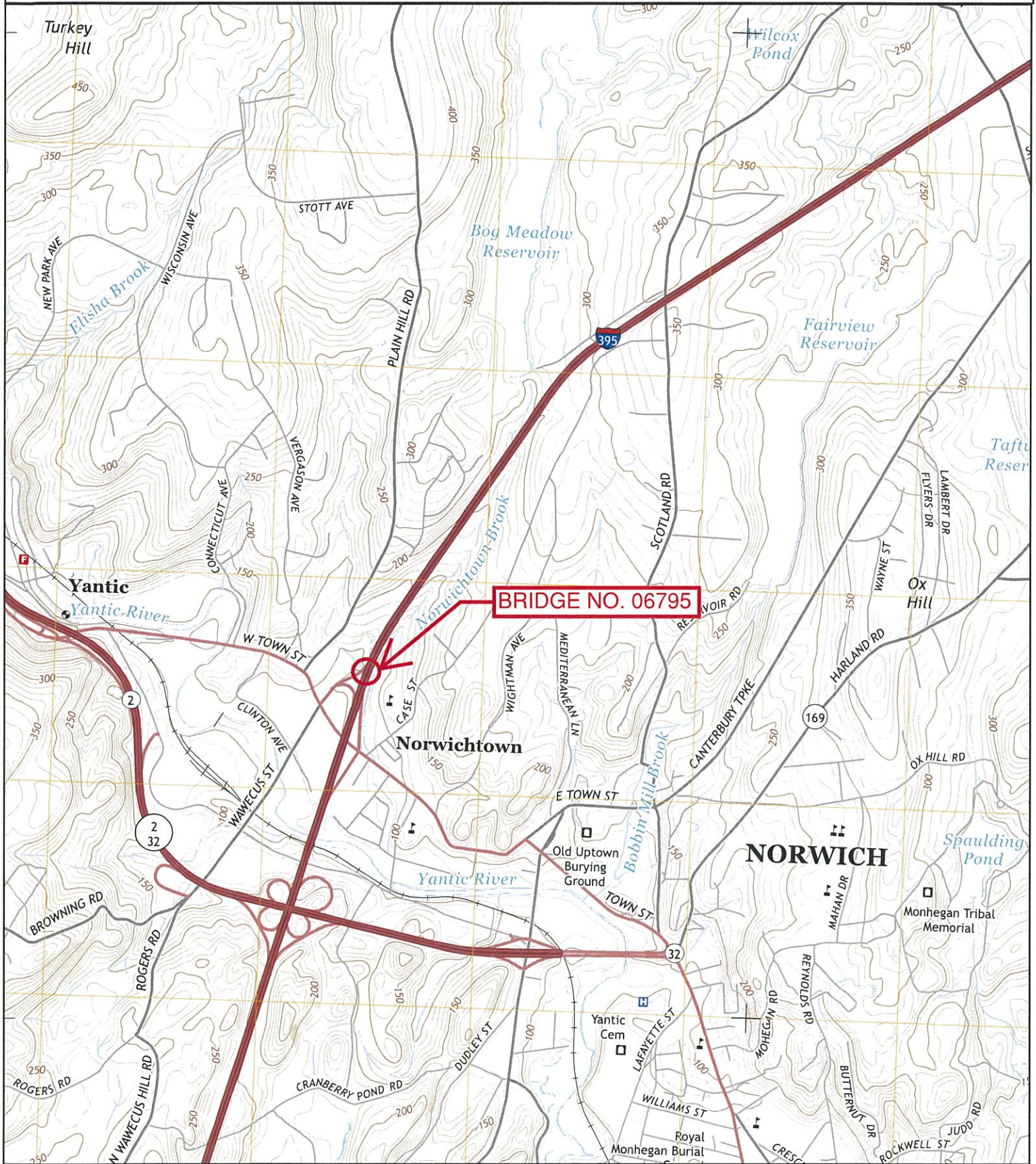
Location Maps

- USGS Map
- Aerial Map

USGS QUADRANGLE MAP

BRIDGE NO. 06795 IN NORWICH, CT

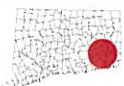
INTERSTATE 395 OVER HAMMER BROOK



BRIDGE NO. 06795



USGS MAP #72
NORWICH,
CONNECTICUT



Created: 2019

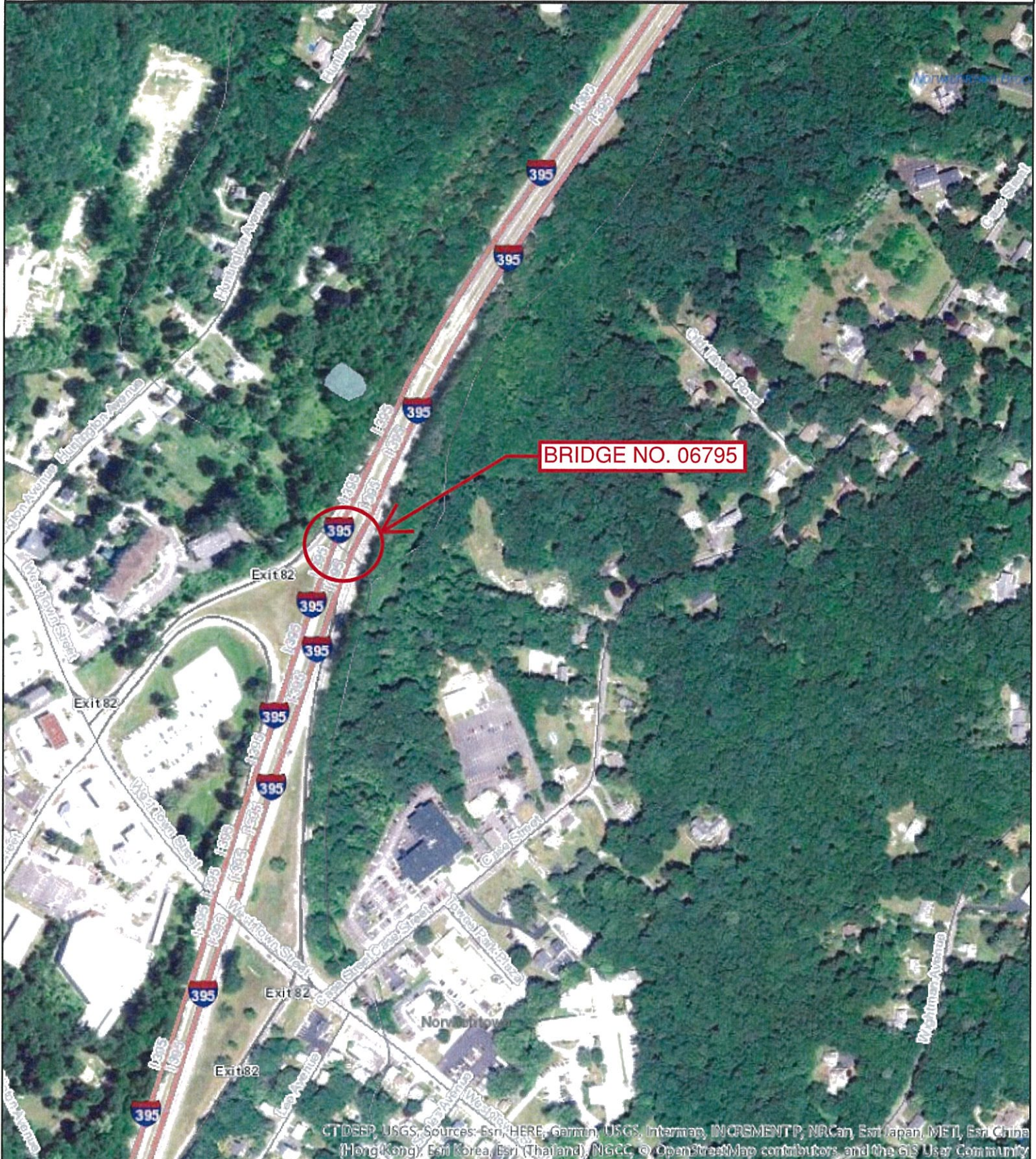
1 INCH = 2,000 FEET





DETAILED AERIAL MAP

BRIDGE NO. 06795 IN NORWICH, CT

INTERSTATE 395 OVER HAMMER BROOK



CTDEEP, USGS. Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENTP, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

	<p>CTECO AERIAL MAP NORWICH, CONNECTICUT</p>	 Created: 2019	<p>1 INCH = 500 FEET</p>  <p>0 250 500 1000 1500 Feet</p>
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Attachment B
Site Plans



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

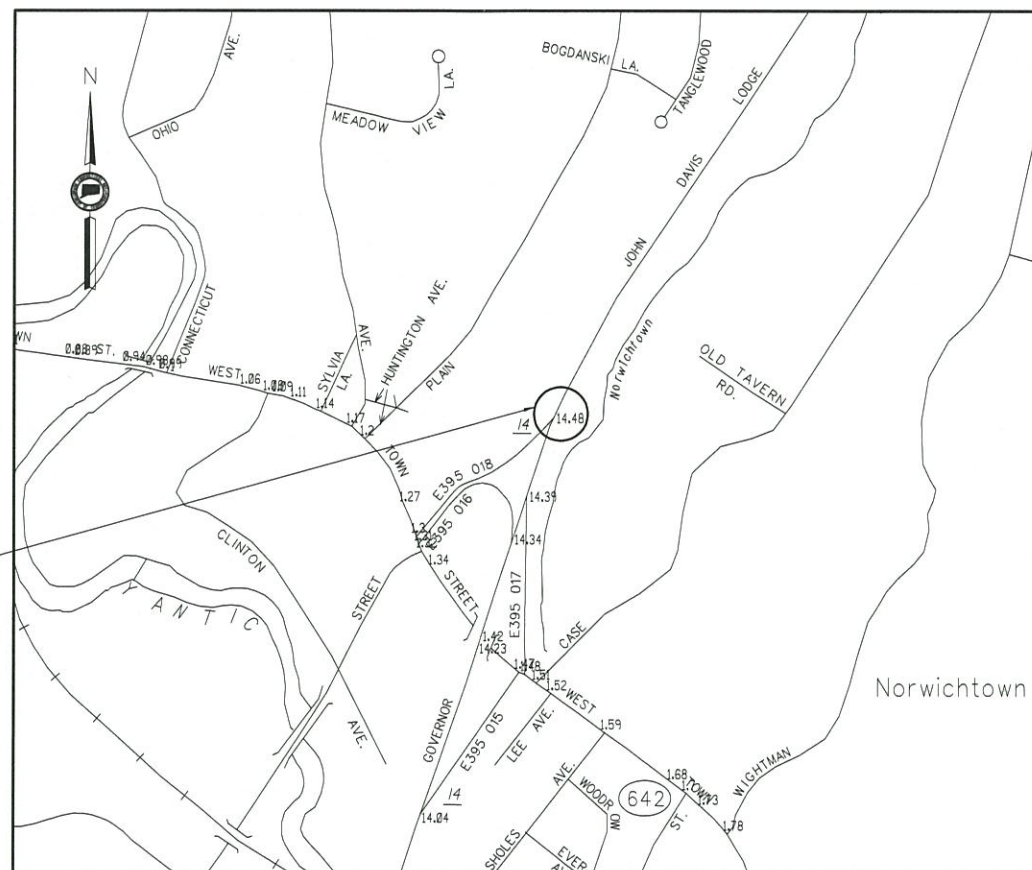
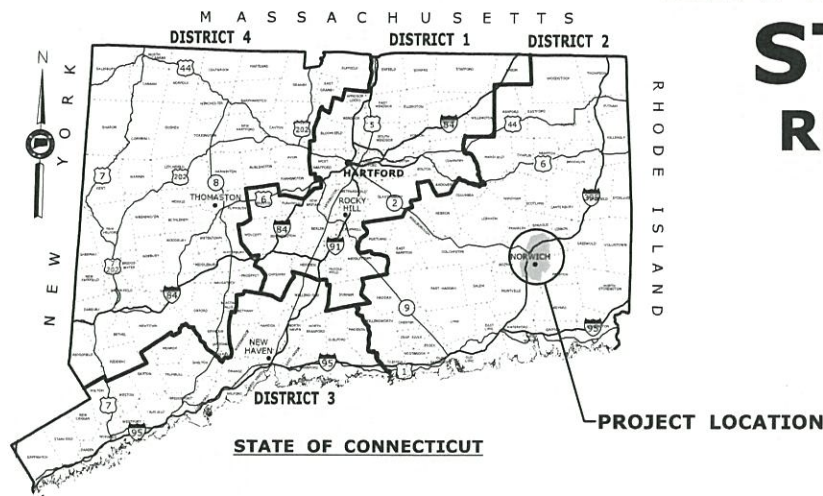
STATE PROJECT NO. 103-266

REHABILITATION OF BRIDGE No. 06795

I-395 OVER HAMMER BROOK,

(SITE No. 1)

IN THE CITY OF NORWICH



BRIDGE NO. 06795
I-395 OVER
HAMMER BROOK

LOCATION PLAN

SCALE: 1" = 500'

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06795 TITLE SHEET
PMT-02	BR. NO. 06795 GENERAL SITE PLAN
PMT-03	BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06795 CROSS-SECTIONS
PMT-05	BR. NO. 06795 100-YEAR FLOOD IMPACT PLAN
PMT-06	BR. NO. 06795 ELEV. & SECTION PLAN
PMT-07	BR. NO. 06795 STAGING AND WATER HANDLING PLAN
PMT-08	BR. NO. 06795 PERMIT PLANTING PLAN

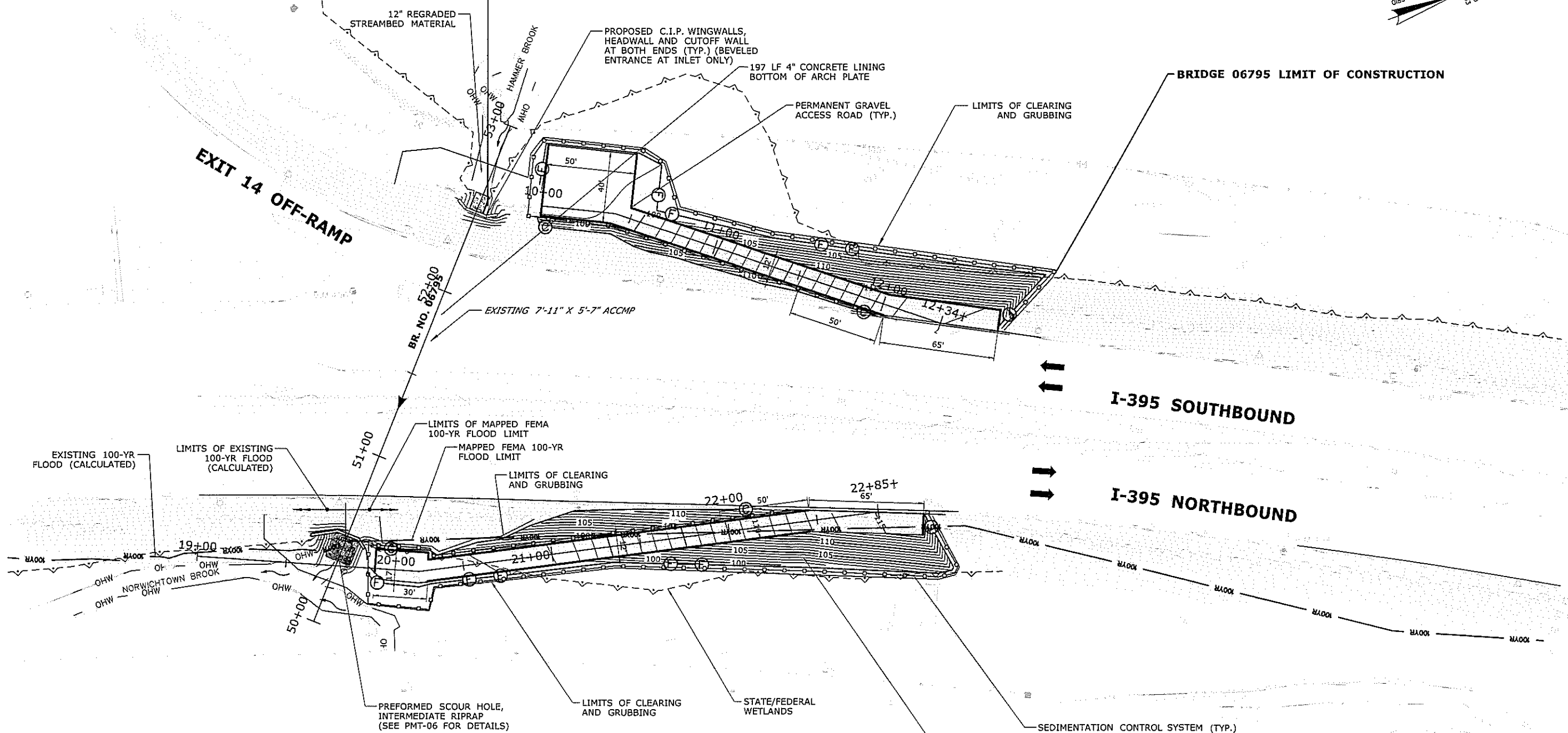
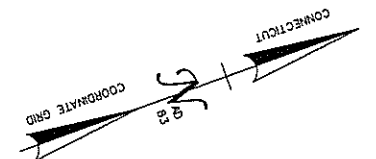
LOUIS BERGER US, Inc
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/25/2019

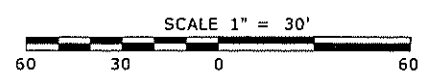
DESIGNER/DRAFTER: JPM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-01 SHEET NO.	
CHECKED BY: - SCALE AS NOTED						DRAWING TITLE: BR. NO. 06795 TITLE SHEET
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	Plotted Date: 6/25/2019	Filename: ...\\VW_MSH_0103_0266_06795_TSH.dgn				

BEGIN STATE PROJECT NO. 103-266
 BRIDGE 06795 LIMIT OF CONSTRUCTION
 STA. 10+00



LEGEND:

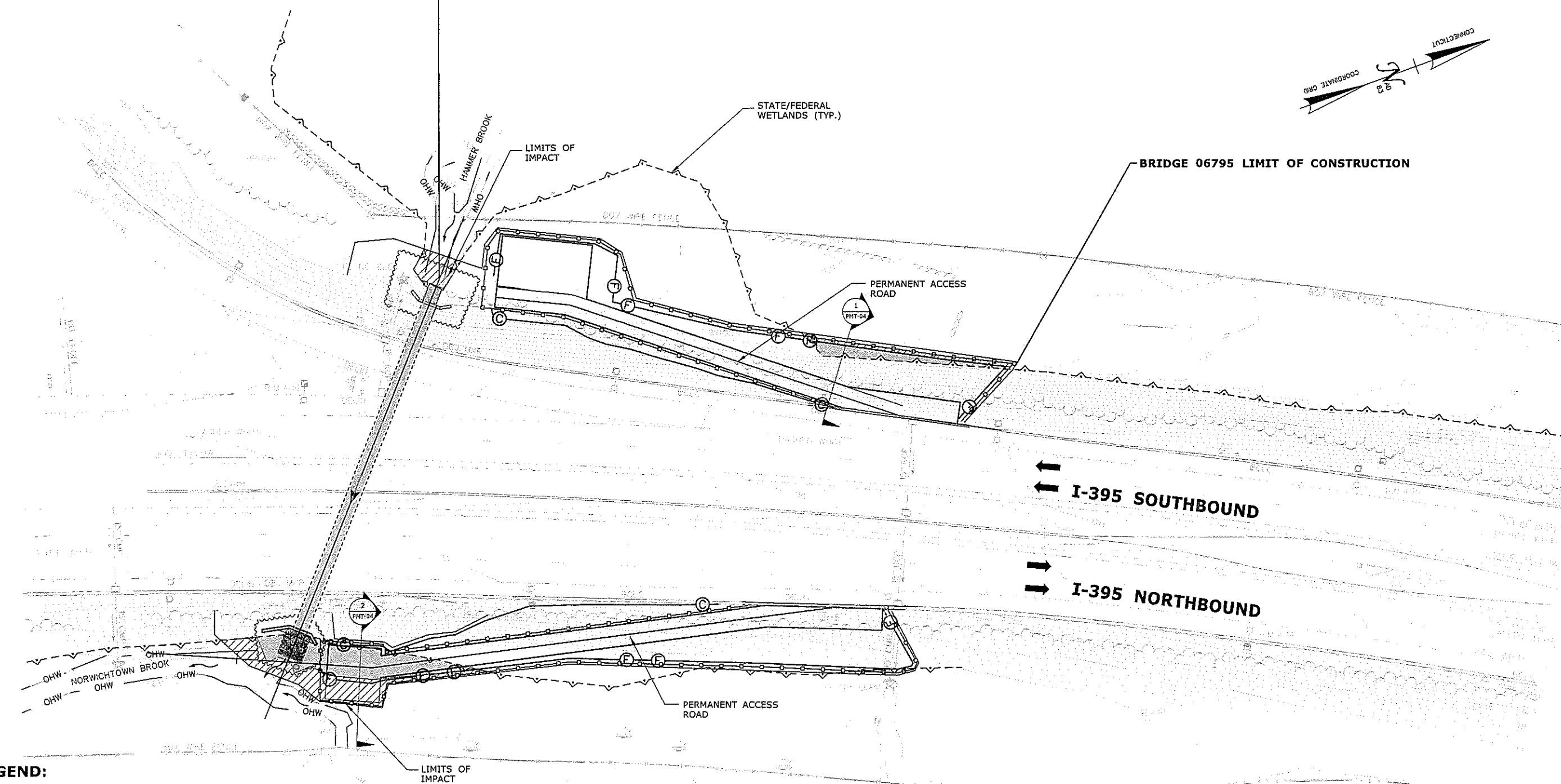
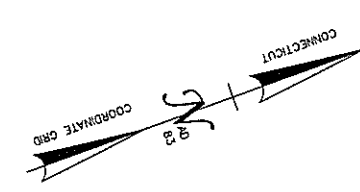
- 100YR - MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW - ORDINARY HIGH WATER
- - - - STATE/FEDERAL WETLANDS
- o - o - SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/25/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-02 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/25/2019							

BRIDGE 06795 LIMIT OF CONSTRUCTION



LEGEND:

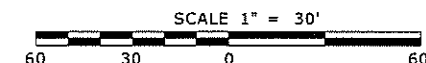
THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- PERMANENT IMPACT
- MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

NOTES:

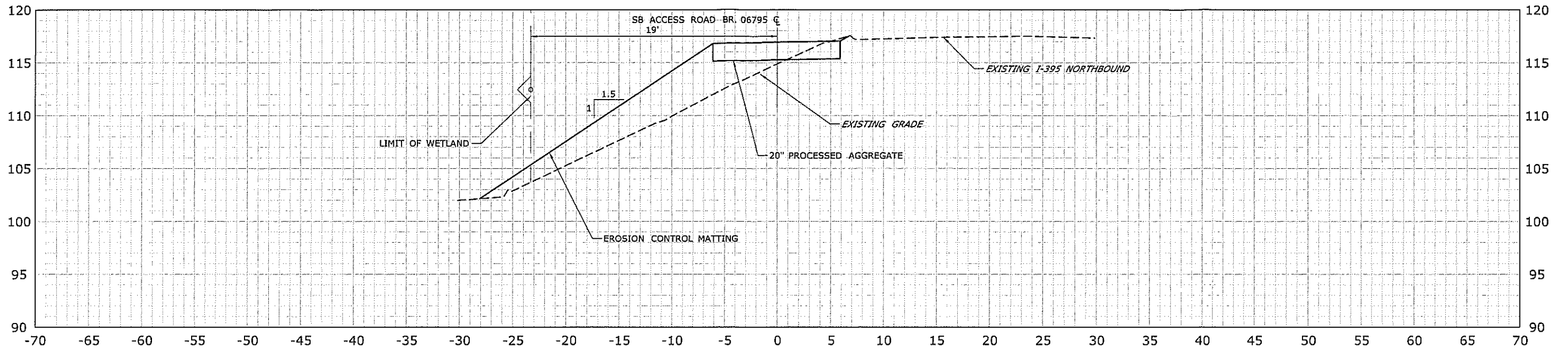
1. CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE.
2. ALL DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

WETLAND IMPACT TABLE				
	WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS	1	1900 S.F. (0.04 AC.)	1400 S.F. (0.03 AC.)	3300 S.F. (0.08 AC.)
TEMPORARY IMPACTS	1	1600 S.F. (0.04 AC.)	400 S.F. (0.01 AC.)	2000 S.F. (0.05 AC.)
TOTAL IMPACTS		3500 S.F. (0.08 AC.)	1800 S.F. (0.04 AC.)	5300 S.F. (0.12 AC.)

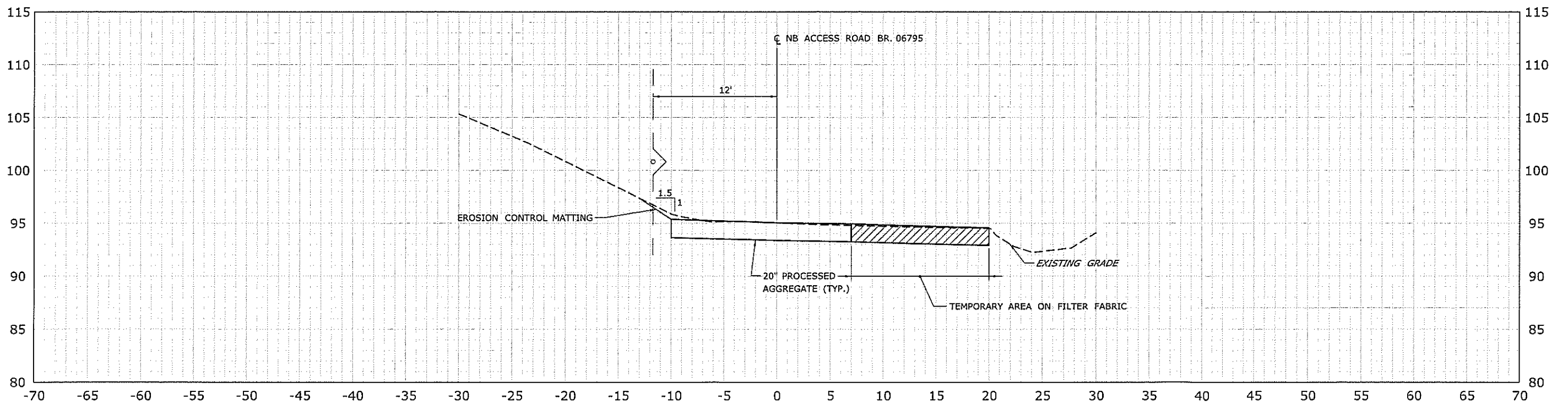


ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/25/2019

<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p><small>Filename: ...LHW MSH_0103-0266_Br 06795 WIP PLN-01.DGN.dgn</small></p>	<p>SIGNATURE/BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH</p> <p>DRAWING TITLE: BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-03</p> <p>SHEET NO.</p>
<p>REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/25/2019</p>						



1 ACCESS ROAD SECTION
PMT-03



2 ACCESS ROAD SECTION
PMT-03

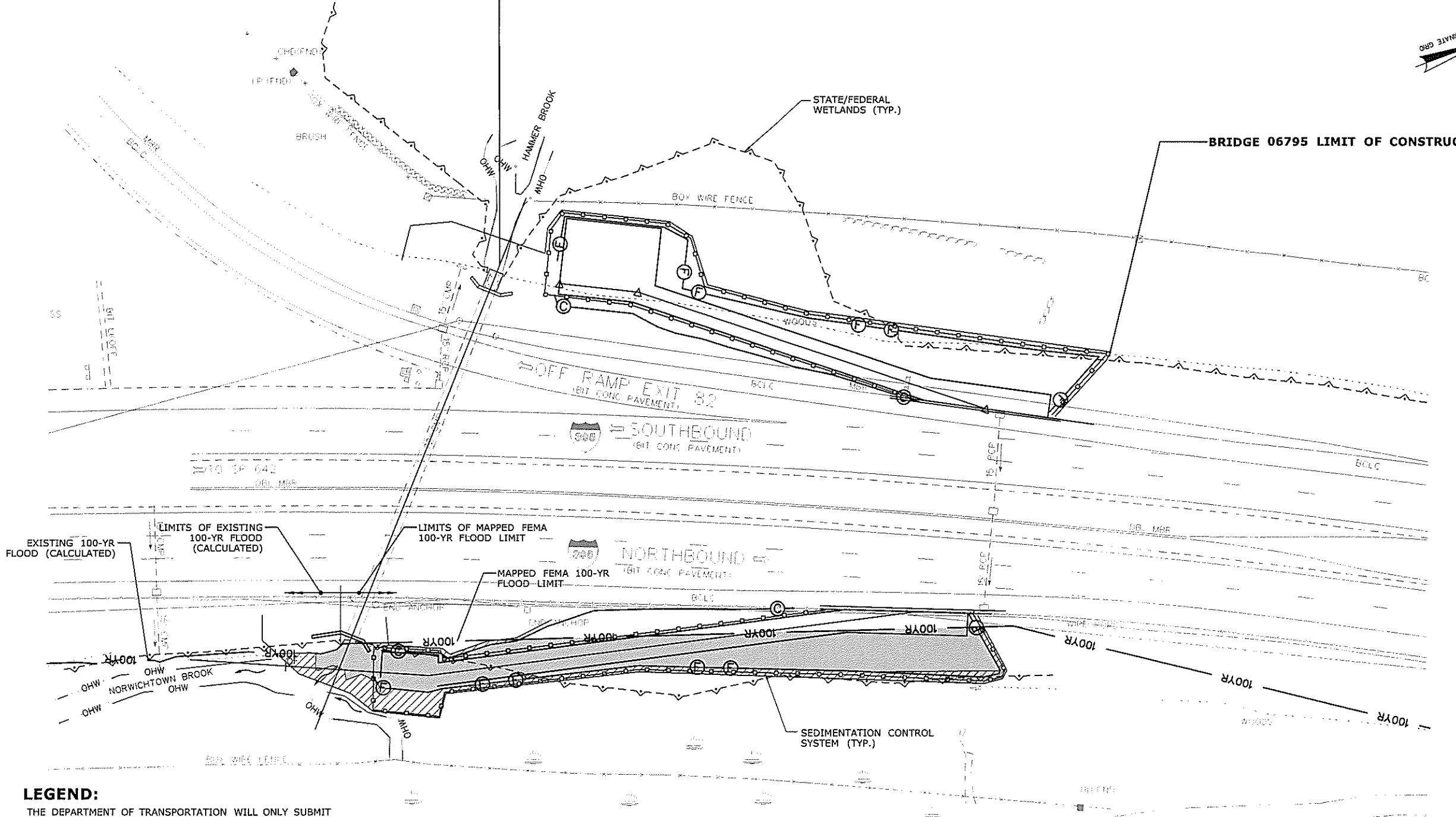
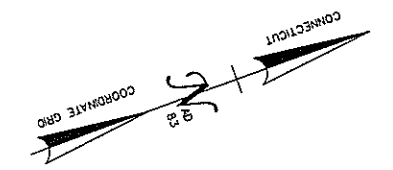
ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/25/2019

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REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/25/2019				DRAWING TITLE: BR. NO. 06795 CROSS-SECTIONS

Filename: ...\\HW.MSH 0103-0266 Br 06795 XSEC.PLN-D1.DGN.dgn

BRIDGE 06795 LIMIT OF CONSTRUCTION

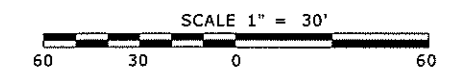


LEGEND:
 THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- PERMANENT IMPACT
- 100YR MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

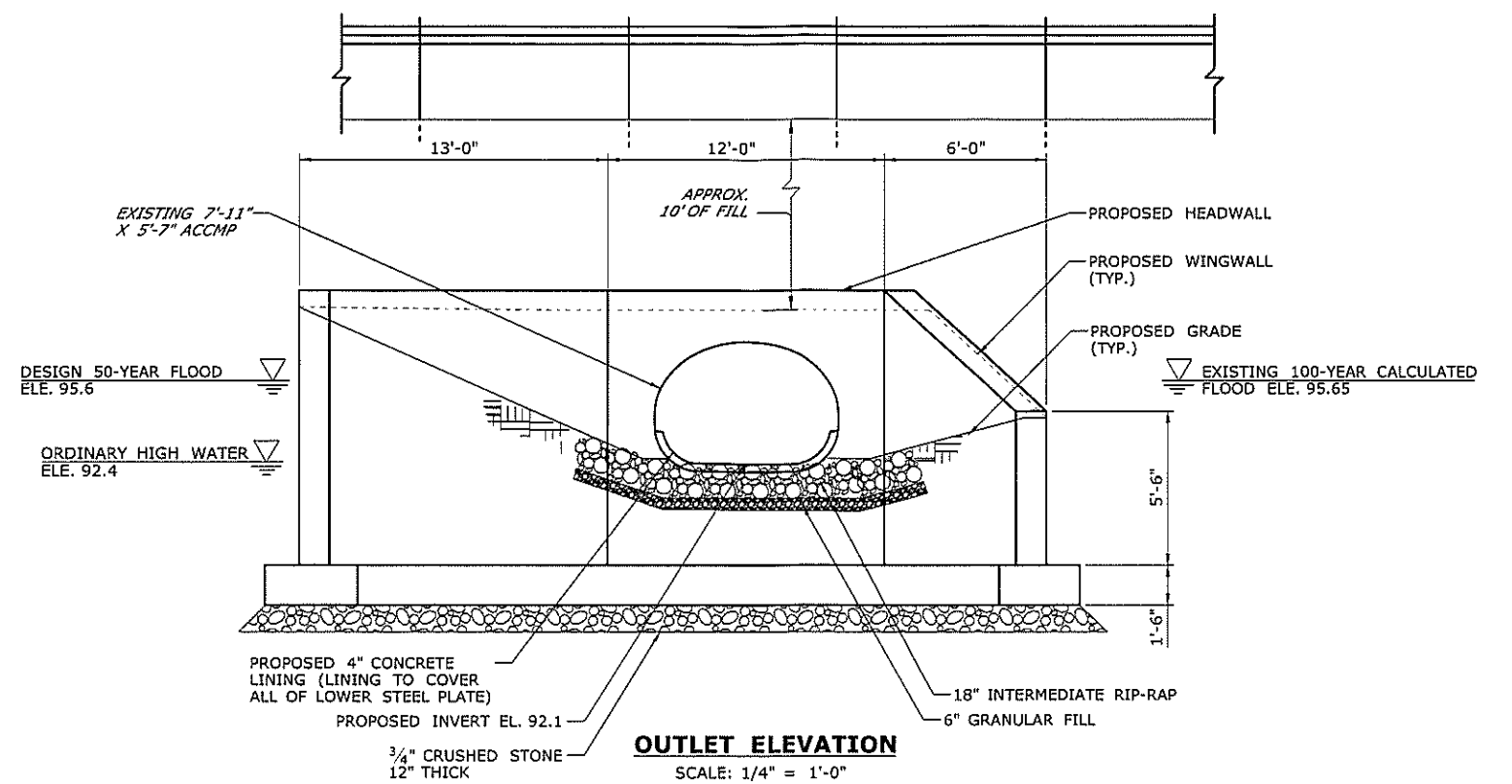
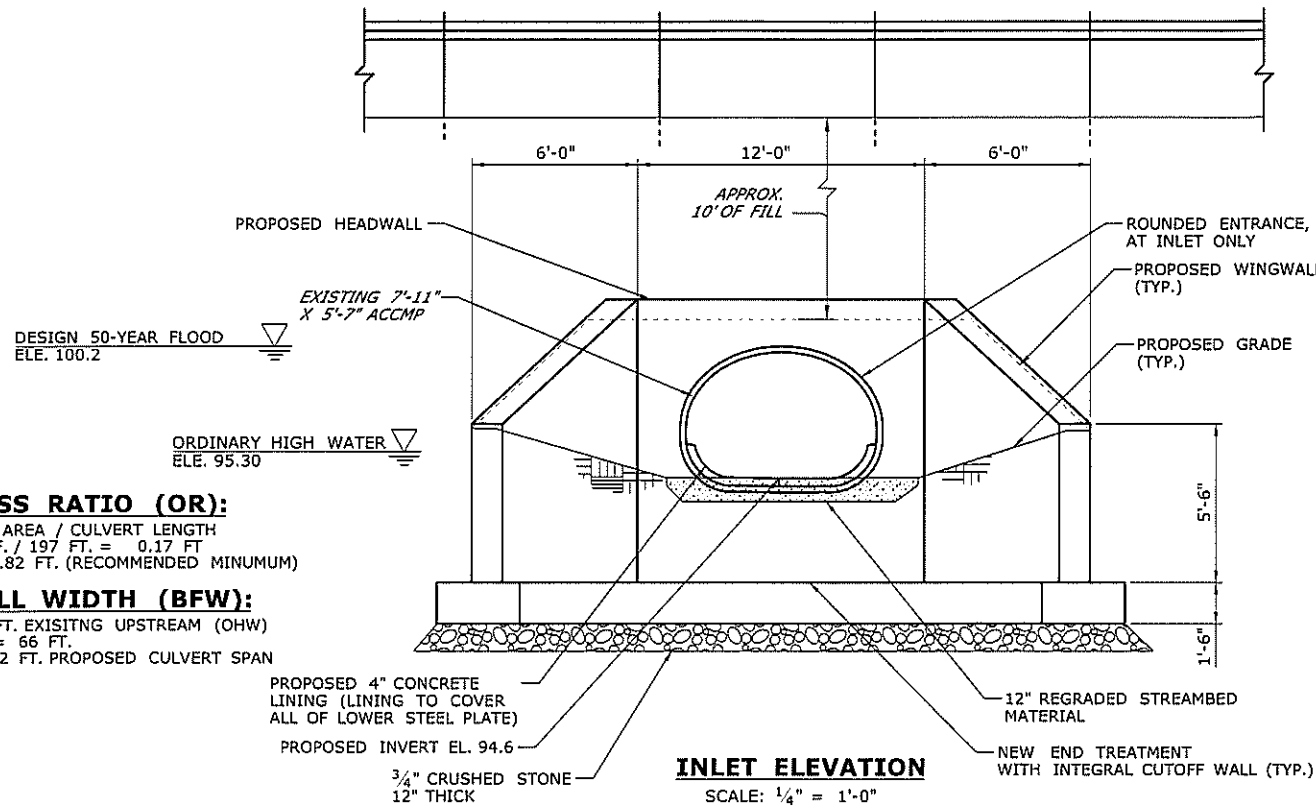
NOTE:
 CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

100-YEAR FLOODPLAIN AREA IMPACTS, CUT AND FILL			
AREA IMPACTS		VOLUME IMPACTS	
TEMPORARY IMPACT AREA	PERMANENT IMPACT AREA	EXCAVATION IN FEMA FLOOD PLAIN	FILL IN FEMA FLOODPLAIN
2400 S.F.	6800 S.F.	52 C.Y.	200 C.Y.



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 PLAN DATE 6/25/2019

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REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/25/2019						

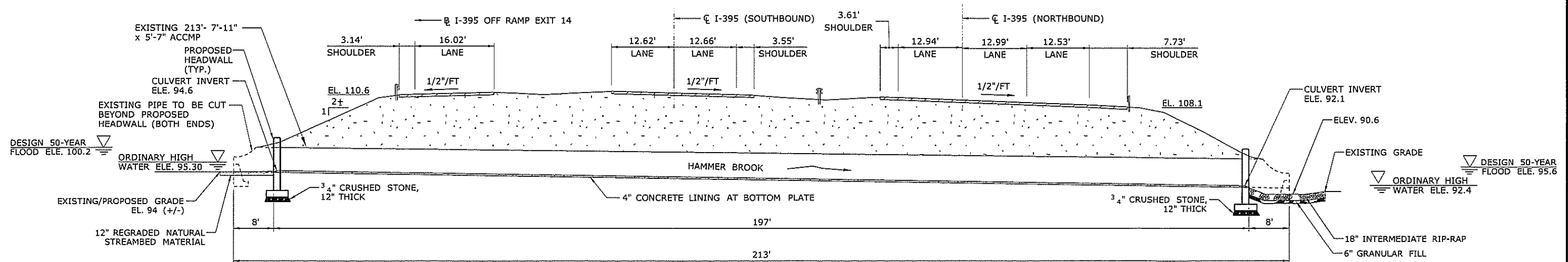


OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 34 S.F. / 197 FT. = 0.17 FT.
 0.17 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

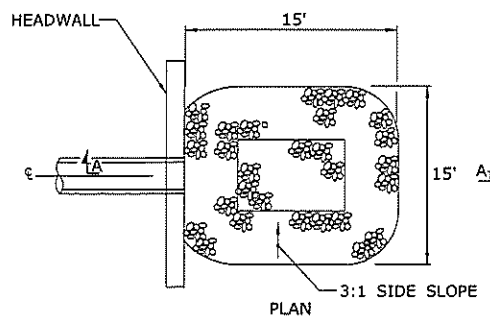
BANKFULL WIDTH (BFW):
 BFW = 55 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 66 FT.
 66 FT. > 7.92 FT. PROPOSED CULVERT SPAN

INLET ELEVATION
 SCALE: 1/4" = 1'-0"

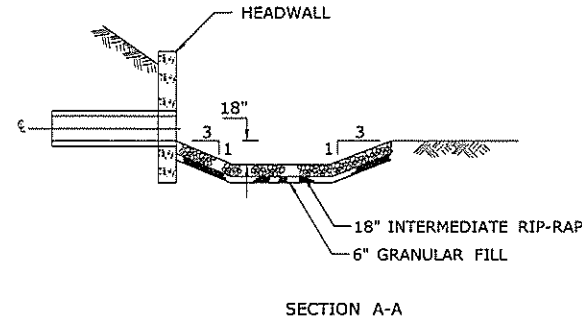
OUTLET ELEVATION
 SCALE: 1/4" = 1'-0"



PROPOSED LONGITUDINAL SECTION
 (LOOKING NORTH)
 SCALE: 1" = 10'



PREFORMED SCOUR HOLE
 N.T.S.



SECTION A-A

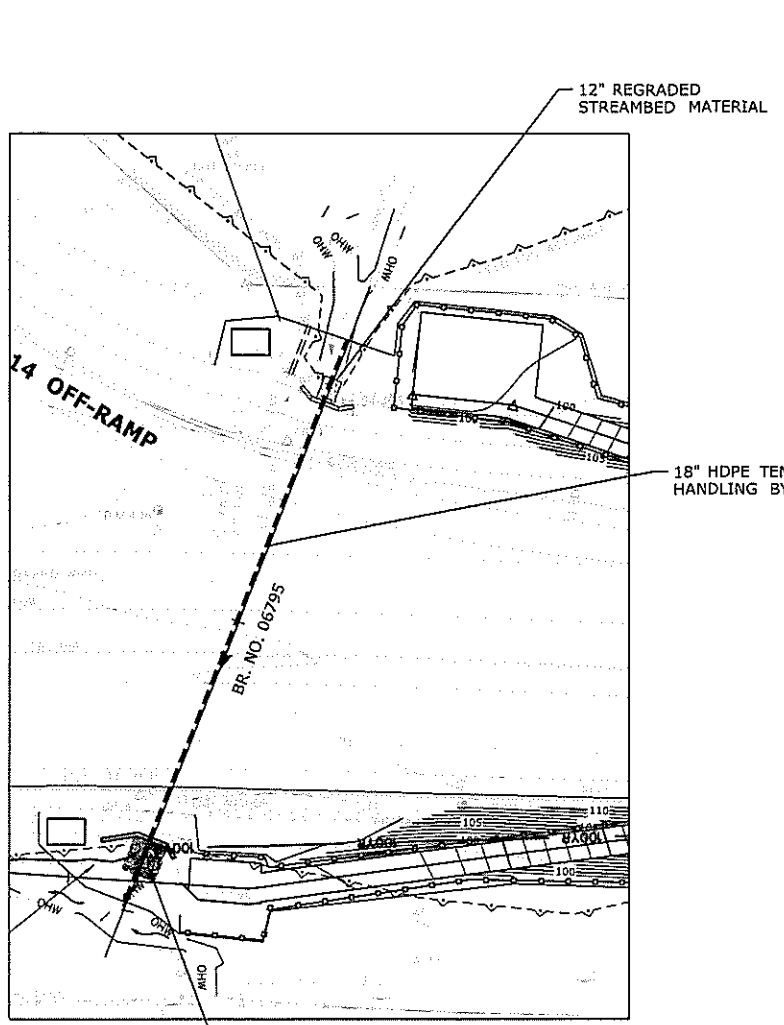
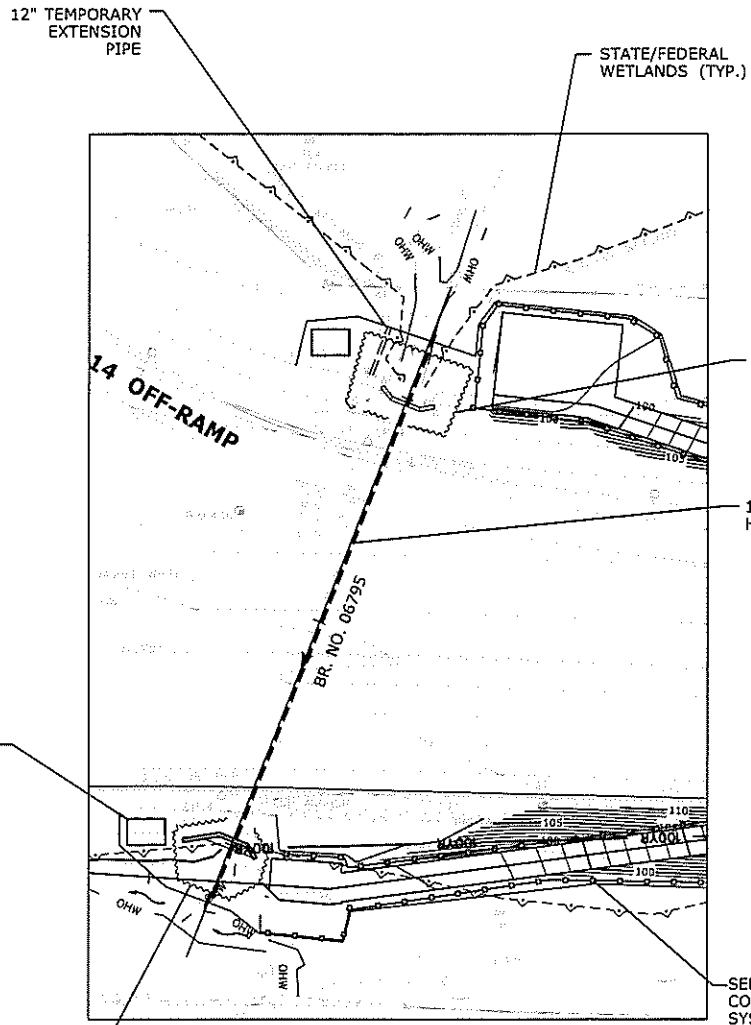
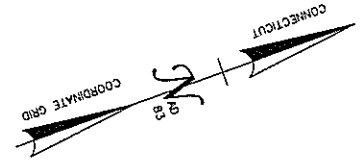
NATIVE STREAMBED MATERIAL NOTES

1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PARTIAL CULVERT REMOVAL AND NEW END TREATMENT INSTALLATION SHALL BE STOCKPILED AND THEN REPLACED AT THE INLET, TO THE DEPTH SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER, AND IN ACCORDANCE WITH THE PERMIT DOCUMENTS.
2. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.

HYDRAULIC DATA 06795	
DRAINAGE AREA	0.73 SQ MILES
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	305 CFS
AVERAGE DAILY FLOW ELEVATION	95.0
UPSTREAM DESIGN SURFACE WATER ELEVATION	100.2
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	95.6

ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/26/2019

DESIGNER/DRAFTER: MM		SIGNATURE/ BLOCK:	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWH: NORWICH	PROJECT NO. 103-266
CHECKED BY: MJM		LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	DRAWING TITLE: BR. NO. 06795 ELEV. & SECTION PLAN	SHEET NO. PMT-06	
SCALE AS NOTED	Plotted Date: 6/26/2019	Filename: ...\\SB_MSH_0103-0266_Br06795_E5_PLAN.dgn			



TEMPORARY DEWATERING BASIN (APPROX. LOCATION) (TYP.)

COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL MIN. TOP OF COFFERDAM ELEV. 94.5

STAGE - 1 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS ROADS.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY WATER-HANDLING FACILITIES, INCLUDING TEMPORARY COFFERDAM AND TEMPORARY BYPASS PIPE.
5. WATER HANDLING TO REMAIN THROUGH ALL STAGES.
6. POWER WASH INTERIOR OF PIPE AND FILL VOIDS (SEE NOTES).
7. EXCAVATE AND PUMP DRY. CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, HEADWALL AND HALF OF INVERT LINING.

STAGE - 2 SUGGESTED SEQUENCE

1. RELOCATE TEMPORARY WATER HANDLING BYPASS PIPE.
2. CONSTRUCT OTHER HALF OF INVERT LINER.
3. INSTALL RIP-RAP PREFORMED SCOUR HOLE AT OUTLET.
4. REGRADE EXISTING NATURAL STREAMBED MATERIAL AT THE INLET TO NEW INVERT.
5. REMOVE TEMPORARY WATER HANDLING FACILITIES.
6. INSTALL CONSERVATION SEEDING AND PROPOSED PLANTINGS.
7. REMOVE EROSION AND SEDIMENTATION CONTROL UPON PERMANENT STABILIZATION.

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY BYPASS PIPE AS SHOWN DURING CONSTRUCTION OF THE NEW LINING AND END TREATMENTS.

EQUIPMENT SHALL NOT BE PERMITTED IN THE STREAM WHEN TEMPORARY BYPASS PIPE IS NOT IN PLACE WITHOUT APPROVAL FROM THE ENGINEER.

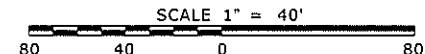
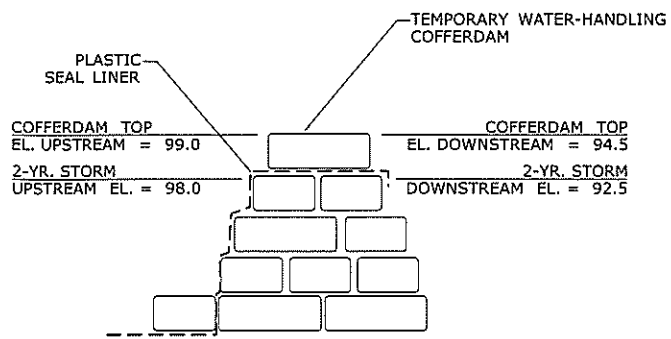
A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREA. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. NO ADDITIONAL REGULATORY IMPACTS WILL BE ALLOWED BEYOND THE AREAS SHOWN. ALL DISTURBED AREAS SHALL BE RESTORED.

WATER FROM POWER WASHING OPERATIONS MUST BE COMPLETELY CONTAINED AND PUMPED INTO A SETTLING BASIN.

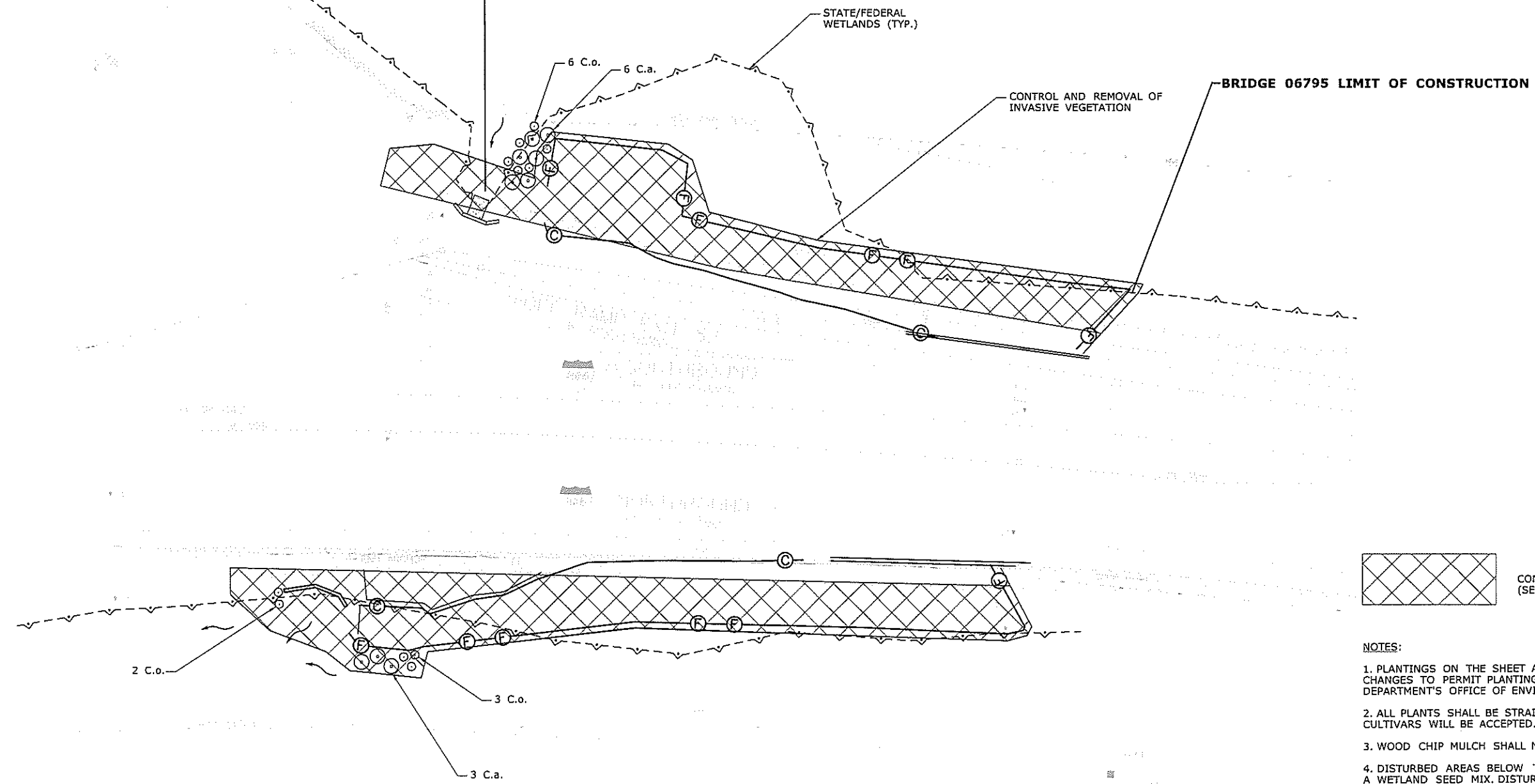
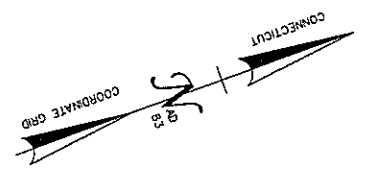
TEMPORARY HYDRAULIC DATA 06795	
AVERAGE DAILY FLOW	1.4 CFS
AVERAGE SPRING FLOW	2.7 CFS
2-YEAR FREQUENCY DISCHARGE	30 CFS
TEMPORARY DESIGN DISCHARGE	30 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	98 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	92.5 FT



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/13/2019

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<p>REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/13/2019</p>						

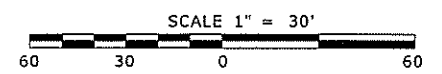
BRIDGE 06795 LIMIT OF CONSTRUCTION



PERMIT PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	COMMENTS	WETLAND INDICATOR
C.a.	Cornus amomum	Silky Dogwood	24"-36" HT.	9	Field Located		FACW
C.o.	Cephalanthus occidentalis	Buttonbush	24" - 36" HT. B.B.	11	Field Located		OBL
		Wood Chip Mulch		0 S.Y.			

- NOTES:**
1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
 2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
 3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
 4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
 5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.



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PLAN DATE 6/13/2019

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	CHECKED BY: MJM					
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/13/2019	Filename: ...VHW MSH 0103-0266 Br 06795 INV PLN-01.DGN.dgn					

Attachment C
Site Photos



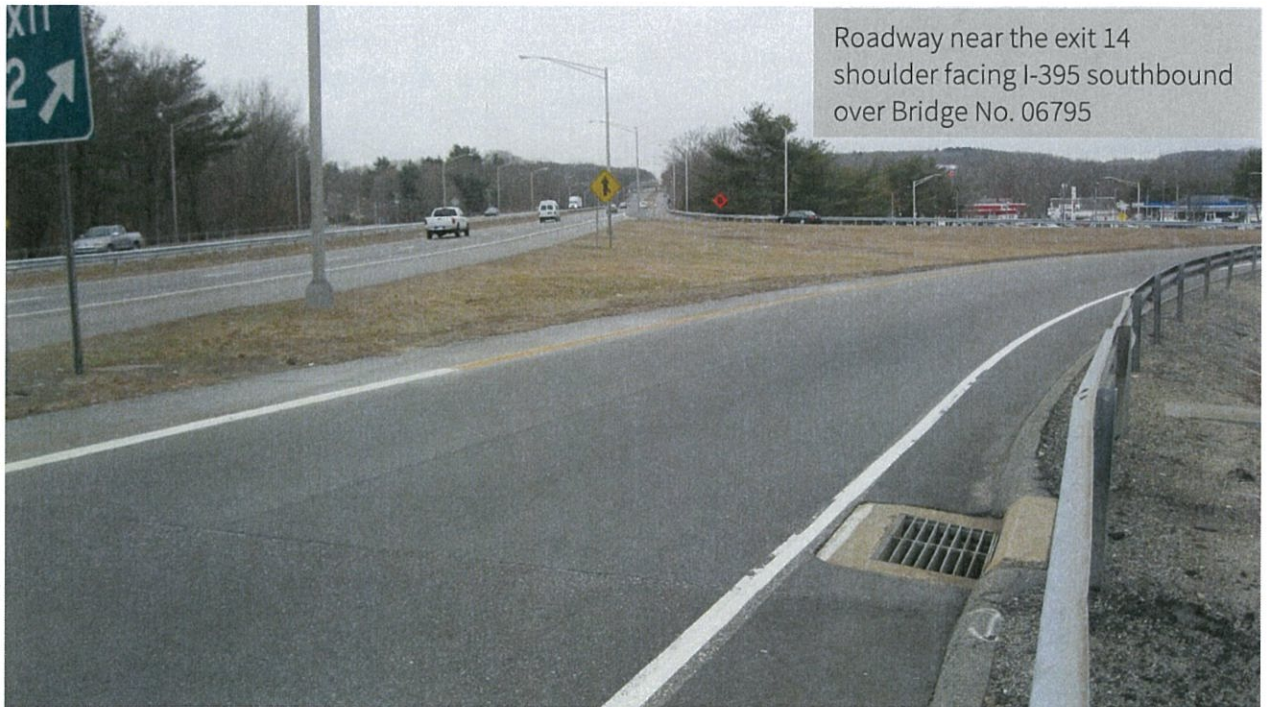
Aerial Photo of Bridge
No. 06795, Google
Images



Downstream Face of
Culvert, Bridge No. 06795



Upstream Face of the
Culvert, Bridge No. 06795



Roadway near the exit 14
shoulder facing I-395 southbound
over Bridge No. 06795



Downstream from Bridge No. 06795,
Hammer Brook flowing from the outlet to
the braided channel of Norwichtown Brook



Hammer Brook upstream
of Bridge No. 06795

Attachment D

Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06795 Carrying Hammer Brook under Interstate 395
Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06795 in Norwich, Connecticut. Bridge No. 06795 is approximately 7.91 feet wide by 5.58 feet high asphalt-coated corrugated metal pipe (ACCOMP) arched culvert that conveys Hammer Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Hammer Brook. The total structure length of the bridge is 213 feet and it is under approximately 10 feet of fill. The existing culvert is rated to be structurally deficient due to the presence of corrosion, section loss, and distortion to the pipe and requires rehabilitation. The existing barrel of the steel pipe arch culvert exhibits loss of asphalt coating and heavy laminar rust at and below the springline. The project involves constructing cast-in-place reinforced concrete flared wingwalls, cut-off walls, and headwalls at both ends of the culvert with a rounded entrance at the inlet. The culvert will also have concrete lining along the full length of the pipe along the invert. Project No. 103-266 also includes Bridges No. 06796 and 06797. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06796 and 06797 are being processed under separate permits.

Site Information

Hammer Brook has a drainage area of 0.73 square mile. The watercourse lies within the Yantic River Regional Basin No. 3900 and in the Thames River Major Basin No. 3. The watershed is located in the western portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural fields (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map number 09011C0211G (Panel 211 of 554), New London County, Connecticut (effective date July 18, 2011), the area of the crossing is not within a mapped FEMA floodplain. Upstream of Hammer Brook, the area is located in a 500-year floodplain, within Flood Zone X. Downstream of the crossing, Hammer Brook flows into Norwichtown Brook. This area is mapped as FEMA Flood Zone A, a Special Hazard Area.

Study Area

Bridge No. 06795 culvert allows I-395 northbound and southbound to cross Hammer Brook. Land use in the vicinity of the Site includes transportation (roadway), forest, commercial and residential properties. Cover on undeveloped land includes both forest land and scrub-shrub wetlands.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are adjacent to the Hammer Brook watercourse at the inlet and outlet of Bridge No. 06795. Hammer Brook flows west to east. The watercourse of Hammer Brook is riverine (R4SBC) with intermittent, seasonally flooded water in the streambed. The channel width varies with narrower sections in areas with rocky substrate. At the outlet, Hammer Brook acts as a tributary and joins Norwichtown Brook, which runs further south along the

I-395 northbound embankment through a series of culverts south of West Town Street and ultimately discharges into the Yantic River. The confluence between Hammer Brook and Norwichtown Brook is approximately 20 feet downstream of the bridge outlet. The wetlands within the project area contain muck soils, scrub-shrub wetland plant species, and broad-leaved deciduous plants. The wetland in the northern portion of the project area, adjacent to the inlet is a Freshwater Forested/Shrub Wetland (PSS1E). The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

The area adjacent to Hammer Brook upstream of the crossing includes dense brush dominated by Multiflora rose (*Rosa multiflora*). Other species present include Morrow's Honeysuckle (*Lonicera morrowii*), Garlic Mustard (*Alliaria petiolata*), Common Mullein (*Verbascum Thapsus*) and Carex spp. Downstream of the crossing has a tree canopy dominated by Red Maple (*Acer rubrum*) and American Beech (*Fagus grandifolia*). The area adjacent to the roadway includes trees and saplings of Eastern White Pine (*Pinus strobus*), Red Maple, as well as Japanese Barberry (*Berberis thunbergii*), and Asiatic Bittersweet (*Celastrus orbiculatus*).

Soils

Soils found within the project area mapped by the Natural Resource Conservation Service (NRCS) predominantly includes Udorthents-Urban Land complex (Map #306) and Urban Land (Map #307). The surrounding area adjacent to the project area at the inlet is Raypol Silt Loam (Map #12) and adjacent to the project area at the outlet is Rippowam Fine Sandy Loam (Map #102). The adjacent area has wetland soils present, which includes areas of mucky mineral and mucky-fine sandy loam soil.

Functions and Values

The primary wetland functions and values of Hammer Brook and wetlands in the project area are fisheries and wildlife habitat, flood flow alteration, and sediment/nutrient retention. The stream channel functions within the culvert are limited to fish and wildlife passage and flood flow alteration. The field environmental assessment was limited to observations made during wetland delineation. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest.

The proposed project will have limited effects on wetland function and values in the project area. The two critical issues with culvert lining are alteration of flood flows and impacts to fish passage. This project is designed to minimize changes to the existing conditions to the maximum extent practicable; however, the changes proposed will impact the flows and thus impair the fish passage. As a result of the impacts to fish passage, offsite mitigation has been included in this project which will restore fish passage to over 1.68 miles of natural stream habitat to native trout brook populations. The design process for this project also included hydraulic modeling of the proposed culvert lining. The hydraulic modeling analysis found that the 50-year water surface elevation will be 0.4 feet less than the existing water elevation. The proposed culvert rehabilitation involves changing the bottom of the culvert to be smooth lining; given the low gradient of the culvert, a slight increase of the stream flow velocity is anticipated. The project meets the design criteria for the CTDOT Drainage Manual for small structures. The proposed water surface elevations are not expected to adversely impact existing structures. The structure maintains approximately 9.8 feet of freeboard to the I-395 roadway in the modeled conditions for the 50-year discharge. Flood waters will continue to overtop the right overbank spillway and flood the nearby hotel parking lot; however, the proposed project is not expected to adversely impact existing structures as compared to existing conditions. The proposed rehabilitated culvert will result in a 11% decrease in flow over the spillway when

compared to the existing conditions. Inundation maps for the 50-year and 100-year storm have been attached to the applications. The hydraulic analysis showed no discernable difference between the existing and proposed 10-year and 25-year storm; therefore, inundation maps for those storm frequencies have been omitted.

Short-term effects as a result of construction activities are minimized by:

- Erosion and sedimentation control plan.
- Inclusion of a water handling plan.
- Minimizing work area in the watercourse and wetlands.
- Limiting areas of disturbance in uplands.
- Restoration of temporarily disturbed areas.

Regulatory Impacts

To gain access to the structure to perform the work, permanent access roads will be constructed at the upstream and downstream side of Bridge No. 06795. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction.

Construction access and water handling:

The project site will require the construction of permanent construction access roads to allow materials and heavy construction equipment to access the culvert. Access roads will be constructed at the upstream and downstream sides, which will require clearing and grubbing as well as some permanent impacts to wetlands. A sedimentation and erosion control system will be installed along the access roads and employed throughout all phases of construction. To minimize traffic impacts on I-395, the work zone adjacent to I-395 will be contained to the shoulder of both the northbound and southbound lanes. Off-peak temporary shoulder and/or lane closures may be used for equipment or construction personnel to enter and exit the access roads, as required. The lining and construction at the inlet and outlet of Bridge No. 06795 will require the installation of temporary water-handling-cofferdams and temporary dewatering of portions of Hammer Brook within the project area.

The construction is anticipated to take place in two stages. In Stage 1, a temporary water handling bypass pipe will be installed along one side of the entire length of the culvert and temporary water-handling cofferdams will be placed at the inlet and outlet of the structure. Water will be confined to the temporary bypass pipe. During this stage the entire pipe will be power-washed and voids filled. The water from the power-washing operations will be completely contained and pumped to a settling basin. Once the existing pipe is cleaned, half of the culvert invert to be lined with the proposed 4 inches of concrete in the dry. During Stage 1, the temporary water-handling cofferdams will allow for the proposed cut-off wall, wingwalls, and headwalls to be installed in the dry at the inlet and outlet. In Stage 2, the bypass pipe will be relocated to the other side of the culvert so that the remaining portion of the culvert invert may be lined. A preformed riprap scour hole will be placed at the culvert outlet to prevent additional scour. Salvaged natural streambed material will be regraded at the inlet to raise the streambed to the new culvert invert elevation. Once construction is completed the temporary water-handling equipment will be removed restoring flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatered groundwater to a temporary sedimentation basin located in an upland area. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. All temporarily disturbed areas will be restored at the completion of construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set.

The sedimentation and erosion control system shall be removed upon permanent stabilization. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Cast-in-Place Concrete Lining:

The cast-in-place concrete lining will occur within Bridge No. 06795. The project proposes to install a 4 inch thick concrete lining along the bottom invert of the culvert. The lining will result in minor changes in the existing conditions. The greatest concern for this lining is reducing the hydraulic capacity and altering flooding and hydraulic conditions at the culvert. The recommended lining will reduce the hydraulic opening of the crossing. The proposed water surface elevation will decrease by 0.4 feet as compared to existing conditions. As previously stated, the proposed water surface elevations are acceptable under the CTDOT Drainage Manual based on the freeboard of the roadway. Changes of the area flooded in a 50-year event (design storm) are negligible based on the changes to the water surface elevation and upstream topography.

Fish Passage:

The project includes feasible elements designed to minimize project impacts to fisheries while minimizing channel connectivity impacts from the cast-in-place concrete lining. The proposed design culvert will result in increased water velocities in the culvert and a raised elevation exacerbating shallow water depth. The proposed design will impact the existing fisheries in the area and Bridge No. 06795 will be impassable. Native brook trout will not be able to reach the 1.2 miles of stream habitat currently existing upstream of the structure. On-site mitigation alternatives were determined to be not possible due to a lack of a viable/feasible alternative that would not create backwater conditions or flood upstream private properties. Due to impacts to upstream fish passage, CTDEEP Fisheries Division proposed an offsite mitigation site. This offsite mitigation has been coordinated between CTDOT and CTDEEP Fisheries. The selected mitigation site is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed project will conserve the native brook trout population and improve existing conditions. The proposed mitigation location will provide channel connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both up and downstream of the structure. The proposed work involves the replacement of the existing perched, undersized culvert with a timber bridge on Del Reeves Road. This mitigation proposes to conserve the native brook trout population. The proposed mitigation is further outlined in the Memorandum of Agreement (MOA) between CTDOT and DEEP Fisheries attached to the regulatory permit applications.

Fisheries design elements include:

- Placement of a preformed riprap scour hole at the outlet and the placement of salvaged natural streambed material at the inlet which will raise the streambed to the new culvert invert elevation to ensure that the structure does not create a 'drop' barrier to fish movement.
- The restoration of disturbed areas.
- Offsite mitigation to offset the adverse impacts from the culvert lining.

Proposed Impacts:

The proposed project results in 1,900 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads, the placement of the preformed riprap scour hole at the outlet and associated channel grading, as well as the construction at the inlet and outlet of the

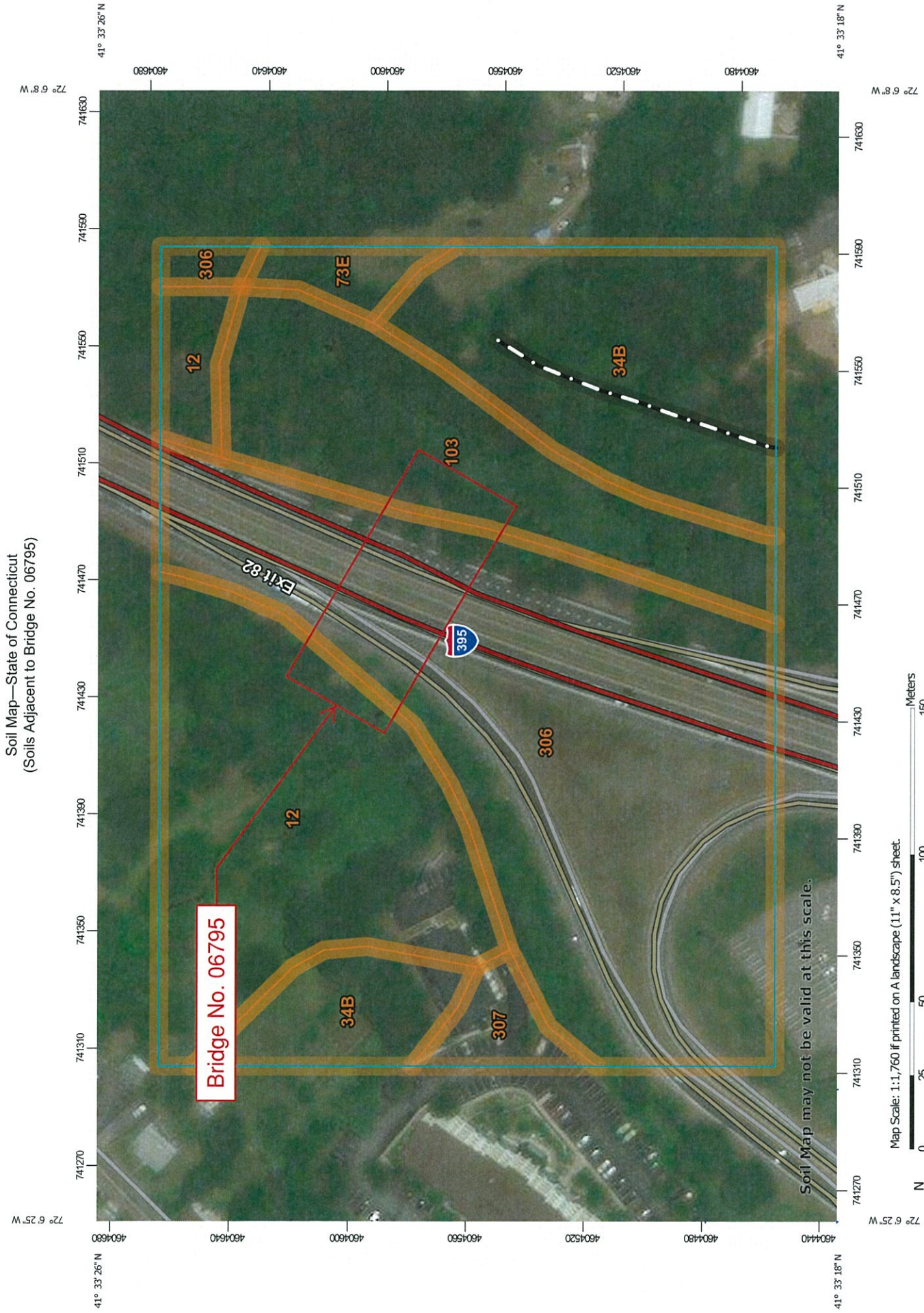
culvert. In order to place the material into the regulated areas, heavy machinery and equipment will be required. The project results in 1,400 square feet (0.03 acres) of permanent watercourse impacts. This number accounts for the lining of the culvert, the construction of the headwalls, wingwalls, cutoff walls at the inlet and outlet, and placement of riprap at the outlet and associated channel grading. Though this is described as a permanent impact, the watercourse will remain. The project will not result in permanent conversion of watercourse to upland. Temporary impacts include the area necessary for the water handling and tree clearing. Temporary impact to the wetlands is 1,600 square feet (0.04 acres) and to the watercourse is 400 square feet (0.01 acres). The total wetland and watercourse impact is 5,300 square feet (0.12 acres). Impacts are described within the table below:

Bridge No. 06795 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	1,600 sqft (0.04 ac)	400 sqft (0.01 ac)	2,000 sqft (0.05 ac)
Permanent	1,900 sqft (0.04 ac)	1,400 sqft (0.03 ac)	3,300 sqft (0.08 ac)
Total	3,500 sqft (0.08 ac)	1,800 sqft (0.04 ac)	5,300 sqft (0.12 ac)









































Mitigation, Minimization, and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of proposed impacts. These design elements include, utilizing a water handling system for the flow of Hammer Brook during construction, placing riprap at the outlet of the culvert to prevent scour and to grade the streambed to the new invert elevation, as well as the construction of flared concrete wingwalls at the inlet and outlet, and a rounded entrance at the inlet of the culvert to improve the flow of the brook. Salvaged natural streambed material will be placed at the inlet of the culvert to grade the streambed to the new invert elevation. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers, and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed construction access roads and staging areas. Although the project counts areas within the culvert and at the inlet and outlet as permanent impact, those areas will remain watercourse following the completion of the project. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated with native wetland plants following construction. The proposed planting plan is located on PMT-08 within the Environmental Permit Plan Set. The proposed project could not incorporate any onsite fisheries mitigation due to potential flooding on to private property. As a result, offsite mitigation has been coordinated to offset adverse fisheries impacts as a result of the invert lining of Bridge No. 06795. The selected offsite mitigation is located at Mott Hill Brook in the Meshomasic State Forest in East Hampton, Connecticut. The proposed mitigation location will provide channel connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both upstream and downstream of the structure. The proposed work involves the replacement of the existing perched and undersized culvert with a timber bridge on Del Reeves Road. This mitigation proposes to conserve the native brook trout population. The MOA between CTDOT and DEEP Inland Fisheries has been attached to the regulatory permit applications. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual, as well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
 (Soils Adjacent to Bridge No. 06795)



MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
 Special Point Features	 Special Line Features
 Blowout	 Streams and Canals
 Borrow Pit	 Transportation
 Clay Spot	 Rails
 Closed Depression	 Interstate Highways
 Gravel Pit	 US Routes
 Gravelly Spot	 Major Roads
 Landfill	 Local Roads
 Lava Flow	 Background
 Marsh or swamp	 Aerial Photography
 Mine or Quarry	
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 18, Dec 6, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 14, 2011—Aug 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12	Raypol silt loam	3.3	22.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	2.9	20.1%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	0.3	1.8%
103	Rippowam fine sandy loam	2.0	14.1%
306	Udorthents-Urban land complex	5.7	39.1%
307	Urban land	0.3	2.0%
Totals for Area of Interest		14.5	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06795 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): concave Slope (%): 4
 Subregion (LRR or MLRA): LRR R Lat: 41.5564 Long: -72.1048 Datum: NAD83
 Soil Map Unit Name: Raypol Silt Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Acer rubrum</i></u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>30</u> =Total Cover		

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____ =Total Cover		

Herb Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Onoclea sensibilis</i></u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>
2. <u><i>Symplocarpus foetidus</i></u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>
3. <u><i>Cichorium intybus</i></u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>25</u> =Total Cover		

Woody Vine Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Berberis thunbergii</i></u>	<u>2</u>	<u>No</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>2</u> =Total Cover		

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>10</u>	x 1 = <u>10</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>30</u>	x 3 = <u>90</u>
FACU species <u>7</u>	x 4 = <u>28</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>57</u> (A)	<u>148</u> (B)
Prevalence Index = B/A = <u>2.60</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06795 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): slope Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5564 Long: -72.1048 Datum: _____
 Soil Map Unit Name: Raypol Silt Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

<u>Tree Stratum</u> (Plot size: <u>50 ft</u>)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>
1. <u><i>Acer rubrum</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>20</u> =Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>50 ft</u>)			
1. <u><i>Rosa multiflora</i></u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>
2. <u><i>Lonicera morrowii</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>80</u> =Total Cover		
<u>Herb Stratum</u> (Plot size: <u>50 ft</u>)			
1. <u><i>Alliaria petiolata</i></u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>10</u> =Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>50 ft</u>)			
1. <u><i>Celastrus orbiculatus</i></u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>10</u> =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>20</u>	x 3 = <u>60</u>
FACU species <u>90</u>	x 4 = <u>360</u>
UPL species <u>10</u>	x 5 = <u>50</u>
Column Totals: <u>120</u> (A)	<u>470</u> (B)
Prevalence Index = B/A = <u>3.92</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

Attachment E
Northern Long Eared Bat Consultation

Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

Information to Determine 4(d) Rule Compliance:

	YES	NO
1. Does the project occur wholly outside of the WNS Zone ¹ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Have you contacted the appropriate agency ² to determine if your project is near known hibernacula or maternity roost trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Could the project disturb hibernating NLEBs in a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Could the project alter the entrance or interior environment of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

You are eligible to use this form if you have answered yes to question #1 or yes to question #2 and no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

Agency: FHWA – Connecticut Division

Applicant³ (Name, Email, Phone No.):

Connecticut Department of Transportation
 Amanda M. Saul, Office of Environmental Planning
DOT.NLEB@ct.gov, (860)594-2939

Project Name: CTDOT0103-0266

Project Location (include coordinates if known): I-395 Norwich (coordinates listed below) at three locations

Basic Project Description (provide narrative below or attach additional information):

This project involves the rehabilitation of three culverts under I-395 in the town of Norwich, Bridge 06795 over Hammer Brook (41.556303, -72.104585), Bridge 06796 over Byron Brook (41.577787, -72.076136), and Bridge 06797 over unnamed brook (41.583895, -72.061892).

¹ <http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>

² See <http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html>

³ If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

General Project Information	YES	NO
Does the project occur within 0.25 miles of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project occur within 150 feet of a known maternity roost tree?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project include forest conversion ⁴ ? (if yes, report acreage below)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Estimated total acres of forest conversion	1.5 ac	
If known, estimated acres ⁵ of forest conversion from April 1 to October 31		
If known, estimated acres of forest conversion from June 1 to July 31 ⁶		
Does the project include timber harvest? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of timber harvest		
If known, estimated acres of timber harvest from April 1 to October 31		
If known, estimated acres of timber harvest from June 1 to July 31		
Does the project include prescribed fire? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of prescribed fire		
If known, estimated acres of prescribed fire from April 1 to October 31		
If known, estimated acres of prescribed fire from June 1 to July 31		
Does the project install new wind turbines? (if yes, report capacity in MW below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated wind capacity (MW)		

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: Amanda M. Saul

Digitally signed by Amanda M. Saul
 DN: cn=Amanda M. Saul, o=Connecticut
 Department of Transportation, ou=Office of
 Environmental Planning,
 email=amanda.saul@ct.gov, c=US
 Date: 2019.03.15 09:14:22 -04'00'

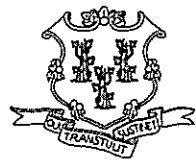
Date Submitted: 3/15/2019

⁴ Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).

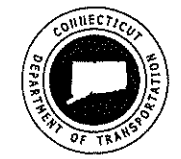
⁵ If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.

⁶ If the activity includes tree clearing in June and July, also include those acreage in April to October.

Attachment F
CTDEEP Fisheries Approval and Memorandum of Agreement (MOA)



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

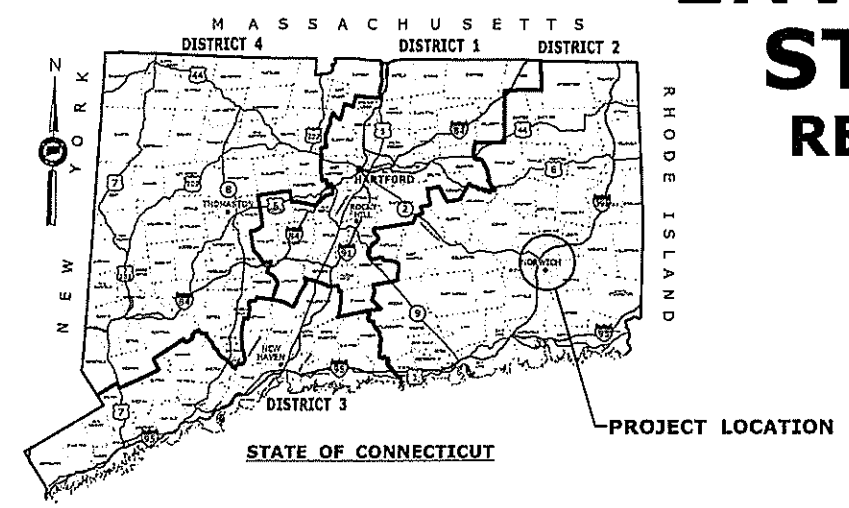
STATE PROJECT NO. 103-266

REHABILITATION OF BRIDGE No. 06795

I-395 OVER HAMMER BROOK,

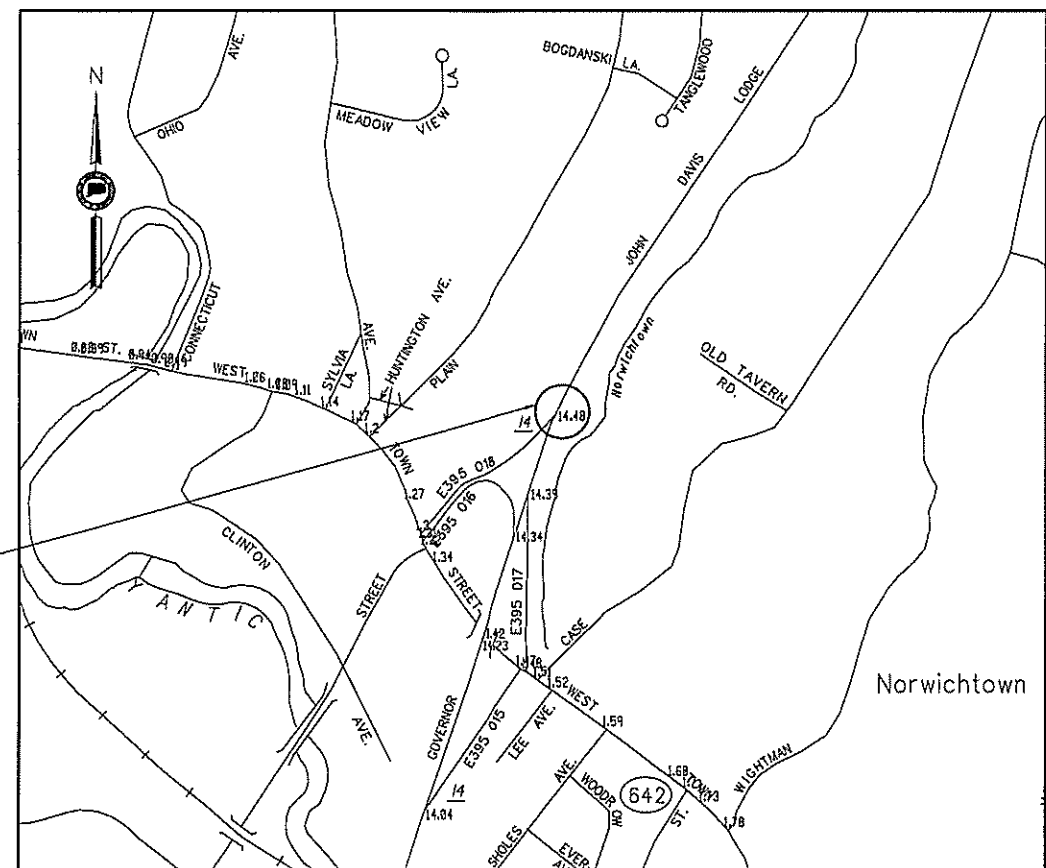
(SITE No. 1)

IN THE CITY OF NORWICH



Brian
Murphy

Digitally signed
by Brian Murphy
Date: 2019.05.30
09:26:28 -04'00'



LOCATION PLAN
SCALE: 1" = 500'

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06795 TITLE SHEET
PMT-02	BR. NO. 06795 GENERAL SITE PLAN
PMT-03	BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06795 CROSS-SECTIONS
PMT-05	BR. NO. 06795 100-YEAR FLOOD IMPACT PLAN
PMT-06	BR. NO. 06795 ELEV. & SECTION PLAN
PMT-07	BR. NO. 06795 STAGING AND WATER HANDLING PLAN
PMT-08	BR. NO. 06795 PERMIT PLANTING PLAN

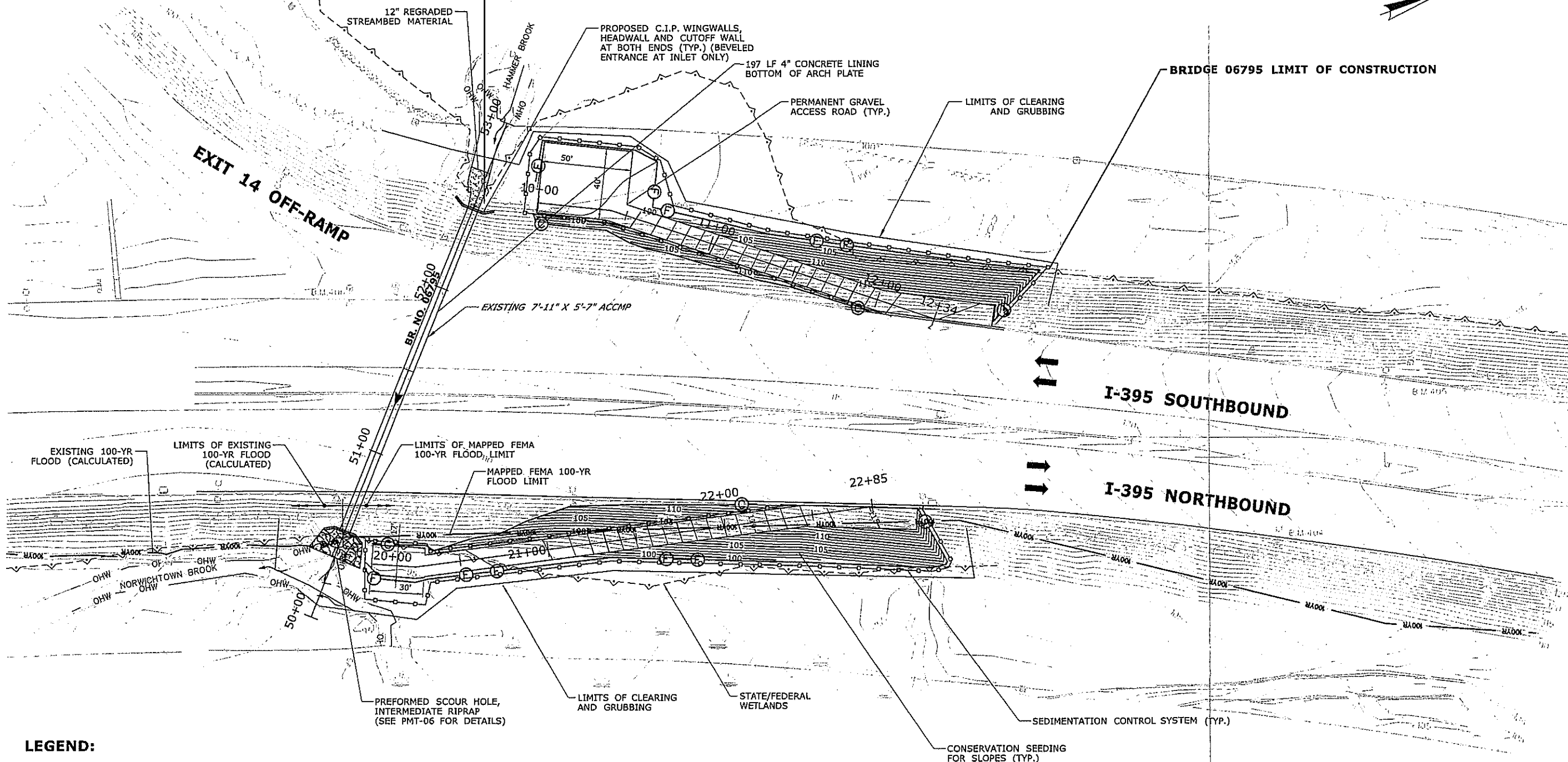
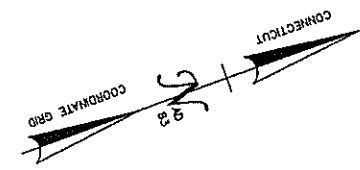
LOUIS BERGER
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Robert Lin
2019.04.10
10:12:20-04'00'

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/9/2019

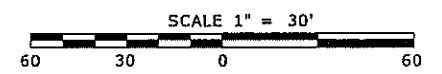
<p>DESIGNER/DRAFTER: JPM</p> <p>CHECKED BY: -</p> <p>SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p>Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH</p> <p>DRAWING TITLE: BR. NO. 06795 TITLE SHEET</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-01</p> <p>SHEET NO.</p>
<p>REV. DATE REVISION DESCRIPTION SHEET NO. Potted Date: 4/9/2019</p>	<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>Filename: ...\\HV.HSH.0103.0266.06795.TSH.dgn</p>		

BEGIN STATE PROJECT NO. 103-266
 BRIDGE 06795 LIMIT OF CONSTRUCTION
 STA. 10+00



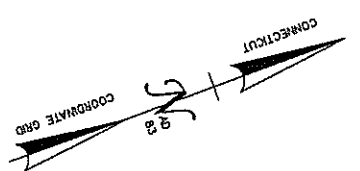
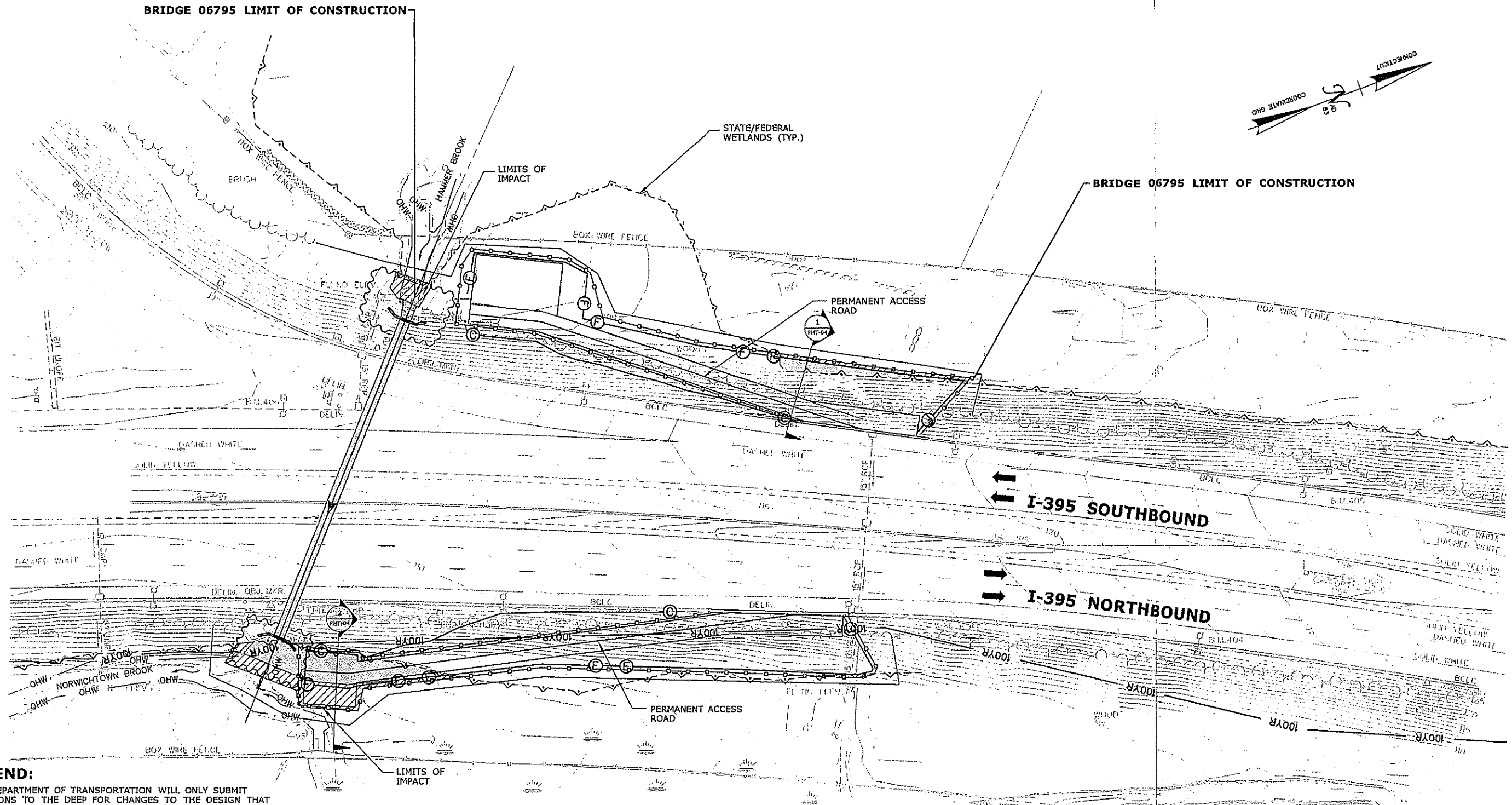
LEGEND:

- 100YR - MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- OHW - ORDINARY HIGH WATER
- - - - STATE/FEDERAL WETLANDS
- o - o - SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 4/9/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: MAM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: 	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWNSHIP: NORWICH	PROJECT NO. 103-266
CHECKED BY: MJM	SCALE AS NOTED	2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK		DRAWING TITLE: BR. NO. 06795 GENERAL SITE PLAN	DRAWING NO. PMT-02		
REV. DATE REVISION DESCRIPTION SHEET NO.	Plotted Date: 4/9/2019	Filename: ...UHV_MSH_0103-0266.Br 06795_RDP_PLN-01.DGN.dgn			SHEET NO.		



LEGEND:

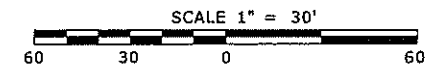
THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- PERMANENT IMPACT
- MAPPED FEMA/CALCULATED 100-YEAR FLOOD LIMIT
- ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

NOTES:

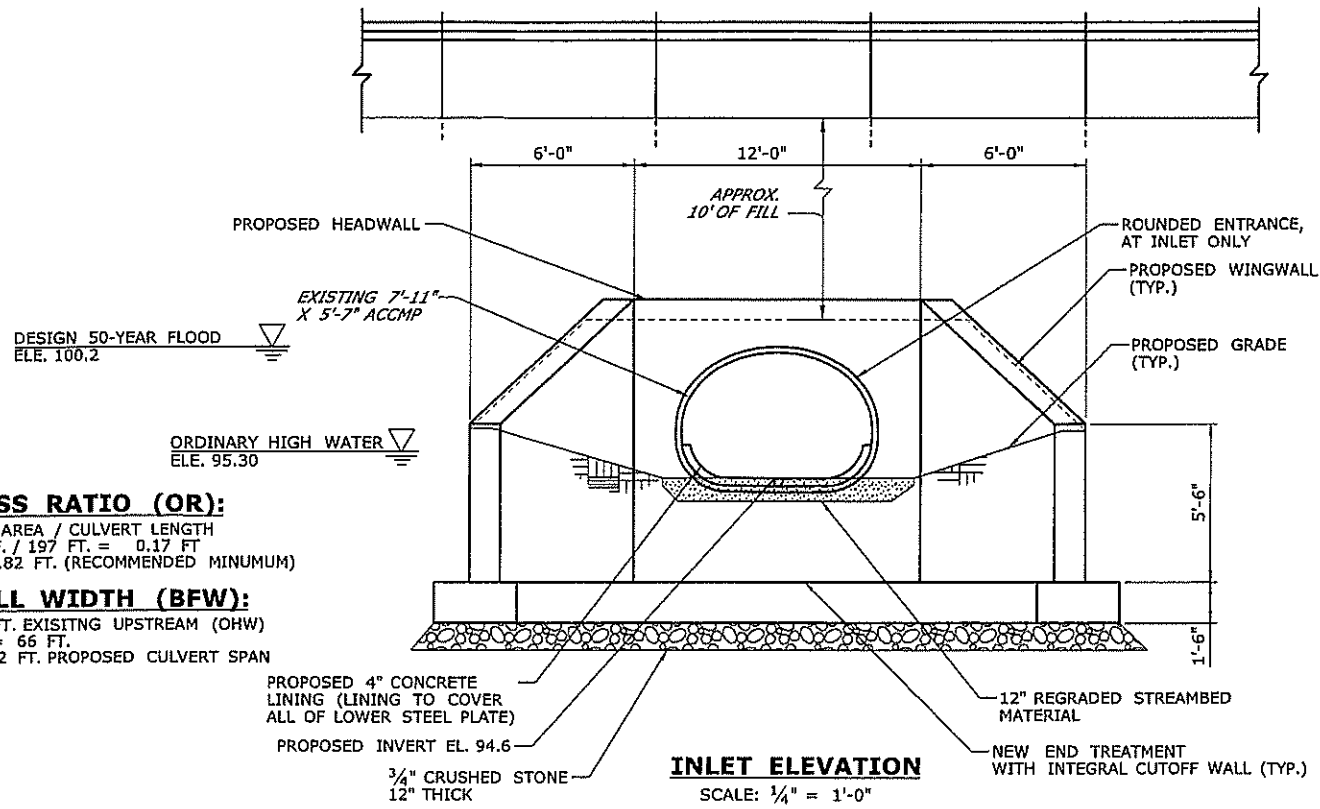
1. CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE.
2. ALL DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

WETLAND IMPACT TABLE			
WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS 1	1800 S.F. (0.04 AC.)	1400 S.F. (0.03 AC.)	3200 S.F. (0.07 AC.)
TEMPORARY IMPACTS 1	1200 S.F. (0.03 AC.)	400 S.F. (0.01 AC.)	1600 S.F. (0.04 AC.)
TOTAL IMPACTS	3000 S.F. (0.07 AC.)	1800 S.F. (0.04 AC.)	4800 S.F. (0.10 AC.)



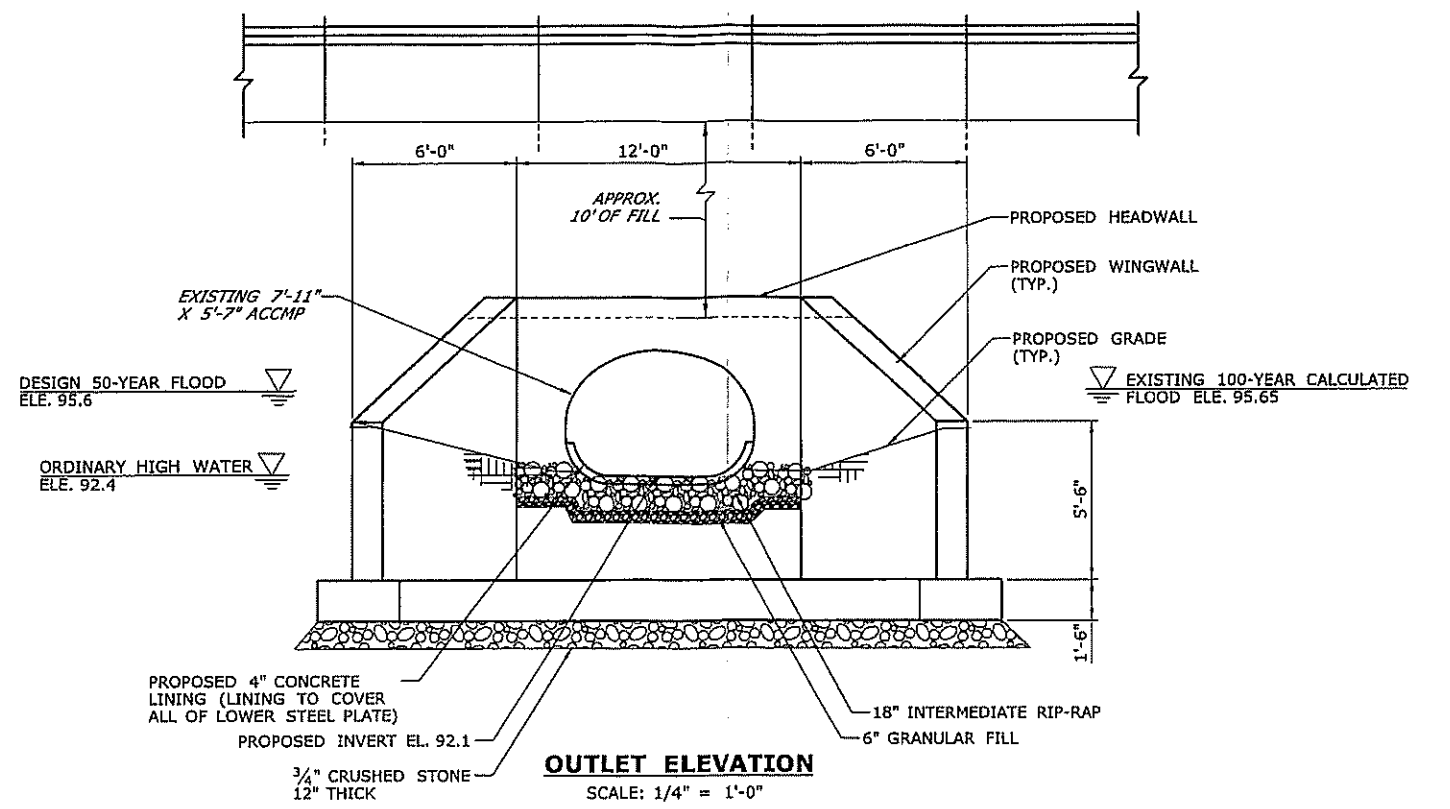
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/9/2019

DESIGNER/DRAFTER: MAM	CHECKED BY: MAM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		SIGNATURE/ BLOCK: Louis Berger	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)		TOWN: NORWICH	PROJECT NO. 103-266
SCALE AS NOTED				2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK			DRAWING TITLE: BR. NO. 06795 WETLAND/WATERCOURSE IMPACT PLAN	DRAWING NO. PMT-03
Plotted Date: 4/9/2019			Filename: ...\\HW_MSH_0103-0266.Br 06795_WIP_PLN-01.DGN				SHEET NO.	
REV.	DATE	REVISION DESCRIPTION	SHEET NO.					

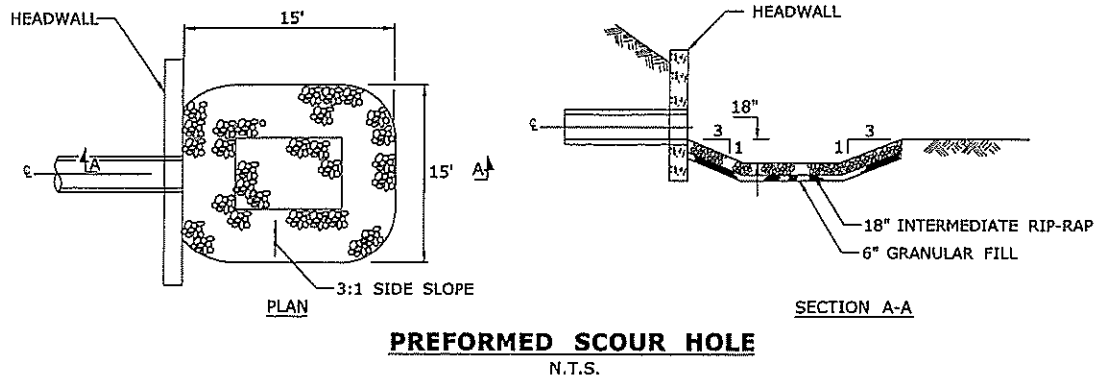
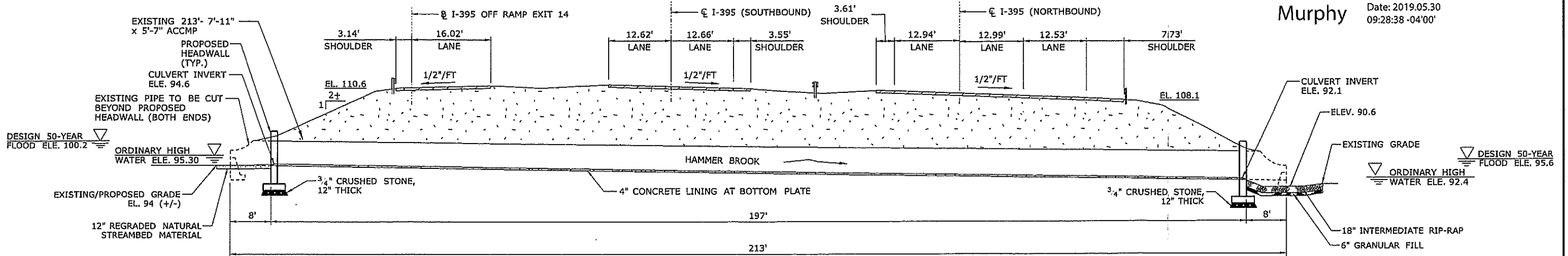


OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 34 S.F. / 197 FT. = 0.17 FT
 0.17 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):
 BFW = 55 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 66 FT.
 66 FT. > 7.92 FT. PROPOSED CULVERT SPAN



Brian Murphy
 Digitally signed by Brian Murphy
 Date: 2019.05.30 09:28:38 -04'00'



PROPOSED LONGITUDINAL SECTION (LOOKING NORTH)
 SCALE: 1" = 10'

NATIVE STREAMBED MATERIAL NOTES

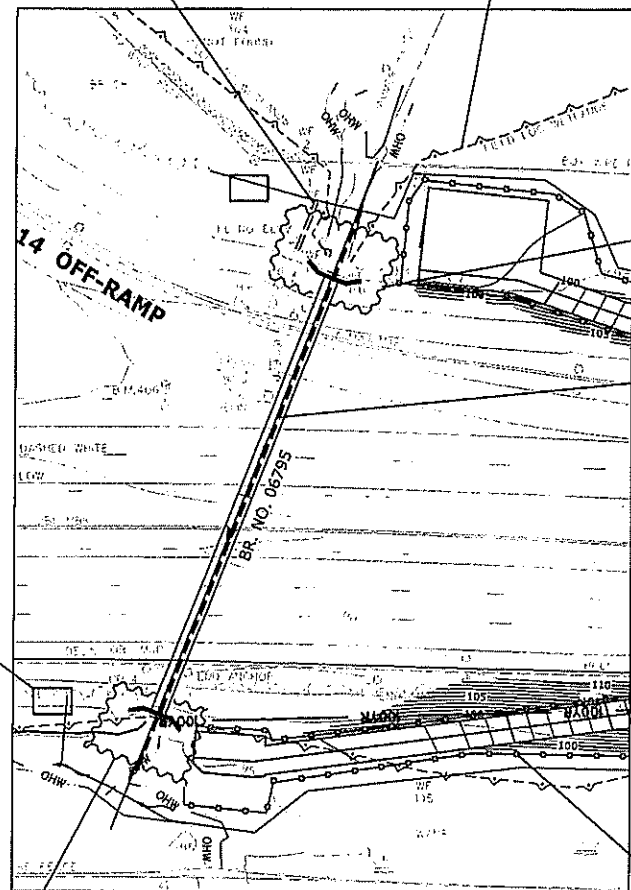
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PARTIAL CULVERT REMOVAL AND NEW END TREATMENT INSTALLATION SHALL BE STOCKPILED AND THEN REPLACED AT THE INLET TO THE DEPTH SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER, AND IN ACCORDANCE WITH THE PERMIT DOCUMENTS.
2. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.

HYDRAULIC DATA 06795	
DRAINAGE AREA	0.73 SQ MILES
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	305 CFS
AVERAGE DAILY FLOW ELEVATION	95.0
UPSTREAM DESIGN SURFACE WATER ELEVATION	100.2
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	95.6

ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 3/1/2019

DESIGNER/DRAFTER: MM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)</p>	<p>TOWN: NORWICH</p>	<p>PROJECT NO. 103-266</p>
CHECKED BY: MJM					
SCALE AS NOTED	<p>FILENAME: ...USB_MSH_0103-0266_Br06795_ES_Plan.dgn</p>				
REV. DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 3/1/2019		

12" TEMPORARY EXTENSION PIPE
STATE/FEDERAL WETLANDS (TYP.)



WATER-HANDLING COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL (TYP.) MIN. TOP OF COFFERDAM ELEV. 99.0

18" HDPE TEMPORARY WATER HANDLING BYPASS PIPE

SEDIMENTATION CONTROL SYSTEM (TYP.)

TEMPORARY DEWATERING BASIN (APPROX. LOCATION) (TYP.)

WATER-HANDLING COFFERDAM FOR PROPOSED HEADWALL, WINGWALLS AND CUT-OFF WALL MIN. TOP OF COFFERDAM ELEV. 94.5

STAGE - 1 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS ROADS.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY WATER-HANDLING FACILITIES, INCLUDING TEMPORARY WATER-HANDLING COFFERDAM AND TEMPORARY BYPASS PIPE. WATER HANDLING TO REMAIN THROUGH ALL STAGES.
5. POWER WASH INTERIOR OF PIPE AND FILL VOIDS (SEE NOTES).
6. EXCAVATE AND PUMP DRY. CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, HEADWALL AND HALF OF INVERT LINING.

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY BYPASS PIPE AS SHOWN DURING CONSTRUCTION OF THE NEW LINING AND END TREATMENTS.

EQUIPMENT SHALL NOT BE PERMITTED IN THE STREAM WHEN TEMPORARY BYPASS PIPE IS NOT IN PLACE WITHOUT APPROVAL FROM THE ENGINEER.

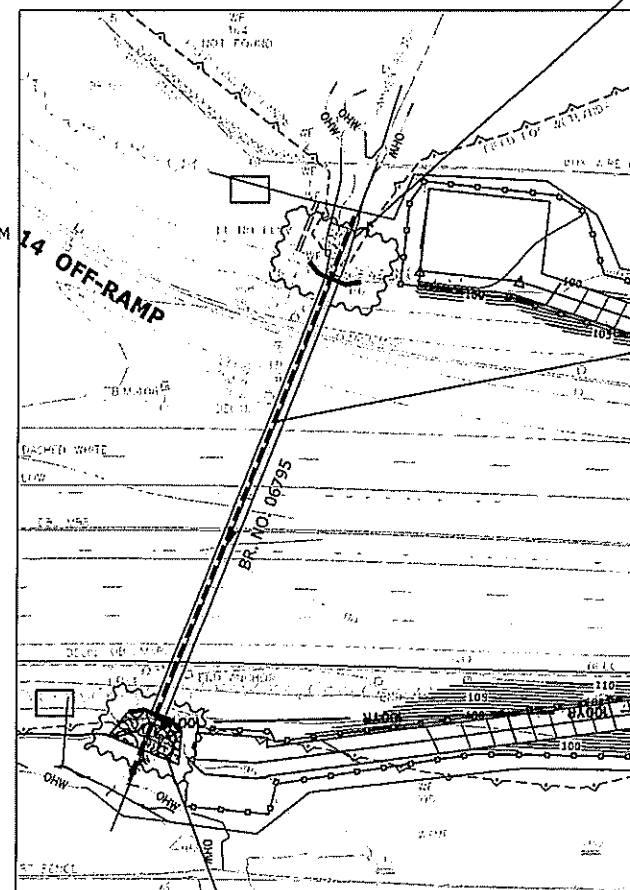
A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREA. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. NO ADDITIONAL REGULATORY IMPACTS WILL BE ALLOWED BEYOND THE AREAS SHOWN. ALL DISTURBED AREAS SHALL BE RESTORED.

WATER FROM POWER WASHING OPERATIONS MUST BE COMPLETELY CONTAINED AND PUMPED INTO A SETTLING BASIN.

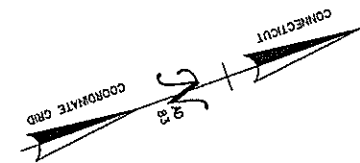
12" REGRADED STREAMBED MATERIAL



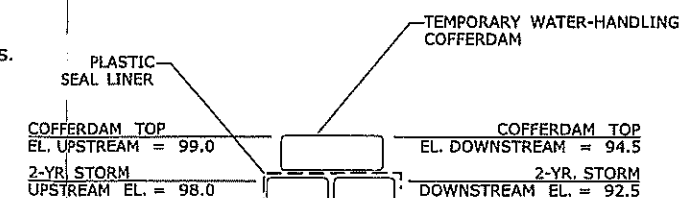
INTERMEDIATE RIP-RAP

STAGE - 2 SUGGESTED SEQUENCE

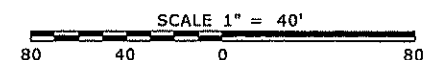
1. RELOCATE TEMPORARY WATER HANDLING BYPASS PIPE.
2. CONSTRUCT OTHER HALF OF INVERT LINER.
3. INSTALL RIP-RAP PREFORMED SCOUR HOLE AT OUTLET.
4. REGRADE EXISTING NATURAL STREAMBED MATERIAL AT THE INLET TO NEW INVERT.
5. REMOVE TEMPORARY WATER HANDLING FACILITIES.
6. INSTALL CONSERVATION SEEDING AND PROPOSED PLANTINGS.
7. REMOVE EROSION AND SEDIMENTATION CONTROL UPON PERMANENT STABILIZATION.



18" HDPE TEMPORARY WATER HANDLING BYPASS PIPE



TEMPORARY HYDRAULIC DATA 06795	
AVERAGE DAILY FLOW	1.4 CFS
AVERAGE SPRING FLOW	2.7 CFS
2-YEAR FREQUENCY DISCHARGE	30 CFS
TEMPORARY DESIGN DISCHARGE	30 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	98 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	92.5 FT



ENVIRONMENTAL PERMIT PLANS

PLAN DATE 4/9/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/ BLOCK: Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE No. 06795 I-395 OVER HAMMER BROOK, (SITE No. 1)	TOWN: NORWICH	PROJECT NO. 103-266
	CHECKED BY: MJM				DRAWING TITLE: BR. NO. 06795 STAGING AND WATER HANDLING PLAN	DRAWING NO. PMT-07
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 4/9/2019	SCALE AS NOTED	Filename: ...\\HW.HSH.0103-0266.Br.06795.WHP.PLN-01.DGN.dgn				SHEET NO.

To be provided by Sponsoring Agency		
PS#	Core CT Contract #	PO#

**MEMORANDUM OF AGREEMENT
BETWEEN THE
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND
THE DEPARTMENT OF TRANSPORTATION**

This Memorandum of Agreement (MOA) is entered into by the Department of Energy and Environmental Protection (DEEP) and the Department of Transportation (DOT) for the purpose of undertaking a project of mutual interest pursuant to Section CGS 22a-41 in anticipation of a DEEP License being issued for Project 103-266.

1. **Duration:** The period of this MOA shall begin upon execution and shall expire when all conditions have been met but in any case no later than three years from the transfer of funds from DOT to DEEP.
2. **Title:** This project is entitled: *“Fisheries Mitigation – Br. No. 06795, I-395 over Hammer Brook, Norwich; State Project 103-266”*.
3. **Total Project Costs** for the period of this MOA shall not exceed **\$235,000**.
4. **Project Directors:** The following individuals are designated to serve as Project Directors (or Project Managers or Principal Investigators):

For the DOT

Andrew H. Davis
 Transportation Supervising Planner
 Office of Environmental Planning
 Department of Transportation
 2800 Berlin Turnpike
 Newington, CT 06131
 Email: andrew.h.davis@ct.gov
 Phone: (860)594-2157

For the DEEP

Brian D. Murphy
 Senior Fisheries Habitat Biologist
 DEEP – Bureau of Natural Resources
 Fisheries Division
 209 Hebron Road
 Marlborough, CT 06447
 Email: brian.murphy@ct.gov
 Phone: (860) 424-4142

5. **Business Contacts:** The following individuals are designated to serve as contacts for business matters:

For the DOT:

Kimberly C. Lesay
 Transportation Assistant Planning Director

 Department of Transportation
 2800 Berlin Turnpike
 PO Box 317546
 Newington, CT 06131
 email: Kimberly.Lesay@ct.gov
 Phone: 860-594-2931

For the DEEP:

Deidre Persson
 Fiscal/Administrative Assistant

 DEEP FSS – Financial Management Division
 79 Elm Street
 Hartford, CT 06106-5127
 email: deidre.persson@ct.gov
 Phone: (860) 424-3977
 Fax: (860) 424-4122

6. **General Supervision:** Primary responsibility for general supervision of all activities and compliance with all applicable laws and standards and the terms of this MOA rests with the DEEP.
7. **Description:** This MOA will cover work that will be conducted by DEEP for a fisheries project within the Meshomasic State Forest in East Hampton (hereinafter called project). A substandard culvert that conveys Mott Hill Brook under Del Reeves Road, located on DEEP State Forest Property has scoured at its outlet

resulting in perched conditions. This condition forms a barrier and blocks upstream fish passage for the native brook trout populations. The main project goal is to restore upstream fish passage and instream habitats for the wild brook trout population and provide stream connectivity to over 1.68 miles of upstream habitats.

Project objectives are: (1) remove an existing barrier to fish passage and replace it with a box culvert,(2) restore and stabilize instream and streambank habitats at and below the road crossing , and (3) monitoring of brook trout population response through two pre and two post project annual fish surveys.

The restoration project will be conducted by DEEP. DEEP will obtain all required state/federal permits for the project.

The selected restoration project has been chosen as off-site mitigation for DOT Project 103-266 which involves the repair of culvert #06795 with a smooth concrete bottom at Hammer Brook, Norwich. The project has been flagged as requiring mitigation due to the fact that the existing culvert provides fish passage but the proposed smooth concrete bottom repair of the culvert will prevent the passage of fish through the repaired culvert. The Meshomasic State Forest project has been discussed with DEEP Land and Water Reuse Division (LWRD) and LWRD staff are in agreement with the suitability of this project as adequate mitigation for Project 103-266. (See Appendix A)

8. **Project Location:** DOT Project 103-266 is located in Norwich; Bridge #06795 carries I-395 over Hammer Brook. The off-site mitigation project is located on State property within the boundary of Meshomasic State Forest in East Hampton.

9. **Deliverables:**

A. By the DOT-

1) DOT will secure funding to support the mitigation project (See Appendix B).

2) A transfer of funds from DOT to DEEP to reimburse DEEP costs for the restoration project will take place following the receipt of invoices for said work. Initial project design and engineering work is expected to occur in 2018 and the amount to be expended will be approximately \$38,726 which will be made immediately available to DEEP for design funds in Accordance with Appendix C and is not to exceed \$38,726. The remainder of the funding for construction, \$193,629, will be made available to DEEP once Project 103-266 construction funds are obligated, which is approximately scheduled for 8/14/2019. DEEP shall invoice the DOT for costs not to exceed \$235,000 and in accordance with the cost estimate in Appendix C. Costs above this amount may be considered for reimbursement but are subject to eligibility restrictions and available funds.

B. By the DEEP-

1) Construction machinery, equipment, and personnel to complete the box culvert work on Mott Hill Brook.

2) Provide summary report to DOT following schedule in Paragraph 11 below.

3) Upon completion of the work, DEEP will invoice for actual expenses incurred.

10. **Budget:** A total of up to \$235,000 will be provided by the DOT pursuant to the terms of the MOA. The project estimate given to DOT by DEEP for the cost of the work is \$232,355 (Refer to Appendix C for cost estimate).

11. **Schedule of Reports:**

A. **Project Completion Report:** Upon completion of the project, DEEP will provide a summary report of the completed activities to DOT once the post project annual fish survey is complete. Such summaries should be submitted to the DOT no later than three months following project completion of the final post project annual fish survey.

12. **Schedule of Activities:** Upon DOT's formal authorization to DEEP for construction activities to commence the project activities will be scheduled and completed by DEEP. Timing of the project is to be determined by DEEP but shall be completed as expeditiously as practical. Initial project design and engineering work is expected to occur in 2018 and the amount to be expended will be approximately \$38,726 which will be made immediately available to DEEP for design funds in Accordance with Appendix C and is not to exceed \$38,726. The remainder of the funding for construction, \$193,629, will be made available to DEEP once Project 103-266 construction funds are obligated, which is approximately scheduled for 8/14/2019. This obligation date is subject to change based on project 103-266 progression. If the obligation date is to change then DOT will notify DEEP of the date change. Invoicing and reimbursement for actual expenses will occur after work is completed but no later than December 31, 2021.

13. **Cancellation:** Either party may propose to terminate this MOA. The party proposing termination must notify the other party of the MOA explaining the reasons for termination and afford at least ninety (90) days to consult and seek alternatives to termination. Should such consultation fail, the MOA will be terminated. In the event that the DOT is the proponent of the cancellation after the transfer of the funds has been completed, or should DOT project 103-266 not proceed, the completed mitigation work will be transferrable to a future DOT project requiring off-site mitigation. In the event DEEP is the proponent of the cancellation then the requirement for off-site mitigation for Project 103-266 shall still be deemed satisfied unless otherwise agreed in writing.

14. **Extensions/Amendments:** This MOA may be modified by the mutual agreement in writing of the DOT and the DEEP. Revisions may include but not be limited to:

- a. timing of the restoration work,
- b. any other agreement revisions determined material by either agency.

15. **Use of Funds:** The DEEP agrees to limit expenses and efforts to the quoted scope and cost estimate solely for the purpose of the project work at Mott Hill Brook, Meshomasic State Forest. The DEEP agrees to submit all invoices pursuant to this MOA prior to December 31,2021.

16. **CFDA Number is NA.** (Include if federal funding is used) 100% State Funding

17. **Approved by:**

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

DEPARTMENT OF TRANSPORTATION

APPROVED

APPROVED

Date: May 31, 2018

Date: May 17, 2018

By: Susan Whole
Authorized Signature

By: Kimberly Lesauy
Authorized Signature

Chartfield Distributions For Sponsor Agency use only.

Amount	Dept	Fund	SID	Program	Project	Activity	Bud Ref	Agency CF 1	Agency CF 2	Account
					DEP_NONPROJECT					

From: Murphy, Brian
Sent: Tuesday, June 27, 2017 8:46 AM
To: Gilmore, Robert
Subject: RE: Mitigation for Project 103-266 Hammer Brook, Norwich

APPENDIX A : LWRD APPROVAL

From: Gilmore, Robert
Sent: Tuesday, June 27, 2017 8:29 AM
To: Murphy, Brian
Cc: Davis, Andrew H
Subject: RE: Mitigation for Project 103-266 Hammer Brook, Norwich

Brian – I support this mitigation proposal. It's a good project.

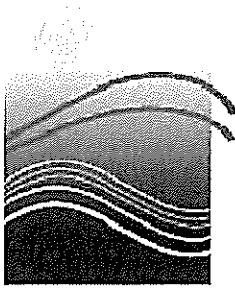
From: Murphy, Brian
Sent: Monday, June 26, 2017 10:20 AM
To: Gilmore, Robert <Robert.Gilmore@ct.gov>
Cc: Gephard, Steve <Steve.Gephard@ct.gov>
Subject: Mitigation for Project 103-266 Hammer Brook, Norwich

Hi Bob,

RE: Hammer Brook, Norwich (RTE 395):

The DOT is using a concrete lining to rehabilitate this culvert. For various property and flooding issues, we cannot modify the culvert to maintain existing fish passage. Since we will lose fish passage at this site due to the lining, I have asked for fish resource mitigation. There is a perched culvert on Del Reeves Road, Mott Hill Brook in Meshomasic State Forest, East Hampton that blocks fish passage for a native brook trout population that I would like to propose as suitable mitigation. In the past, I tried unsuccessfully to obtain an Eastern Brook Trout Joint Venture grant for this project, see attached grant proposal for details. In essence, I want to replace the perched, undersized culvert with a timber bridge that will provide fish passage, restore the channel and increase the openness ratio. Andy Davis appears to be on board with this project as mitigation however he would like a regulatory opinion as to the suitability of this project as mitigation since it would be tied to permit approval. Can you take a look at the original concept proposal and let me know your initial thoughts. We can bring it up at the monthly meeting at DOT if necessary. Thanks.

Brian D. Murphy, Senior Fisheries Habitat Biologist
Fisheries Division
Habitat Conservation and Enhancement Program
Connecticut Department of Energy and Environmental Protection
Eastern District Headquarters
209 Hebron Road
Marlborough, CT 06447
P: 860.295-9523 | F: 860.295.8175 | brian.murphy@ct.gov



Connecticut Department of

ENERGY &
ENVIRONMENTAL
PROTECTION

www.ct.gov/deep

*Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.*

Attachment B

CTDOT Project 103-266 KCL
Fisheries Mitigation for Rehabilitation of Bridge 06795
Interstate 395 over Hammer Brook, Norwich

Bridge Number 06795 carries I-395 over Hammer Brook in the Town of Norwich. The existing structure is a 96" x 66" ACCMP which currently displays signs of corrosion, section loss, and perforations, and requires rehabilitation. The structure is currently rated a 4. The structure lies adjacent the confluence with Norwichtown Brook and lies within the Yantic River subregional basin. As part of project coordination, bridge 06795 and surrounding tributaries were surveyed by CTDEEP Fisheries Division and were found to provide for fish passage in the existing condition except for during extreme low flows. These waterways were found to support native fish populations, including native brook trout, which are listed as a Species of Greatest Conservation Need in Connecticut. A full structure replacement was investigated but was dismissed as it resulted in additional project cost, construction duration and would require at least a partial closure of I-395 during construction. The existing structure is characterized by hydraulic inadequacies; therefore, slip-lining was dismissed as well. The rehabilitation of the structure will consist of repairing the bottom portion of the culvert with concrete. The concrete will be smooth as to not exacerbate flooding conditions. Private property upstream currently experiences flooding.

Coordination with CTDEEP regarding permitting needs for the project were ongoing throughout 2016 and various rehabilitation strategies for the structure as well as mitigation strategies were explored, including taking different action within the structure, paired with berms to protect adjacent properties from the increased flooding. However, the berms were found to also increase flooding as well as result in additional property and regulated resource impacts for the physical berm itself. Typically for projects of this type, measures can be taken within or around the pipe (baffles, blocks, weirs) to slow velocities associated with the rehabilitation efforts, however the hydraulic conditions on site prevent these measures from being able to be implemented without creating additional adverse flooding conditions.

Hydraulic analysis conducted for the proposed project rehabilitation reveal the smooth culvert bottom will increase water velocities and will also raise the bottom elevation of the structure, rendering the structure impassable for fish. The loss of passage at bridge 06795 will prevent fish from being able to reach 1.2 miles of stream habitat currently existing upstream of the structure. CTDEEP's Fisheries Division therefore requested mitigation to offset this loss of available habitat.

Since mitigation is not feasible on site, CTDEEP and the Department investigated other mitigation options. Over the summer of 2017, CTDEEP Fisheries Division investigated various sites to find a location that would provide additional fish passage for the same species that are impacted due to the rehabilitation at structure 06795. CTDEEP identified the replacement of a substandard 30" concrete culvert which conveys Del Reeves Road over Mott Hill Brook in East Hampton as acceptable mitigation. The culvert is located within the Meshomasic State Forest property owned by CTDEEP. The culvert is currently undersized and results in roadway overtopping and erosion. A large scour pool has formed downstream of the culvert which has resulted in a perched outlet condition, which prevents fish passage for native brook trout present in the brook. Mott Hill Brook is a tributary to Cold Brook and is located within the Connecticut River Basin. The proposed structure at this location would be a pre-fabricated timber clear span bridge on concrete abutments and would restore fish passage. This mitigation project will provide connectivity to over 1.68 miles of viable wild brook trout upstream habitat as well as stabilization of over 100 feet of streambank habitat both up and downstream of the structure. Design, permitting and construction oversight will be the responsibility of CTDEEP.

The Department will not be held to long term commitments and involvement is limited to the funding as outlined in an Memorandum of Agreement between the two agencies. The MOA calls for the Department to secure funding in the amount of \$235,000 which is to be transferred to DEEP as a reimbursement following receipt of invoices for the proposed project. This off-Site mitigation arrangement allows the State to maintain its infrastructure and adequately and efficiently mitigate for unavoidable impacts to natural resources.

Attachment C

Project Title:	Del Reeves Culvert Replacement	Date:	9/1/2017
Bridge # :	N/A	Estimated by:	JSB
Project Number:	TBD	Checked by:	JSB
Project Location:	Meshomasic State Forest, East Hampton, CT	Base year:	2017
Preliminary Estimated Construction Phase Cost		Construction year:	2018
		Inflation (%):	3.5

Item No.	Item Name/Description	Units	Quantity	Units Price	Line Item Value
1	Earth Excavation	CY	30	15	450
2	Structure Excavation - Earth	CY	10	30	300
3	Sedimentation Control System	LF	100	4	400
4	Removal of Existing Pipe Culvert & Wingwalls	SF	110	70	7700
5	Disposal of Debris	CF	792	20	15840
6	Replace Culvert (Precast Box Culvert (5' Rise x 5' Span)	SF	110	240	26400
7	Culvert Footings	LF	44	150	6600
8	Metal Beam Rail (Type R-B 350)	LF	92	35	3220
9	R-B 350 Bridge Attachment - Vertical Shape	EA	4	2300	9200
10	R-B End Anchorage - Type II	EA	4	1300	5200
11	Furnishing and Placing Top Soil	SY	187	6	1122
12	Formation of Subgrade (Culvert Base)	SY	35	5	175
13	Subbase, Processed Aggregate Base (3/4" Stone)	CY	5.5	35	193
14	Filter fabric/Geotextile Fence	SF	150	3	450
15	Pervious Structure Backfill	CY	60	80	4800
16	Membrane Water Proofing (Cold Liquid Elastomer)	SY	20	60	1200
17	Sweeping For Dust Control	HR	20	40	800
18	Turf Establishment	SY	20	1	24
19	Temporary Precast Concrete Barrier	LF	30	25	750
20	Traffic Control (Traffic Drums)	EA	10	50	500
21	Construction Signs	SF	100	15	1500
22	Crane Rental (Including Delivery & Pickup)	LS	1	10000	10000
SUBTOTAL (INDEFINITE WORK)					96824
Estimated Based on % of Subtotal contract Cost					
23	Cofferdam and Dewatering (Sand Bags & Water Pumps)	%	10		9682
24	Handling Water (By Pass Conduits (2 - 30" HDPE Pipes))		5		4841
25	Right of Way (ROW)		0		0
26	Utility Relocation		0		0
27	MINOR ITEMS		10		9682
TOTAL (INDEFINITE WORK)					121029
Estimated Based on % of total contract Cost					
		%	2		2421
			4		4841
			2		2421
			6.5		7867
CONTRACT WORK					\$138,579
CONTINGENCY					34645
INCIDENTAL COST (Inspection, Materials Testing, Construction Phase design)					13858
CONTRACT WORK, INCLUDING CONTINGENCY, IN BASE YEAR					\$187,081
CONTRACT WORK, INCLUDING CONTINGENCY AND INFLATION					\$193,629
ESTIMATED PROJECT CONSTRUCTION PHASE COST					\$ 193,629

Project Title:	Del Reeves Culvert Replacement	Date:	9/1/2017
Bridge #:	N/A	Estimated by:	JSB
Project Number:	TBD	Checked by:	JSB
Project Location:	Meshomasic State Forest, East Hampton, CT		
Preliminary Estimated Design & Construction Phase Cost			

Item No.	Cost Classification	Notes	Budget
1	Construction Phase Cost	See Estimated Project construction Phase cost	193629
2	Planning & Design Cost		38726
	a.Design & Permitting	Estimated at 20% of Item 1	38726
	b.Bidding	Estimated at 0% of Item 1	0
	c. Contract Administration	Estimated at 0% of Item 1	0
	d.Construction/Project Inspection	Estimated at 0% of Item 1	0
ESTIMATED TOTAL PROJECT COST			\$ 232,355

Attachment G
State Historic Preservation Office (SHPO) Exemption



STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Determination of Effect to Historic Properties



Author: Mark McMillan **Date:** October 20, 2015



Project: State No.: 103-266
F.A.P. No.: TBD
Project Title: Rehabilitation of Culverts
#06795, 06796, and 06797
Town: Norwich



Determination of Effect: No Historic Properties Affected



Project Description

Using federal and state funds, the Connecticut Department of Transportation (CTDOT) proposes to rehabilitate three structurally deficient culverts in Norwich. All three are single-bore asphaltic coated corrugated metal pipes installed beneath I-395. They have been listed on the Bridge Program List 28 for structures requiring major rehabilitation or replacement. The undertaking is currently in its concept level of development and a Rehabilitation Study is underway.

The range of alternatives being considered includes relining the existing pipes to replacing the structures entirely. It is possible that the rehabilitation of each culvert will be different from the other, depending on their individual conditions. No widening or other modifications to the existing configuration of I-395 is included as part of this work. Construction is anticipated to being in Spring, 2018.

Technical Review of Project

The specific conditions of each culvert vary, but each is a single cell asphalt-coated corrugated metal pipe (ACCMP) with reinforced concrete headwalls. All three culverts are categorized as Not Eligible for the National Register of Historic Places the statewide bridge inventory database maintained by CTDOT. Staff from the Office of Environmental Planning concur with this assessment.

Bridge #06795

Structure #06795 conveys Hammer Brook beneath I-395 in Norwich. Its single pipe is oval in profile, measuring 7'11" wide and 5'7" tall. The pipe is 213' long and there is 10 vertical feet of overburden fill between it and the roadbed.

Recent inspections by CTDOT's Bridge Evaluation and Safety unit have determined that Bridge #06795 is in Serious condition due to the loss of its protective coating and heavy corrosion of its pipe liner. This has resulted in vertical deformations of the pipe that is measured up to five inches in some areas. At its western inlet, the bottom plate of the liner exhibits holes up to three feet long and three inches wide.

The soils surrounding the bridge are categorized as Udorthent-Urban Land Complex within the road right of way. Predictive models find this type of sediments to be of low archaeological sensitivity that would be unlikely to yield historic or cultural information. To the east and west of the right of way are Rippowam Fine Sandy Loam and Raypool Silt Loam soils, which are considered to have high archaeological potential. There are no known archaeological sites within a mile of the culvert.

Abutting the right of way of I-395 to the west is the Bean Hill Historic District.¹ This National Register District is characterized by its collection of 18th and 19th century buildings centered around the town green. Hammer Creek runs through two properties within the district. At 21 Huntington Avenue is a 1950 Cape style cottage that is categorized as 'non-contributing' in the Bean Hill NRHP Inventory form. The parcel identified as 29 Huntington Avenue is omitted from the Inventory form. According to Norwich town records, it contains a Ranch style single family residence that was constructed in 1976.

The houses on both parcels are located at the western end of their lots. They are separated from the culvert by over 400 feet of undeveloped land. Given their non-contributing status and the buffer distance they provide between the culvert and the historic district, the proposed rehabilitation of Bridge #06795 will not foreseeably impact the historic nature of the district.

Bridge #06796

Bridge #06796 conveys Byron Brook beneath I-395. It is a 6 foot diameter ACCMP that is 65 feet long and situated beneath 20 feet of overburden. It was installed in 1955 and does not appear to have undergone any significant alterations. The culvert is in Poor condition due to deterioration of its components and a backup of water within it caused by a beaver dam downstream.

Bridge #06796 is located 2.25 miles north of Bridge #06795 in an undeveloped area of Norwich. The sediments within this culvert's area of potential effect are classified as Charlton-Chatfield Complex soils, which have a moderate level of archaeological sensitivity. This is reduced by the steep (15-45%) slope of to the west of the culvert and "very rocky" condition of the soils. There are no known archaeological sites within a mile of the culvert.

¹ National Park Service, *Bean Hill Historic District (NRHP #82001006)*, listed on December 8, 1982.

Bridge #06797

Bridge #06797 is located 1200 feet northeast of Bridge #06796. It consists of an oval ACCMP pipe that is 6' wide, 3'8" tall, and 76 feet long. It conveys an unnamed brook beneath I-395, whose roadbed is 3 feet above the top of the pipe.

There are a variety of sediments surrounding this culvert, but all are characterized as being "very stony". There are no known archaeological sites within a mile of this culvert. Given the predicted low potential of the soils in the project area and the known soil disturbances caused by the construction of I-395, there is limited potential for impacting intact archaeological resources.

Determination

The work proposed under State Project #103-266 would normally be classified as a "Bridge/Culvert Related Projects" and "Interstate Related Projects". These types of Minor Transportation Projects are typically exempt from Section 106 review under Appendix B (*Screened Undertakings Not Requiring Connecticut CTSHPO Review*) of the Section 106 Programmatic Agreement². The proximity of Bridge #06795 to the Bean Hill Historic District does not allow for the application of this exemption.

It is the professional opinion of qualified staff from CTDOT's Office of Environmental Planning that the rehabilitation of this culvert will not foreseeably impact the overall historic character of the district. In accordance with the Section 106 Programmatic Agreement, CTDOT determines that the undertaking will have "No Historic Properties Affected". However, we request a further review of the plans when the project approaches final design to confirm this determination.

No further consultation with the Connecticut State Historic Preservation Officer (CTSPHO) is required. A copy of this determination will be included in the quarterly report of Minor Transportation Projects that is submitted to CTSHPO.

Because the undertaking is within the Quinebaug-Shetucket National Heritage Corridor, a copy of this letter will be sent to The Last Green Valley. As stewards of this resource, they will have thirty days to review and comment on this undertaking.



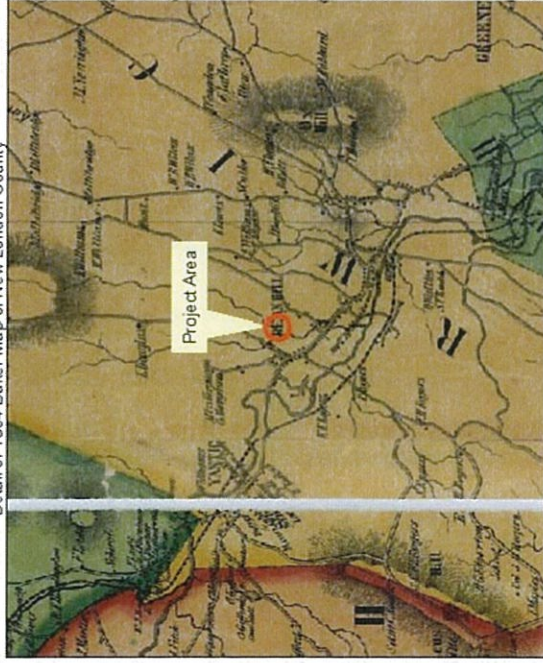
Mark McMillan
National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation

² *Programmatic Agreement among the Federal Highway Administration, the Connecticut Department of Transportation, the Connecticut State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Implementation of Minor Transportation Projects*, signed October 26, 2012. Accessible online at: www.ct.gov/culturalresources

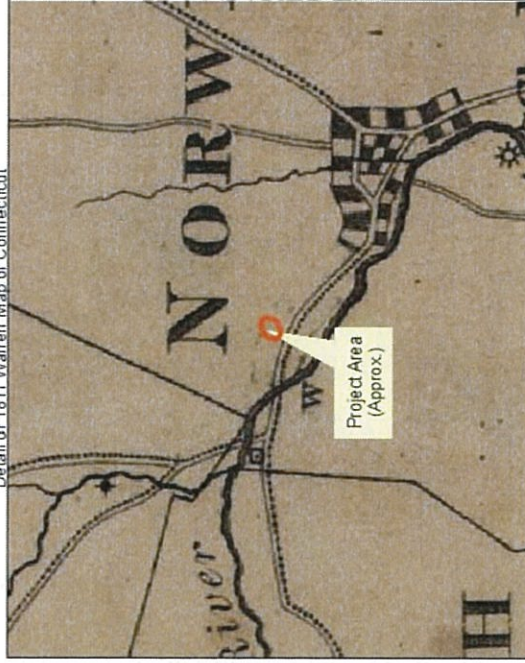
Detail of 2010 Aerial Photography



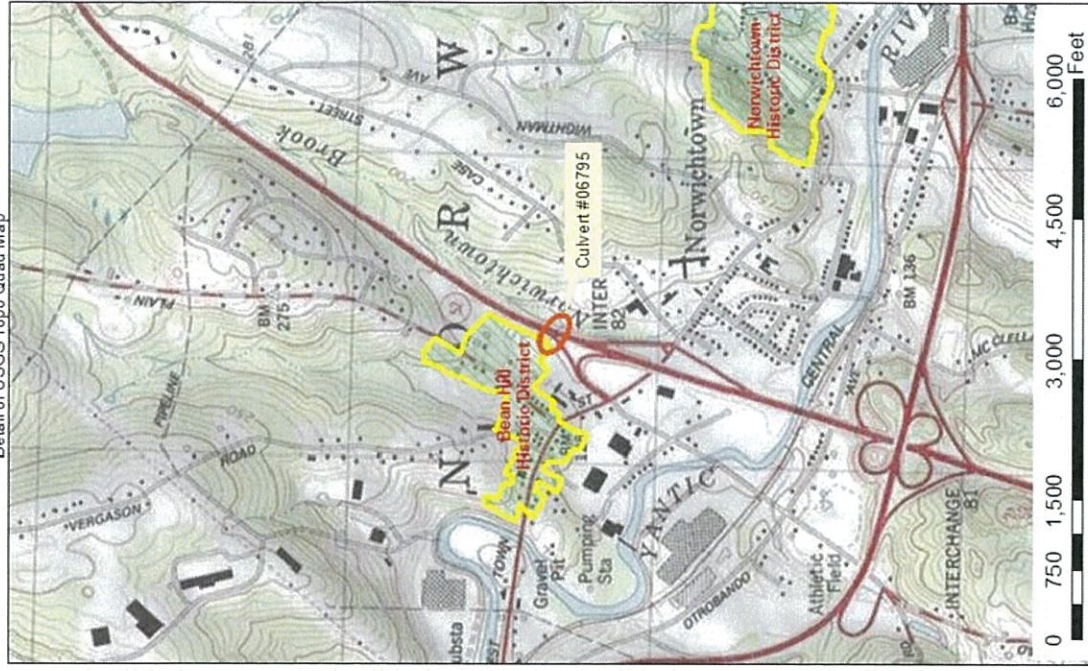
Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



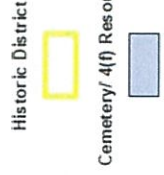
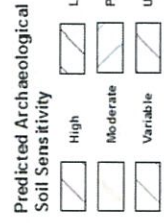
Detail of USGS Topo Quad Map



**Office of Environmental Planning
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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culvert #06795
Norwich

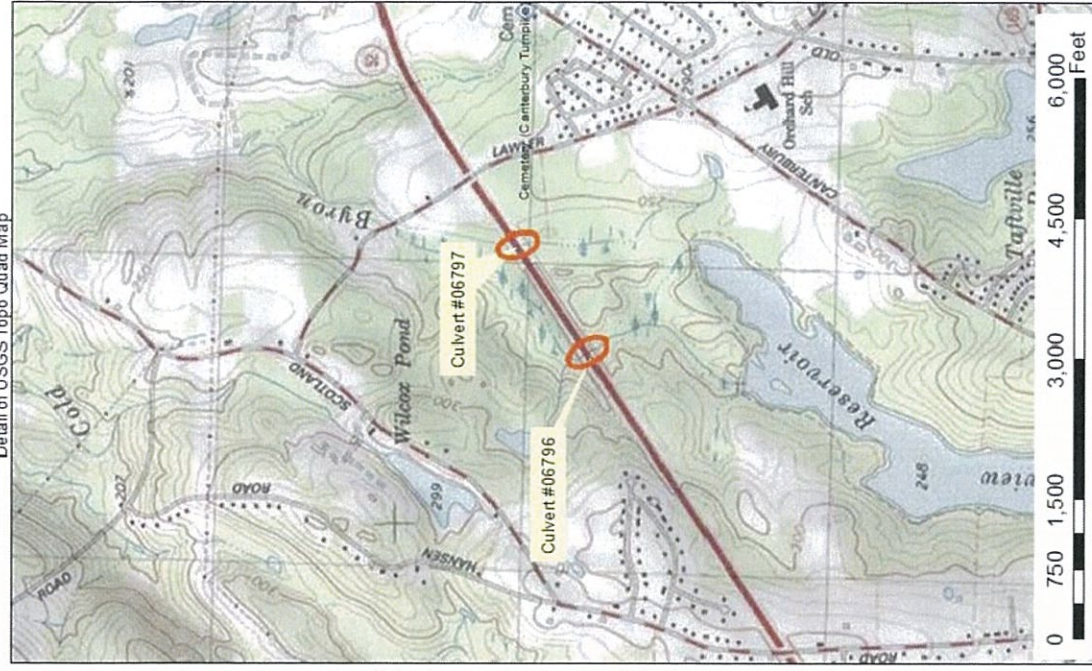


August 27, 2015

Detail of 2010 Aerial Photography



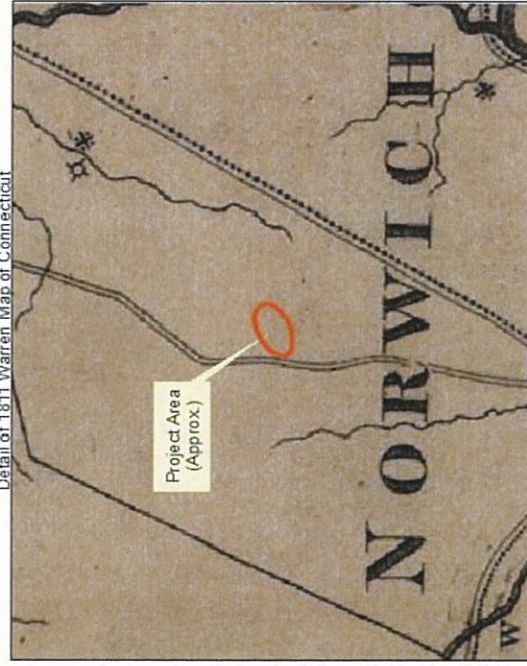
Detail of USGS Topo Quad Map



Detail of 1854 Baker Map of New London County



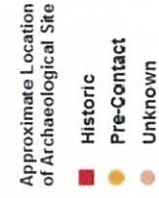
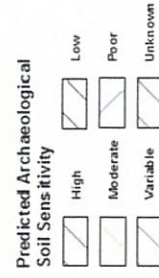
Detail of 1811 Warren Map of Connecticut



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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culverts
#06796 and 06797
Norwich



August 27, 2015

From: McMillan, Mark J. <Mark.McMillan@ct.gov>
Sent: Thursday, March 01, 2018 11:33 AM
To: Naomi Hodges
Cc: Thomas Lopata; Kania, Dobieslaw A.; Cardinali, Andrew J; Don Wurst
Subject: RE: Project #103-266 Norwich (Culvert Rehabilitation on I-395) Historic Determination

Hello Naomi,

Thank you for sending this plans. I have reviewed them, specifically those that relate to **Culvert #06795**, which abuts the Bean Hill National Register Historic District. After considering the placement of the access road and construction activities shown, I confirm that the project remains within the existing road right of way and does not encroach on the Historic District. As such, the finding of **No Historic Properties Affected** previously documented remains valid.

I will save a copy of this email with project files. Unless you need additional information or documentation from me, this completes the **Section 106 review for this project**.

Thank you,

Mark

From: Naomi Hodges [<mailto:NHodges@cmeengineering.com>]
Sent: Thursday, March 01, 2018 11:20 AM
To: McMillan, Mark J.
Cc: Thomas Lopata; Kania, Dobieslaw A.; Cardinali, Andrew J; **Don Wurst**
Subject: Project #103-266 Norwich (Culvert Rehabilitation on I-395) Historic Determination

Hi Mark,

Within the CTDOT determination effect to historic properties received in October of 2015, it was requested to review 103-266 plans to confirm your finding of "No Historic Properties Affected".

It is the professional opinion of qualified staff from CTDOT's Office of Environmental Planning that the rehabilitation of this culvert will not foreseeably impact the overall historic character of the district. In accordance with the Section 106 Programmatic Agreement, CTDOT determines that the undertaking will have "No Historic Properties Affected". However, we request a further review of the plans when the project approaches final design to confirm this determination.

Now that the project is in the 30% design phase, plans are available. I have attached the most recent set of HWY plans of each of the culverts as well as the original Historic determination for your review. Let me know if you need any additional information to complete your review.

Thank you,
Naomi



Naomi C. Hodges | Environmental Scientist

nhodges@cmeengineering.com

101 East River Drive, 1st Floor · East Hartford, CT 06108
T 860.290.4100 ext. 1148 www.cmeengineering.com

From: Kania, Dobieslawa A. [<mailto:Dobieslawa.Kania@ct.gov>]
Sent: Tuesday, October 20, 2015 3:03 PM
To: Ricky Mears
Cc: Cardinali, Andrew J; Don Wurst
Subject: FW: Project #103-266 Norwich (Culvert Rehabilitation on I-395)

FYI.

Dobie

From: McMillan, Mark J.
Sent: Tuesday, October 20, 2015 11:58 AM
To: Kania, Dobieslawa A.
Subject: Project #103-266 Norwich (Culvert Rehabilitation on I-395)

Dobie,

Attached is a Determination of Effect (No Historic Properties Affected) letter for the 103-266 Norwich project. OEP has processed this request under the Programmatic Agreement and determined that it will have No Historic Properties Affected under Section 106 of the National Historic Preservation Act. No further consultation with the CTSHPO is necessary. This information has been sent to FHWA who will consult with the federally recognized tribes regarding this undertaking. A copy has also been forwarded to The Last Green Valley, who are stewards of the Quinebaug-Shetucket National Heritage Corridor. Both entities will have 30-60 days to review and comment. I will keep you informed as I hear from them.

Mark

Mark McMillan

National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, CT 06131
☎ (860) 594-2135
☎ (860) 594-3028 - Fax
✉ mark.mcmillan@ct.gov

Attachment H
Tribal Historic Preservation Office (THPO) Exemption

From: michelle.herrell@dot.gov
Sent: Tuesday, October 27, 2015 8:18 AM
To: McMillan, Mark J.
Subject: No Tribal Consultation Required FAPN TBD/SPN0103-0266, Culvert Rehab on I-395, Norwich

Hi Mark,

I have reviewed CTDOT's proposed project which involves rehabilitating culverts #06795, #06796, and #06797, which are installed beneath I-395 in Norwich, CT. The culverts are in need of major rehabilitation or replacement. As noted in your October 20, 2015 letter, the work would occur within previously disturbed existing road right-of-way. As per the THPO Section 106 Agreements with FHWA-CT Division, dated January 4, 2012 and May 14, 2013, this project would generally fall within the category of "resurfacing or repair of existing ramps or roadways within the previously disturbed right-of-way," with no historic properties affected.

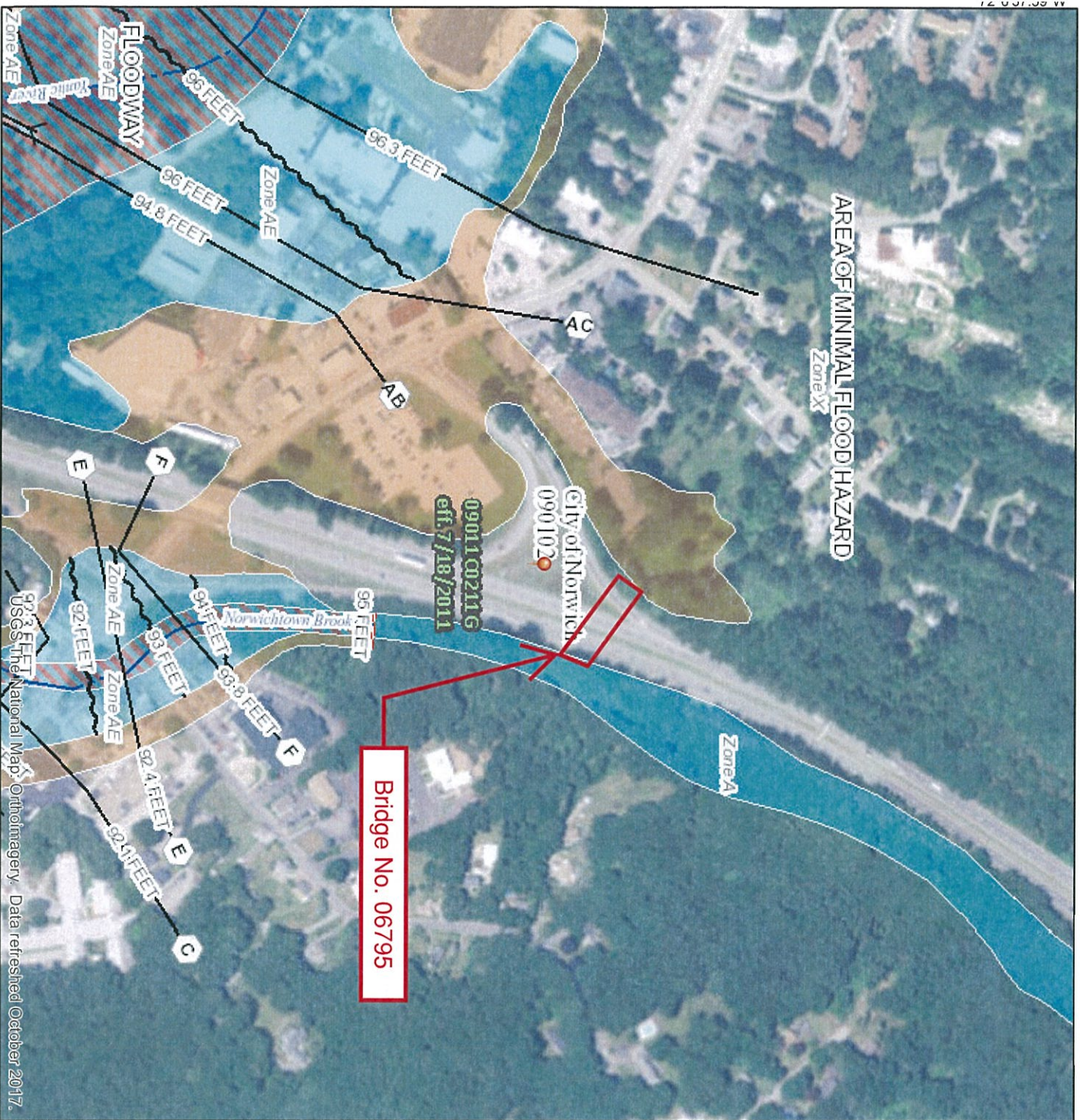
With this email, and taking all these items into consideration, the FHWA-CT Division has determined that tribal consultation would not be required for this project. Should any changes be made to the scope of work for this project that would involve additional ground disturbance beyond what is currently proposed, tribal consultation would have to be reconsidered.

Michelle Herrell
Environmental Protection Specialist
Federal Highway Administration | Connecticut Division Office
628-2 Hebron Avenue, Suite 303 | Glastonbury, CT 06033
P: (860) 494-7577 | F: (860) 659-6724
michelle.herrell@dot.gov

Attachment I
FEMA FIRMette and Inundation Maps

National Flood Hazard Layer FIRMette

41°33'34.24"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	<ul style="list-style-type: none"> Without Base Flood Elevation (BFE) Zone A, V, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
-----------------------------------	---

OTHER AREAS OF FLOOD HAZARD	<ul style="list-style-type: none"> 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile (Zone X) Future Conditions 1% Annual Chance Flood Hazard (Zone X) Area with Reduced Flood Risk due to Levee, See Notes, Zone X Area with Flood Risk due to Levee (Zone D)
------------------------------------	--

OTHER AREAS	<ul style="list-style-type: none"> NO SCREEN Area of Minimal Flood Hazard Zone X Effective LOMFRs Area of Undetermined Flood Hazard Zone B
GENERAL STRUCTURES	<ul style="list-style-type: none"> Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall

OTHER FEATURES	<ul style="list-style-type: none"> 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation 17.5 Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary Coastal Transect Baseline Profile Baseline Hydrographic Feature
-----------------------	---

MAP PANELS	<ul style="list-style-type: none"> Digital Data Available No Digital Data Available Unmapped
-------------------	---

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

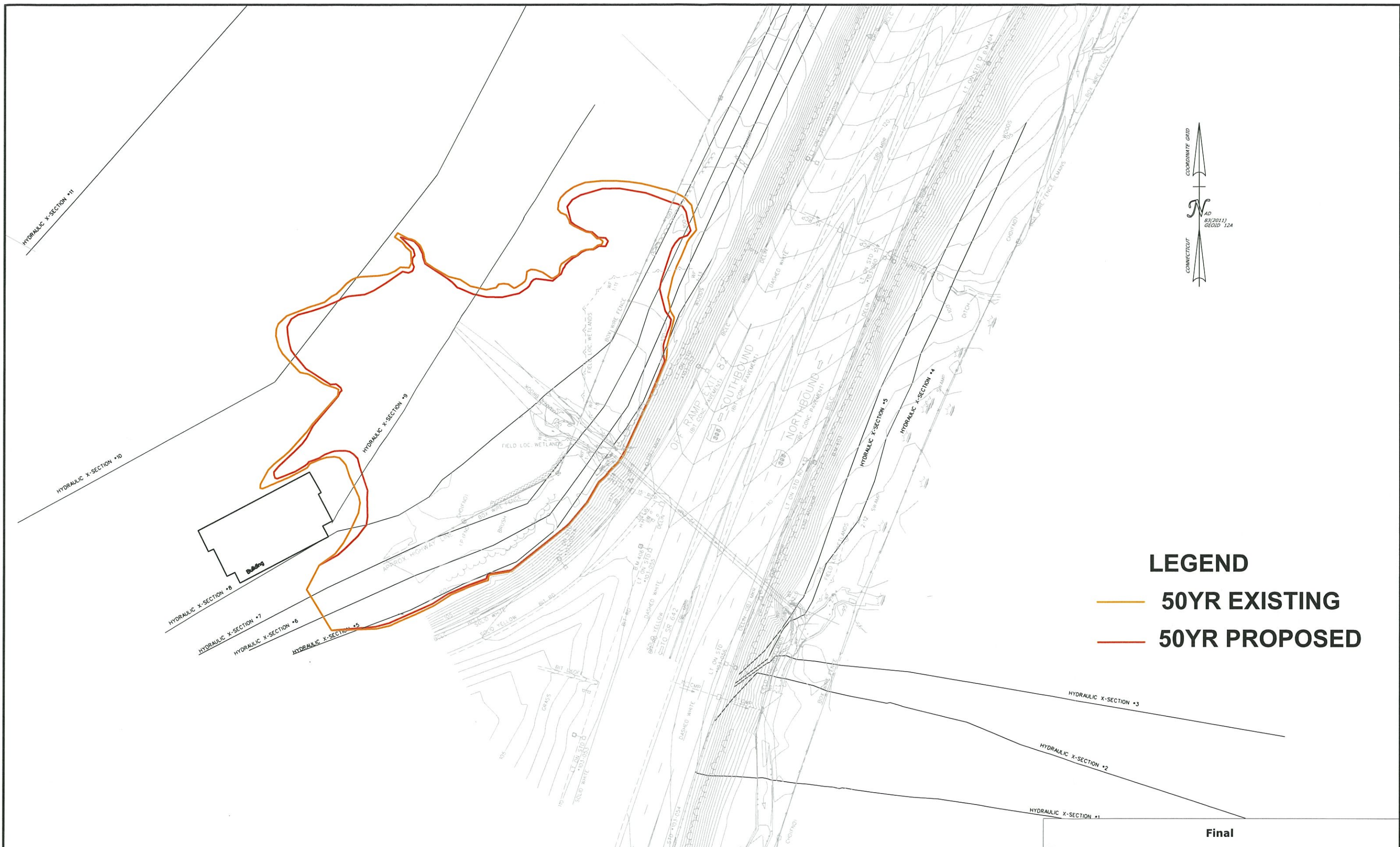
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/12/2018 at 10:07:08 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmoderized areas cannot be used for regulatory purposes.

72°6'0.14"W

41°33'37.32"N

0 250 500 1,000 1,500 2,000 Feet



LEGEND

— 50YR EXISTING

— 50YR PROPOSED

Final

REV.	DATE	REVISION DESCRIPTION	SHEET NO.
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 12/19/2018


DESIGNER/DRAFTER: **JMM**

CHECKED BY:

SCALE IN FEET

0 40 80

SCALE 1"=40'


STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: ...06795 Inundation Mapping.SETUP.dgn

SIGNATURE/BLOCK:


CME ASSOCIATES, INC.
 33 Wilbur Cross Way, Mansfield, CT 06268
 101 East River Drive, East Hartford, CT 06108
 1 Tara Blvd, Nashua, NH 03062
 888.291.3227 | www.cmeengineering.com

PROJECT TITLE:

**REHABILITATION OF
BRIDGE NO. 06795
I-395 over Hammer brook**

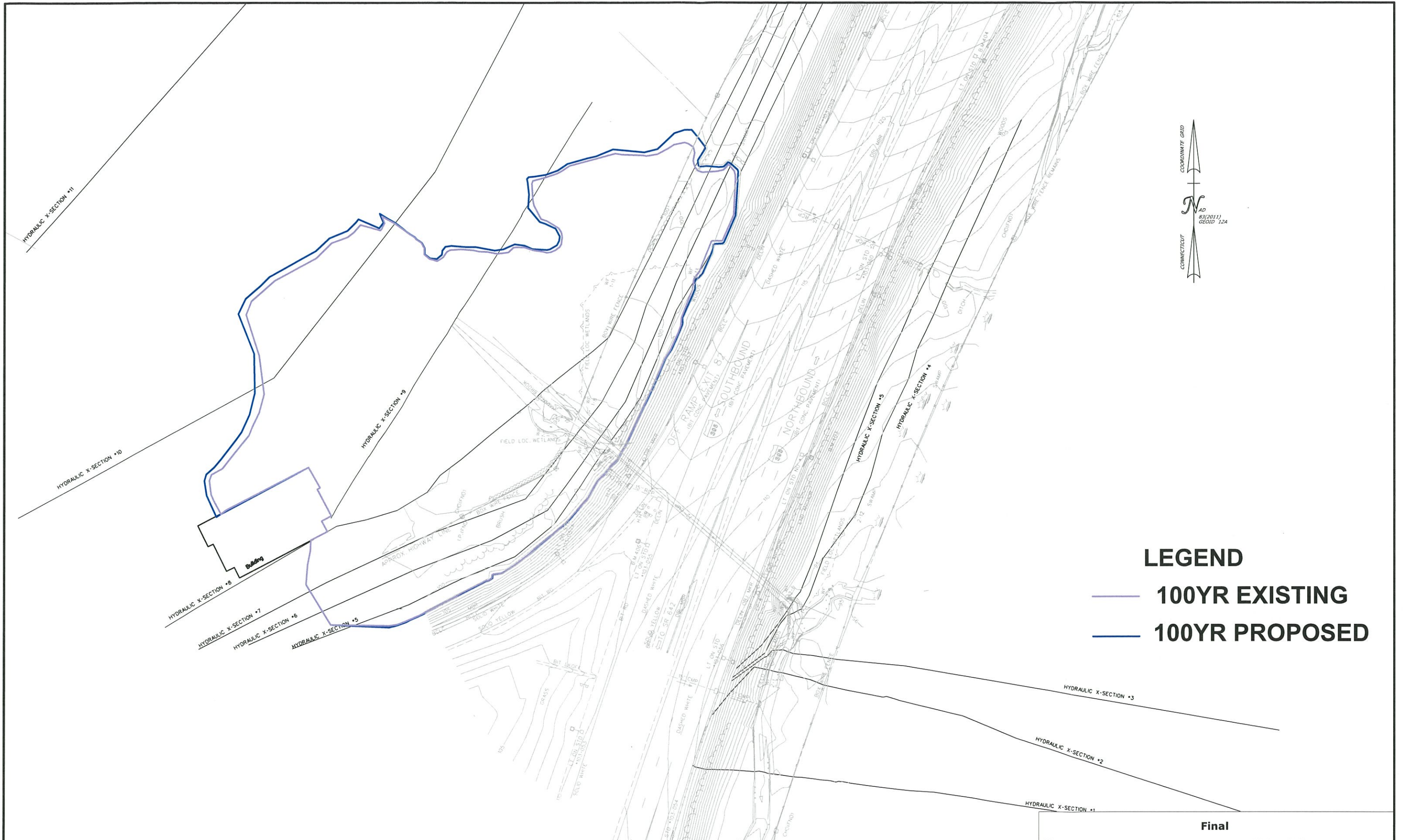
TOWN: **Norwich**

DRAWING TITLE:
**INUNDATION MAPPING
50-YR EVENT**

PROJECT NO. **103-266**

DRAWING NO. **IN-50YR**

SHEET NO. **1**




LEGEND
 — 100YR EXISTING
 — 100YR PROPOSED


Final

REV.	DATE	REVISION DESCRIPTION	SHEET NO.
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Plotted Date: 12/19/2018
 THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

DESIGNER/DRAFTER: **JMM**
 CHECKED BY:
 SCALE IN FEET
 0 40 80
 SCALE 1" = 40'


STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION

SIGNATURE/BLOCK:

CME ASSOCIATES, INC.
 33 Wilbur Cross Way, Mansfield, CT 06268
 101 East River Drive, East Hartford, CT 06108
 1 Tara Blvd, Nashua, NH 03062
 888-291-3227 | www.cmeengineering.com

PROJECT TITLE:
REHABILITATION OF BRIDGE NO. 06795
I-395 over Hammer brook

TOWN: **Norwich**
 DRAWING TITLE:
INUNDATION MAPPING 100-YR EVENT

PROJECT NO. **103-266**
 DRAWING NO. **IN-100YR**
 SHEET NO. **1**

Filename: ...06795 Inundation Mapping_SETUP.dgn

Attachment J
Interagency Coordination Meeting Notes



DEEP / DOT REGULATORY COORDINATION Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. **Bridge No. 06795-**

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCOMP) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes

2. **Bridge No. 06796-**

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. **Bridge No. 06797-**

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.



Connecticut Department of

**ENERGY &
ENVIRONMENTAL
PROTECTION**

**Bureau of Water Protection and Land Reuse
Land & Water Resources Division**

79 Elm Street • Hartford, CT 06106-5127

www.ct.gov/deep

Affirmative Action/Equal Opportunity Employer

Connecticut Department of Energy and Environmental Protection License*

USACE CT GP - Pre-Construction Notification Approval

Licensee(s): Connecticut Department of
Transportation

Licensee Address(s): 2800 Berlin Turnpike
Newington, CT 06131-7546

License Number(s): 201908101-PCN

Municipality: Norwich

Project Description: Replacement of Bridge #06796

Project Address/Location: I-395 over Byron Brook

Waters: Byron Brook

**Authorizing CT Statute(s)
and/or Federal Law:** Section 401 CWA (33 USC 1341)

**Applicable Regulations of
CT State Agencies:** 22a-426-1 to 9

Agency Contact: Land & Water Resources Division,
Bureau of Water Protection & Land Reuse, 860-424-3019

License Expiration: Upon expiration of the U.S. Army Corps of Engineers Section 404
permit for the same activity.

Project Site Plan Set: *Connecticut Department of Transportation, Environmental Permit
Plans for State Project No. 103-266, I-395 Over Byron Brook
(Site No. 2) in the City of Norwich, 7 sheets, prepared by Louis
Berger US, Inc., June 24, 2019.*

License Enclosures: WQC CT GP Conditions;

*Connecticut's Uniform Administrative Procedure Act defines License to include, "the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . ."

Authorized Activities:

The Licensee is hereby authorized to conduct the following work as described in application # 201908101-PCN and as depicted on any site plan sheets / sets cited herein:

1. Rehabilitate culvert #06796 by installing a 54-inch interior diameter corrugated high density polyethylene pipe within the 72-inch diameter existing asphalt-coated corrugated metal pipe, and filling the annular space with low-pressure grout.
2. The following wetland and waterway impacts are authorized: wetland impacts of 2,200 square feet (temporary) and 1,550 square feet (permanent); and waterway impacts of 1,250 square feet (temporary) and 1,050 square feet (permanent).

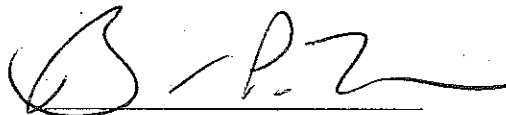
Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.

Issued under the authority of the Commissioner of Energy and Environmental Protection on:

October 7, 2019
Date



Brian P. Thompson
Division Director
Land & Water Resources Division

**Section 401 Water Quality Certification Conditions for Department of the Army (Corps of Engineers)
General Permits for the State of Connecticut**

1. **Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.
2. **Expiration of Certificate.** The Section 401 Water Quality Certifications contained herein shall be valid until such time as the Department of the Army General Permits for the State of Connecticut expires or is modified, suspended, revoked or reissued.
3. **Compliance with Certificate.** All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Any regulated activities carried out at the site, including but not limited to, construction of any structure, excavation, fill, obstruction, or encroachment, that are not specifically identified and authorized herein shall constitute a violation of this certificate and may result in its modification, suspension, or revocation. In carrying out the certified discharge(s) authorized herein, the permittee shall not store equipment or construction material, or discharge any material including without limitation, fill, construction materials or debris in any wetland or watercourse on or off site unless specifically authorized by this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this certificate.
4. **Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner.
5. **Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, incomplete or inaccurate, this certificate may be modified, suspended or revoked.
6. **Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:
 - a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;
 - b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24 hours) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;
 - c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;
 - d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;

- e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;
- f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.
- g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.
- h. Immediately informing the Commissioner's Inland Water Resources Division at (860) 424-3019 and the U.S. Army Corps of Engineers at (978) 318-8879, of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the following information:
 - (i) the provision(s) of this certificate that has been violated;
 - (ii) the date and time the violation(s) was first observed and by whom;
 - (iii) the cause of the violation(s), if known
 - (iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
 - (v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
 - (vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
 - (vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with condition 7 of this certificate.

For information and technical assistance, contact the DEEP Land and Water Resources Division at (860) 424-3019.

7. Unconfined Instream Work; Installation and Removal of Confining Structures.

- Unconfined instream work is limited to the period June 1 through September 30.
- Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.

- The removal of such confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.
 - The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.
 - Once a work area has been confined, in-water work within the confined area is allowed any time of the year.
8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

9. **Submission of Documents.** The date of submission to the Commissioner of any document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

Director, Land and Water Resources Division
Bureau of Water Protection and Land Reuse
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

May 29, 2020

Regulatory Division
File Number: NAE-2019-01746
CT DEEP File Number: 201908105-PCN

Kimberly Lesay
Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, Connecticut 06131
Kimberly.Lesay@ct.gov

Dear Kimberly Lesay:

We have reviewed your application to conduct culvert maintenance work. This project is located in three separate waterways along I-395 in Norwich, Connecticut, and further described as follows:

Repair of culvert 06795 carrying Hammer Brook beneath I-395. The project requires impacts to the surrounding wetlands for the rehabilitation of Bridge No. 06795. The project consists of installing a 4-inch thick reinforced concrete lining along the full length of the culvert invert. Concrete cut-off and return walls will be constructed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the culvert in order to maintain the existing headwater elevation. At the inlet, salvaged natural streambed material will be regraded to raise the streambed to the new invert elevation. A preformed riprap scour hole will be placed at the outlet to prevent additional scour. The construction of permanent access roads is required to access the culvert. These access roads will have minor impacts to the adjacent wetlands. All temporary disturbed areas will be revegetated after the completion of construction. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06795 I-395 Over Hammer Brook, (Site No. 1)," on 8 sheets, and dated "6/25/2019."

Repair of culvert 06796 carrying Byron Brook beneath I-395. The project requires impact to the channel and surrounding wetlands for the repair of the existing culvert. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54-inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Salvaged natural streambed material will be used to grade the streambed to the new invert elevation. The construction of permanent access roads is required to access the culvert. These access roads will have some temporary and permanent impacts to the adjacent wetlands. All temporary disturbed areas will be revegetated after the completion of construction. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06796 I-395 Over Byron Brook, (Site No. 2)," on 7 sheets, and dated "6/24/2019."

Repair of culvert 06797 carrying UNT beneath I-395. The project requires impacts to the channel for the replacement of the existing culvert. Work within the UNT will include installation of new culvert and its cut-off walls, flared wingwalls, and beveled opening at the inlet. Salvaged natural streambed material will be placed at the culvert inlet and outlet. The new proposed box culvert will contain 1 foot of natural streambed material. The brook will be regraded and realigned to its original course before the construction of I-395. The existing culvert will be discontinued and filled with low strength material. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06797 I-395 Over Unnamed Brook, (Site No. 3)," on 8 sheets, and dated "6/27/2019."

Based on the information you have provided, we verify that the activity is authorized under General Permit No. 19 of the enclosed August 19, 2016 Federal permit known as the Connecticut General Permits (GPs).

Please review the enclosed GPs and general conditions carefully to be sure that you and whoever does the work understand its requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with any special condition provided above and all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on August 19, 2021. You must commence or have under contract to commence the work authorized herein by August 19, 2021, and complete the work by August 19, 2022. If not, you must contact this office to determine the need for further authorization *before* beginning or continuing the activity. We recommend that you contact us *before* this authorization expires to discuss reissuance. Please contact us immediately to discuss modification of this authorization if you change the plans or construction methods for work within our jurisdiction. We must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

The Connecticut Department of Energy & Environmental Protection (DEEP) has issued a Water Quality Certification (WQC) for this project, as required under Section 401 of the Clean Water Act, based on their review of the project.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Please contact Alex Kostra, of my staff, at (978) 318-8651 if you have any questions.

Sincerely,

Handwritten signature of Kevin R. Kotelly in black ink.

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosure:

cc:

CT DEEP, Chief, Land & Water Resources Division, john.natale@ct.gov

Nate Margason, U.S. EPA, Region 1, Boston, Massachusetts, margason.nathan@epa.gov



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

Phone: (860) 594-2157

860-594-2931

June 26, 2019

Ms. Susan Lee
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Subject: State Project No. 103-266
Bridge 06796: Interstate 395 over Byron Brook
City of Norwich

Dear Ms. Lee:

Enclosed please find the Section 404 permit application for the General Permit 19 – Stream, River and Brook Crossings for your review and approval. An application for a 401 Water Quality Certification (via the Connecticut Addendum) was previously submitted to the Connecticut Department of Energy and Environmental Protection under a separate cover letter for processing. Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at 860-594-2157.

Very truly yours,

A handwritten signature in blue ink that reads "Kimberly C. Lesay".

Kimberly C. Lesay
Transportation Assistant Planning Director
Bureau of Policy and Planning

Attachments
cc: Nathan Margason – USEPA

Naomi C. Hodges/nch

bcc: Kimberly C. Lesay

Andrew H. Davis – Chris Samorajczyk – Alexander T. Finch

Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin

Robert E. Obey – Eileen Ego (District 2)

Don Wurst – Aaron Foster (CME)

U.S. Army Corps of Engineers (USACE)
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
 33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -
 OMB No. 0710-0003
 Expires: 01-08-2018*

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at . Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website:

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
--------------------	----------------------	------------------	------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - Connecticut Department of Transportation E-mail Address - kimberly.lesay@ct.gov	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- 2800 Berlin Turnpike City - Newington State - CT Zip - 06131 Country - USA	9. AGENT'S ADDRESS: Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax 860-594-2931 860-594-3028	10. AGENTS PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT

DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) Repair of culvert 06796 carrying Byron Brook beneath I-395 located in Norwich, Connecticut	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Byron Brook	14. PROJECT STREET ADDRESS (if applicable) Address N/A on Interstate-395
15. LOCATION OF PROJECT Latitude: °N 41°34'40.09" Longitude: °W 72° 4'33.94"	City - Norwich State- CT Zip- 06360
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID N/A Municipality Section - Township - Range -	

17. DIRECTIONS TO THE SITE

The project site is Interstate 395 over Byron Brook in Norwich, CT. Directions from the US Army Corps of Engineers New England District Main Office include: MA-2A E to I-95 S. Then take exit 25 to I-90 W. Take exit 10 toward MA-12 N, and keep right at the fork to merge onto I-395 S. The culvert located approximately 0.42 miles south (along I-395) of the Lawler Lane overpass, and approximately 0.72 miles north (along I-395) of the Scotland Road overpass.

18. Nature of Activity (Description of project, include all features)

Please See Attached.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of this project is to address the structural deficiencies identified in inspection. Bridge No. 06796 is considered to be structurally deficient due to presence of perforations. The pipe structure is in poor condition and exhibits spotty areas of asphalt coating loss below the waterline, with heavy laminar rust and minor section loss. Also, there is a 3 foot long x 6 inch high perforation in steel at outlet below waterline with backfill material spilling through. This project also has the presence of a beaver dam downstream, which has backed water up into the cell. The purpose is to address the structural deficiencies while minimizing impacts on the existing conditions.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

The project requires impacts to the channel and surrounding wetlands for the repair of the existing culvert. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54 inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Salvaged natural streambed material will be used to grade the streambed to the new invert elevation. The construction of permanent access roads is required to access the culvert. These access roads will have some temporary and permanent impacts to the adjacent wetlands. All temporarily disturbed areas will be revegetated after the completion of construction. A planting has been included in the Environmental Permit Plan Set under PMT-07.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
-------------------------------	-------------------------------	-------------------------------

See Attached.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See Attached.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

The project limits disturbance to the channel of Byron Brook at the existing bridge and at the inlet and outlet of the culvert. See attached description for additional information.

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- Carolina I. Dabdoub, 29 Wales Road

City - Rocky Point State - NY Zip - 11778

b. Address- Bryon Brook Country Club LLC, 649 Route 25A, Suite 1

City - Norwich State - CT Zip - 06360

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CTDEEP	PGP Addendum		Concurrently		
CTDEEP	Water Res. Const. GP		Post PCN Approval		

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

W. H. Holl Director, for Thomas Maziarz 6/27/2019
 SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ACOE Block 18: Nature of Activity

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06796 Culvert Carrying Byron Brook under Interstate 395
Norwich, Connecticut

Bridge No. 06796, a 72 inch diameter asphaltic coated corrugated metal pipe (ACCOMP) culvert, conveys Byron Brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over Byron Brook. The roadway for Bridge No. 06796 has a functional classification of "Urban Interstate". The total structure length of the bridge is 211 feet. The culvert is situated below the roadway, positioned underneath approximately 20 feet of fill. There are reinforced concrete headwalls and wingwalls at both ends of the culvert. The dimension of both headwalls is approximately 20.7 feet in length and 9.9 feet in height. The dimension of the wingwalls at the inlet and outlet is approximately 5.77 feet in length and 6.1 feet in height. Metal beam guiderails extend along the western portion of the roadway, from the approaches and continue over the culvert. The existing ACCOMP structure results in approximately 1.5 feet of upstream backwater above the natural profile and has adequate freeboard. The existing culvert is considered to be structurally deficient due to the presence of coating loss and perforation to the pipe and requires rehabilitation. The existing concrete headwalls and wingwalls also exhibit areas with deterioration. The proposed culvert rehabilitation is part of State Project No. 103-266 and is to be repaired in conjunction with Bridges No. 06795 and 06797, also located along I-395.

Byron Brook has a drainage area of 0.84 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The watershed is located in the northeastern portion of Norwich and can be characterized as largely forested along with developed area, forested wetland area, agricultural land, grasses, and water (CLEAR Land Use 2015). Byron Brook flows southeast to northwest and ultimately discharges to a swamp area beyond the state right-of-way. The watercourse of Byron Brook a permanently flooded perennial stream with unconsolidated bottom. Wetlands within the project area are impacted by beaver activity and has caused ponding.

The project proposes the slip lining of the existing 72 inch diameter pipe culvert to be lined with a 54 inch interior diameter (59.4 inch outer diameter) high-density polyethylene (HDPE) pipe. The annular space between the existing and new pipe will be grouted with low pressure grout. The existing reinforced concrete headwalls and wing-walls will be repaired. The proposed dimensions of the headwalls and wingwalls will remain the same as existing conditions. Existing natural streambed material will be regraded at the inlet and outlet to raise the streambed to the new invert elevation. Subsequent to construction, all temporarily disturbed areas will be restored. The proposed roadway width, alignment and profile will match all existing conditions. The slip lining repair will reduce the hydraulic opening by approximately 44%. The model results show that the reduction in the hydraulic opening results in increased water surface elevations upstream of the crossing. The proposed water surface elevations are not expected to adversely impact existing structures on properties adjacent to the site, as the land upstream is undeveloped. The increase in water surface elevation at the culvert inlet will not impact I-395 and maintains over 20.0 feet of freeboard in the modeled conditions for the 50-year design discharge. The project is scheduled to be constructed in the Spring of 2020. It is anticipated to be completed in one construction season.

Construction Sequencing:

In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed at the inlet and outlet. A temporary staging area will be constructed at the inlet. The construction is anticipated to take place in one stage. In Stage 1, the sedimentation and erosion control measures will be established. A temporary water-handling bypass pipe will be installed within the existing culvert and temporary water-handling-cofferdam surrounding the inlet and outlet will be installed. Water will be confined to the temporary bypass pipe for work to be performed in the dry. During this step, the interior of the culvert will be power-washed and voids filled. Water from the power washing operations shall be completely contained and pumped to a settling basin. Subsequent to the power-washing, the temporary water-handling-cofferdam and bypass pipe will be removed for the slip-lining to occur in wet conditions. It is anticipated that the contractor will insert the new pipe from either the inlet or outlet access area; however, if heavy construction equipment within the watercourse is necessary, the contractor is required to temporarily utilize timber mats for channel bottom protection. Once the new 54 inch HDPE pipe is installed, the temporary bypass pipe will be relocated into the new pipe and water-handling-cofferdams reinstalled to perform the proposed grouting of the annular space between the existing pipe and the proposed pipe, repairs to the headwalls and wingwalls, as well as the regrading of the existing natural streambed material at the inlet and outlet to bring the streambed to the new invert elevation. Once construction is complete the temporary materials, water-handling-cofferdam and bypass pipe will be removed to restore flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatering wastewater located within the cofferdam to a temporary sedimentation basin located in upland areas. Any unconfined instream activities will be limited to June 1st to September 30th. Any wetland impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. All disturbed areas will be restored at the completion of construction. A native planting plan has been included in the permit plans on PMT-07. Sedimentation and erosion control measures are to be removed upon permanent stabilization.

Additional permits being sought includes a State of Connecticut Addendum to the Army Corps of Engineers General Permit and CTDEEP General Permit for Water Resources Construction Activities.

ACOE Block 21: Types of Material Being Discharged and Amount of Each Type in Cubic Yards

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06796 Culvert Carrying Byron Brook under Interstate 395
Norwich, Connecticut

Type of Material	Amount Discharged	Comment
Embankment Fill	14 CY	For the construction of the access roads.
Streambed Material	10 CY	To grade the streambed to the new culvert invert elevation at the inlet and outlet.
Slip-Lining Grout	90 CY	To fill the annular space between the existing AACMP and the new HDPE pipe.
54-inch I.D. HDPE Slip-Lining	2 CY	Slip-lining pipe.
Processed Aggregate	70 CY	For the construction of access road.

ACOE Block 22: Surface Area in Acres of Wetlands or Other Waters Filled

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
 Rehabilitation of Bridge 06796 Carrying Byron Brook under Interstate 395
 Norwich, Connecticut

The proposed project results in 1,550 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads. The project results in 1,050 square feet (0.02 acres) of permanent watercourse impacts. This number accounts for the slip-lining of the culvert and grading of the streambed at the inlet and outlet. Though this improvement is described as a permanent impact, the watercourse will remain. The project will not result in any permanent conversion of watercourse to upland. Temporary impacts include the area necessary for construction access and water handling and the proposed temporary staging area located at the culvert's inlet. Temporary impact to wetlands is 2,200 square feet (0.05 acres) and is 1,250 square feet (0.03 acres) of temporary impacts to the watercourse. The total wetland and watercourse impact is 6,050 square feet (0.14 acres). Impacts are described within the table below:

Bridge No. 06796 Wetland and Watercourse Impact Table			
	Wetland	Watercourses	Total
Temporary	2,200 sqft (0.05 ac)	1,250 sqft (0.03 ac)	3,450 sqft (0.08 ac)
Permanent	1,550 sqft (0.04 ac)	1,050 sqft (0.02 ac)	2,600 sqft (0.06 ac)
Total	3,750 sqft (0.09 ac)	2,300 sqft (0.05 ac)	6,050 sqft (0.14 ac)

ACOE Block 23: Description of Avoidance, Minimization, and Compensation

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06796 Culvert Carrying Byron Brook under Interstate 395
Norwich, Connecticut

The project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing existing streambed material at the inlet and outlet of the culvert to grade the streambed to the new invert elevation. There will be continuous flow of water at the project culvert during construction, and any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed access roads and staging areas associated with the roads. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. A planting plan has been included in the permit plans on PMT-07. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Attachments

Attachment A: Location Maps

- USGS Map
- Aerial Map

Attachment B: Site Permit Plans

Attachment C: Site Photos

Attachment D: Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

Attachment E: Northern Long-Eared Bat Consultation

Attachment F: Fisheries Sign-off

Attachment G: State Historic Preservation Office (SHPO) Exemption

Attachment H: Tribal Historic Preservation Office (THPO) Exemption

Attachment I: Interagency Coordination Meeting Notes

Attachment A

Location Maps

- USGS Map
- Aerial Map

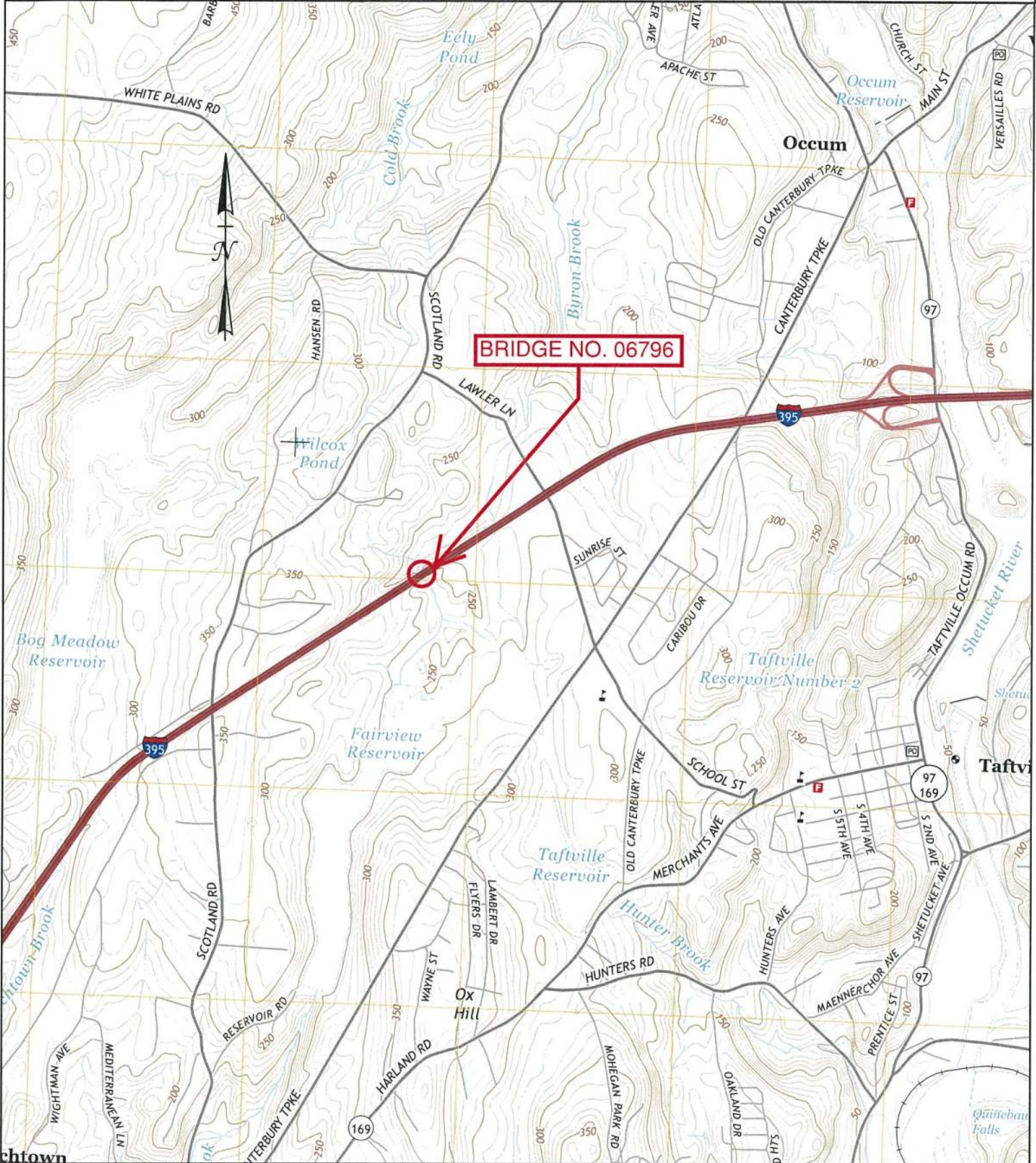


Engineers
Designers
Consultants
Planners
Scientists
401 East River Street • Floor 4 • East Hartford, CT 06108
T 860 234 4100 • www.cmeengineering.com

USGS QUADRANGLE MAP

BRIDGE NO. 06796 IN NORWICH, CT

INTERSTATE 395 OVER BYRON BROOK



BRIDGE NO. 06796



USGS MAP #72
NORWICH



Created: 2019

1 INCH = 2,000 FEET





CONSTRUCTION MANAGEMENT ENGINEERS
 1000 WEST STREET, SUITE 200
 NORWICH, CT 06250
 TEL: 860.881.1111
 WWW.CME-CT.COM

DETAILED AERIAL MAP

BRIDGE NO. 06796 IN NORWICH, CT

INTERSTATE 395 OVER BYRON BROOK



CTDEEP, USGS, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENTP, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



CTECO AERIAL
 MAP
 NORWICH,
 CONNECTICUT



1 INCH = 500 FEET



Attachment B
Site Permit Plans



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

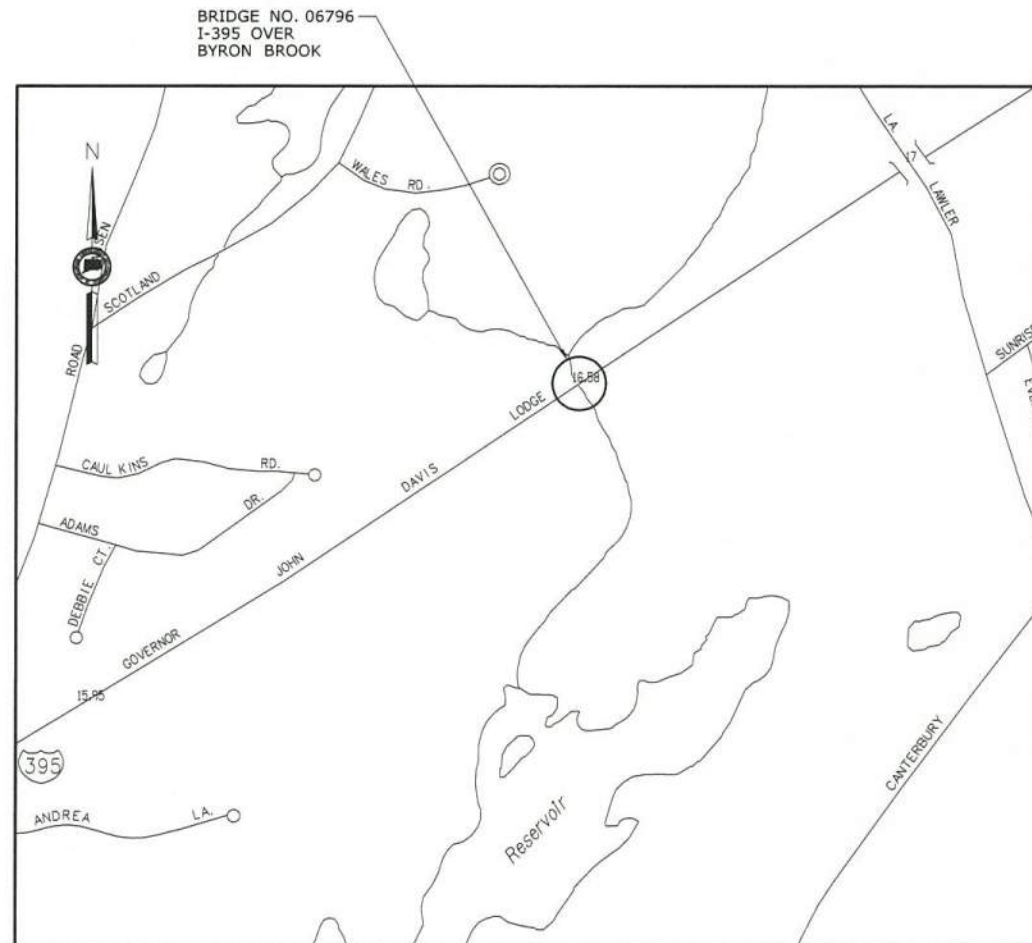
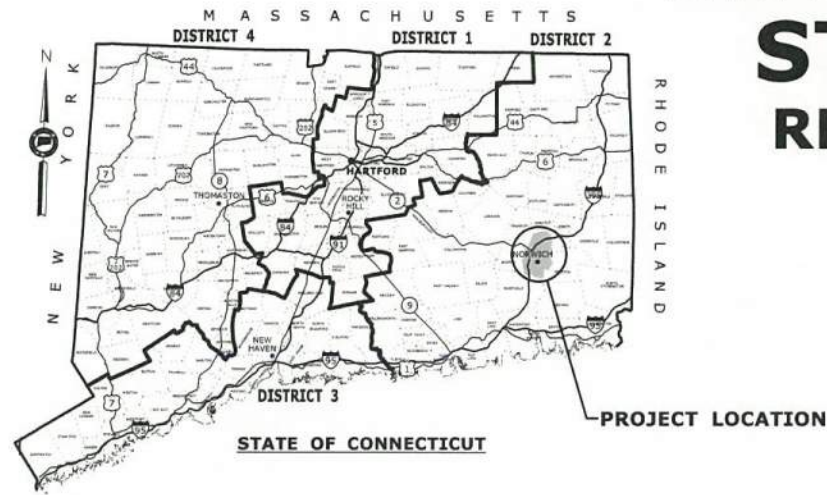
STATE PROJECT NO. 103-266

REHABILITATION OF BRIDGE NO. 06796

I-395 OVER BYRON BROOK

(SITE No. 2)

IN THE CITY OF NORWICH



LOCATION PLAN

SCALE: 1" = 500'

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06796 TITLE SHEET
PMT-02	BR. NO. 06796 GENERAL SITE PLAN
PMT-03	BR. NO. 06796 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06796 CROSS-SECTIONS
PMT-05	BR. NO. 06796 ELEV. & SECTION PLAN
PMT-06	BR. NO. 06796 STAGING AND WATER HANDLING PLAN
PMT-07	BR. NO. 06796 PERMIT PLANTING PLAN

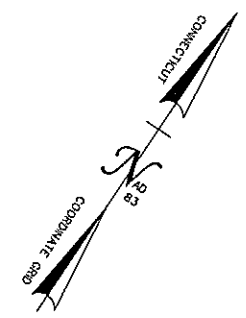
LOUIS BERGER US, Inc
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Robert Lin
2019.06.24
15:23:59-04'00'

ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/24/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JPM CHECKED BY: - SCALE AS NOTED	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)	TOWN: NORWICH	PROJECT NO. 103-266
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/24/2019	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Louis Berger US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	DRAWING TITLE: BR. NO. 06796 TITLE SHEET	DRAWING NO. PMT-01	SHEET NO.	FILENAME: ...UHW_MSH_0103_0266_06796TSH.dgn	SHEET NO.



BRIDGE 06796 LIMIT OF CONSTRUCTION

BRIDGE 06796 LIMIT OF CONSTRUCTION

LIMITS OF CLEARING AND GRUBBING

SEDIMENTATION CONTROL SYSTEM (TYP.)

CONSERVATION SEEDING FOR SLOPES (TYP.)

12" NATURAL STREAMBED MATERIAL (TYP.)

I-395 SOUTHBOUND

I-395 NORTHBOUND

211 LF 54" HDPE SLIP-LINING PIPE WITH SLIP-LINING GROUT BETWEEN PIPES

PERMANENT ACCESS ROAD (TYP.)

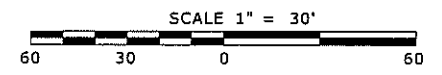
LIMITS OF CLEARING AND GRUBBING

R.O.W. LIMITS (TYP.)

STATE/FEDERAL WETLANDS

LEGEND:

- OHW - ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- o - o - SEDIMENTATION CONTROL SYSTEM (SCS)

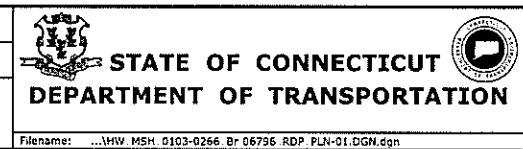


ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/24/2019

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

DESIGNER/DRAFTER: MAM
CHECKED BY: MJM



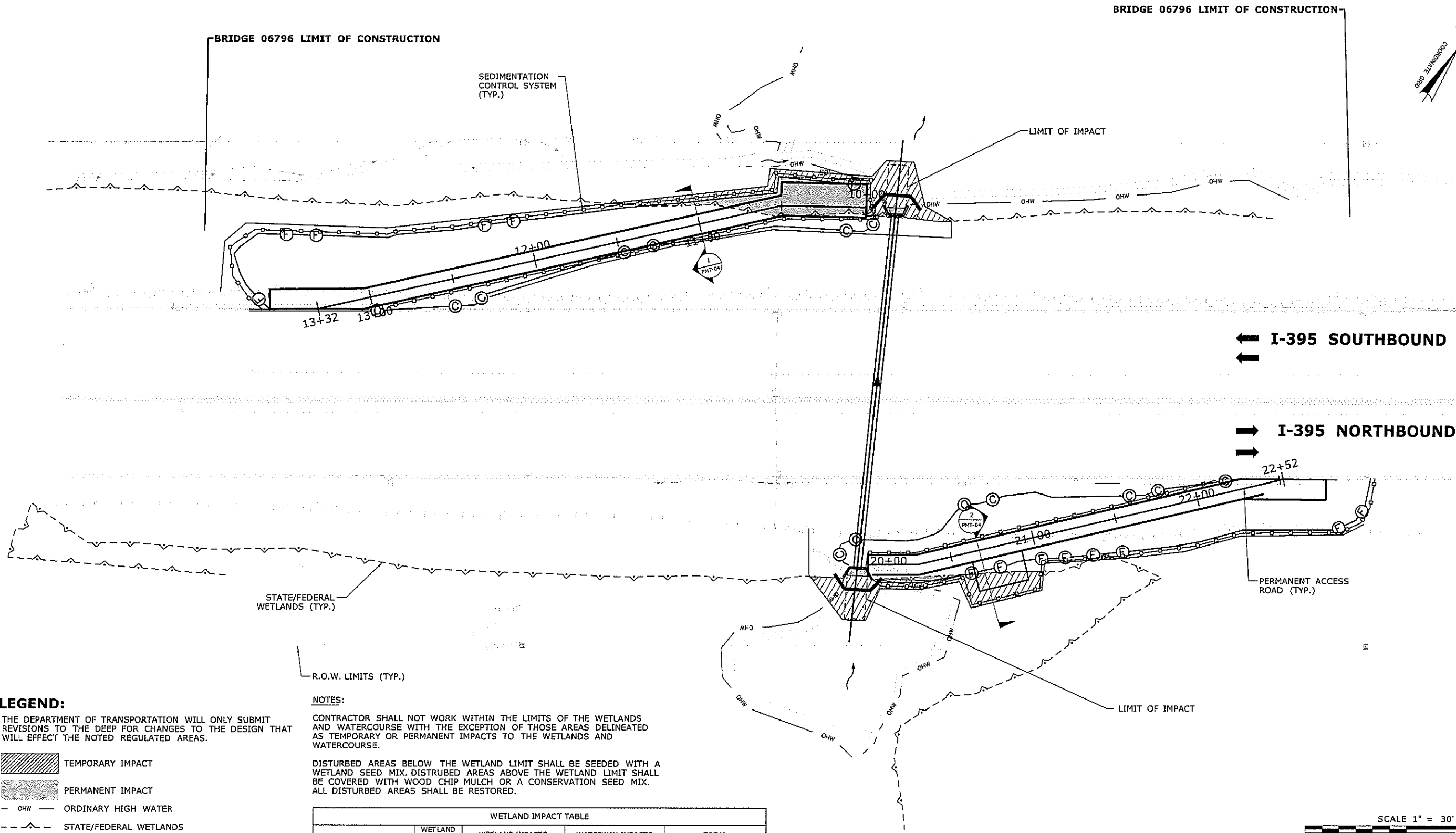
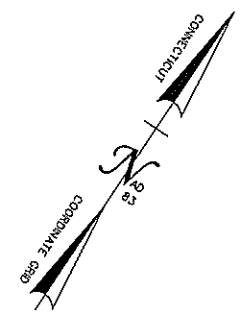
SIGNATURE/BLOCK:
LOUIS BERGER US, Inc
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NEW YORK

PROJECT TITLE:
**REHABILITATION OF BRIDGE NO. 06796
I-395 OVER BYRON BROOK
(SITE No. 2)**

TOWN:
NORWICH
DRAWING TITLE:
**BR. NO. 06796
GENERAL SITE PLAN**

PROJECT NO.
103-266
DRAWING NO.
PMT-02
SHEET NO.

Filename: ...LHW_MSH_0103-0266_Br 06796_RDP_PLN-01.DGN.dgn



LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

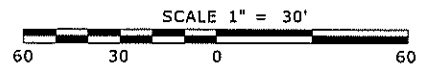
- TEMPORARY IMPACT
- PERMANENT IMPACT
- OHW — ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

NOTES:

CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE.

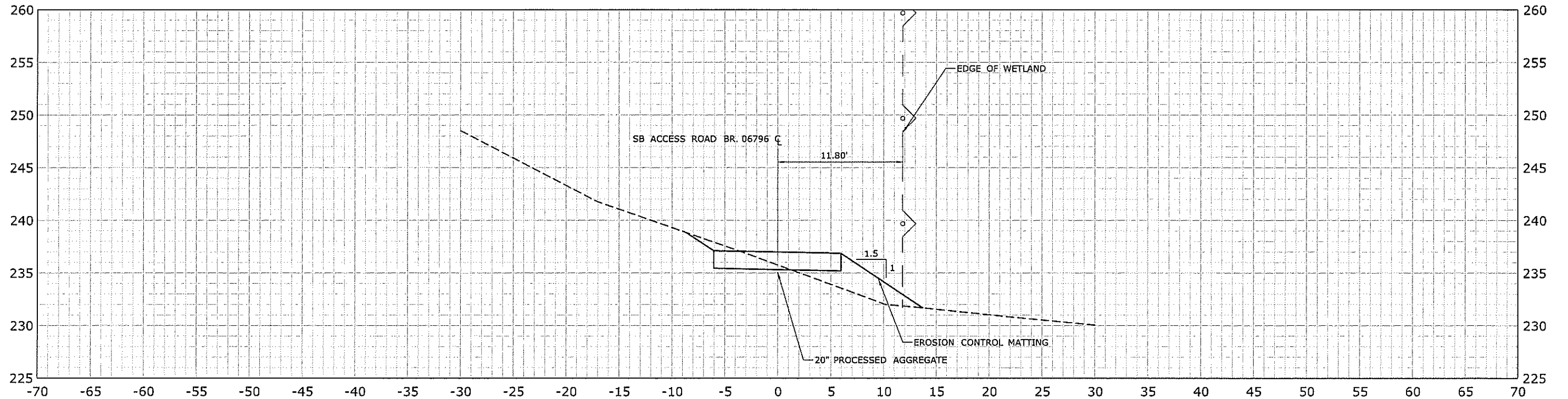
DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

WETLAND IMPACT TABLE				
	WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS	2	1550 S.F. (0.04 AC.)	1050 S.F. (0.02 AC.)	2600 S.F. (0.06 AC.)
TEMPORARY IMPACTS	2	2200 S.F. (0.05 AC.)	1250 S.F. (0.03 AC.)	3450 S.F. (0.08 AC.)
TOTAL IMPACTS		3750 S.F. (0.09 AC.)	2300 S.F. (0.05 AC.)	6050 S.F. (0.14 AC.)

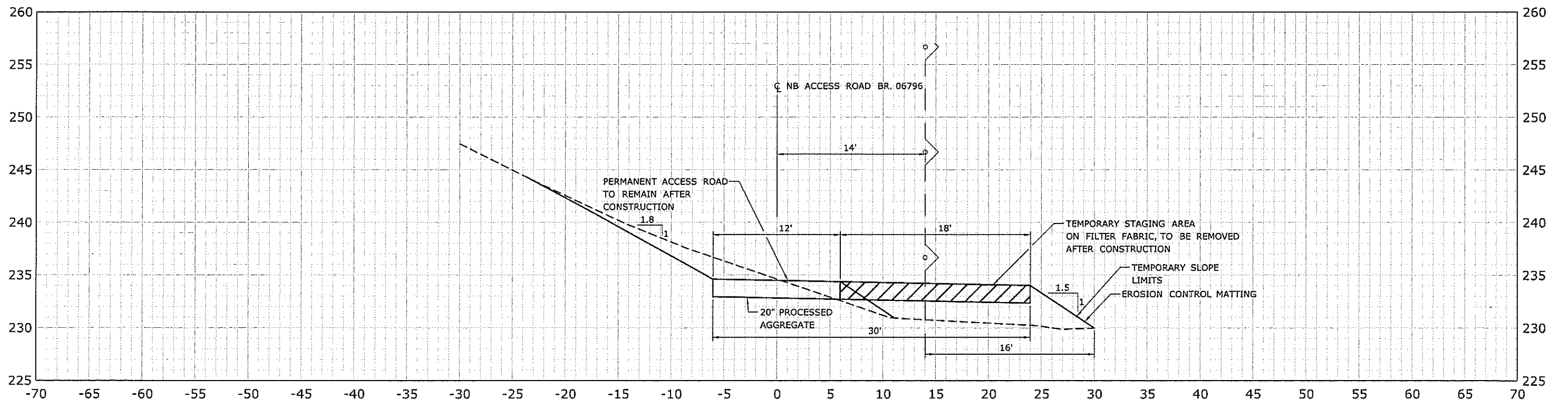


ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/24/2019

<p>DESIGNER/DRAFTER: MAM</p> <p>CHECKED BY: MJM</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p><small>Filename: ...HW MSH 0103-0266 Br 06796 WIP PLN-01.DGN.dgn</small></p>	<p>SIGNATURE/BLOCK:</p> <p>LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE:</p> <p>REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)</p>	<p>TOWN:</p> <p>NORWICH</p> <p>DRAWING TITLE:</p> <p>BR. NO. 06796 WETLAND/WATERCOURSE IMPACT PLAN</p>	<p>PROJECT NO.</p> <p>103-266</p> <p>DRAWING NO.</p> <p>PMT-03</p> <p>SHEET NO.</p>
<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>					
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/24/2019	



1
ACCESS ROAD SECTION
PMT-03



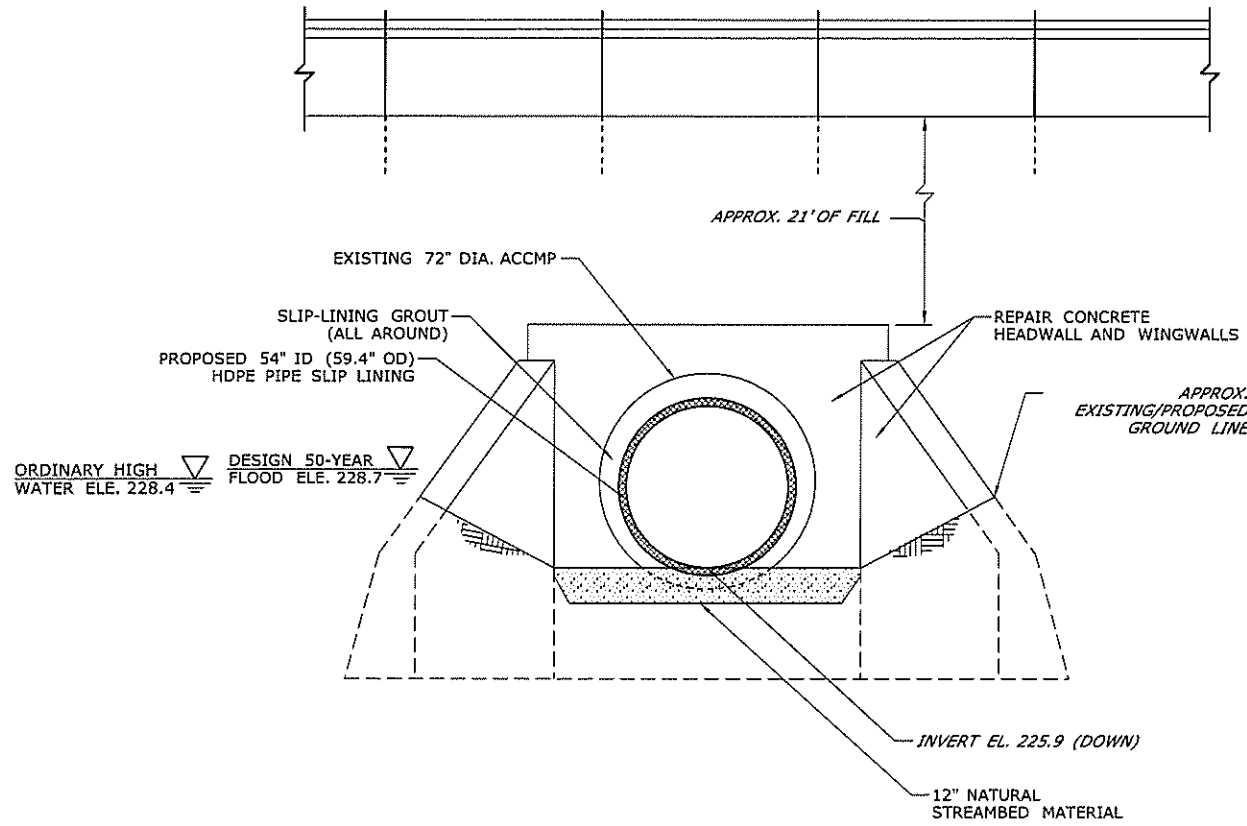
2
ACCESS ROAD SECTION
PMT-03

ENVIRONMENTAL PERMIT PLANS

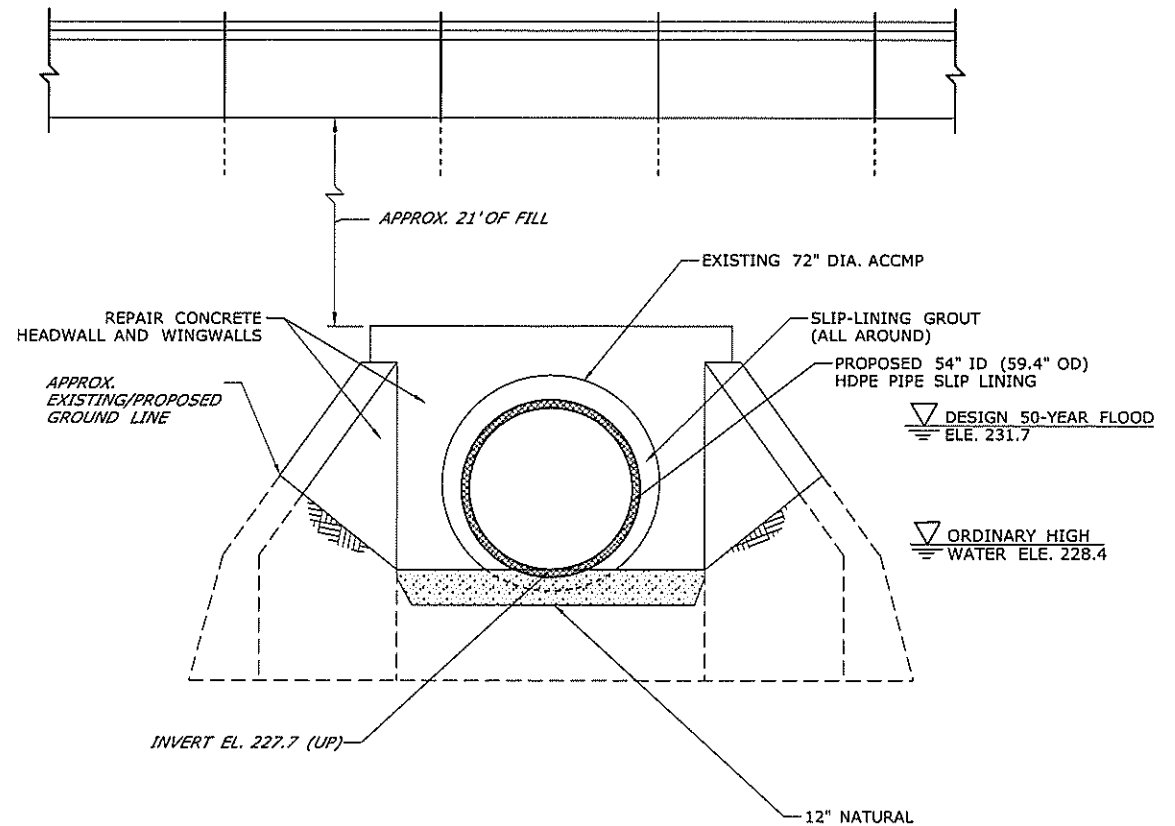
PLAN DATE 6/24/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.			DESIGNER/DRAFTER: JCT CHECKED BY: MAM VERT. SCALE IN FEET 	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-04 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/24/2019	Filename: ...\\HW_MSH_0103-0266_Br 06796_XSEC_PLN-01.DGN.dgn			

DRAWING TITLE:
**BR. NO. 06796
CROSS-SECTIONS**



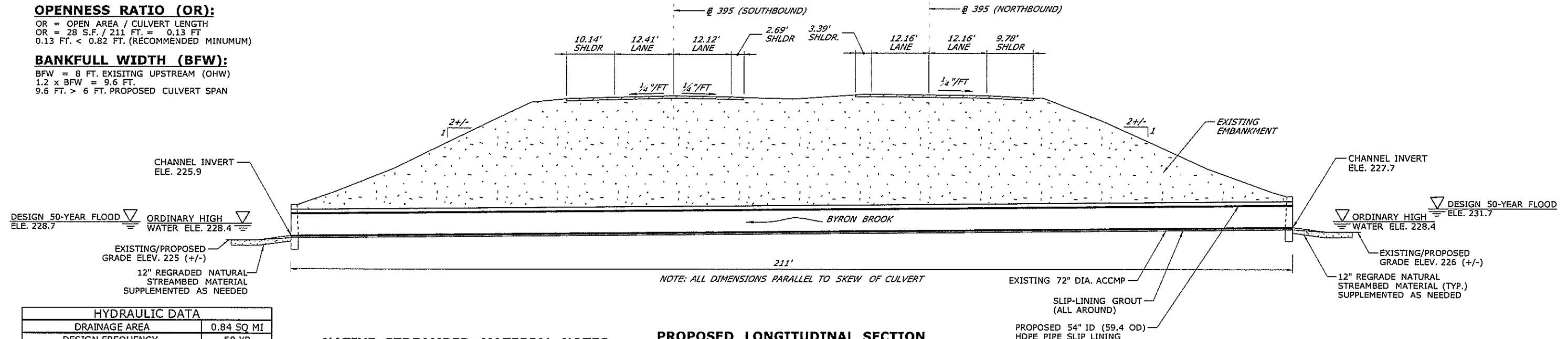
OUTLET ELEVATION
SCALE: 3/8" = 1'-0"



INLET ELEVATION
SCALE: 3/8" = 1'-0"

OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 28 S.F. / 211 FT. = 0.13 FT
 0.13 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):
 BFW = 8 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 9.6 FT.
 9.6 FT. > 6 FT. PROPOSED CULVERT SPAN



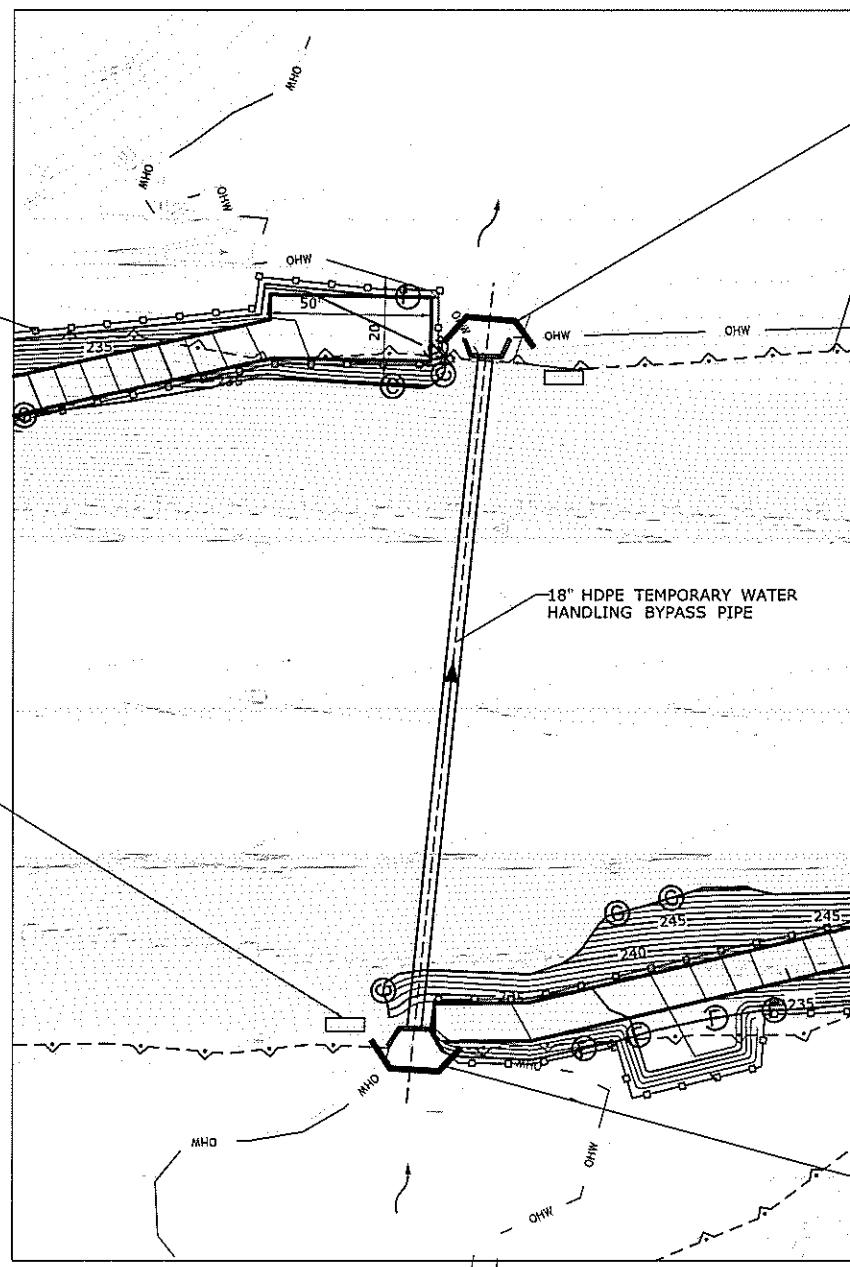
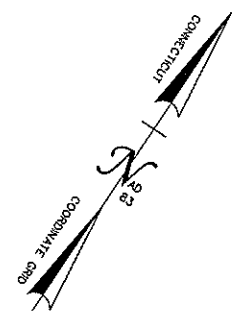
PROPOSED LONGITUDINAL SECTION
SCALE: 3/32" = 1'-0"

- NATIVE STREAMBED MATERIAL NOTES:**
1. NATIVE STREAMBED MATERIAL EXCAVATED SHALL BE STOCKPILED AND THEN REPLACED WITHIN DISTURBED AREAS AT INLET AND OUTLET TO THE DEPTH SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER AND IN ACCORDANCE WITH THE PERMIT DOCUMENTS.
 2. THE STOCK PILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.

HYDRAULIC DATA	
DRAINAGE AREA	0.84 SQ MI
DESIGN FREQUENCY	50 YR
DESIGN DISCHARGE	75 CFS
AVERAGE DAILY FLOW ELEVATION	228.4 FT
UPSTREAM DESIGN SURFACE WATER ELEVATION	231.7 FT
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	228.7 FT

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/24/2019

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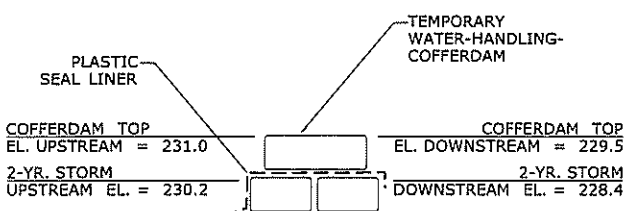


TEMPORARY WATER-HANDLING-COFFERDAM
MIN. ELEV. = 229.5

STATE/FEDERAL WETLANDS (TYP.)

18" HDPE TEMPORARY WATER HANDLING BYPASS PIPE

TEMPORARY WATER-HANDLING-COFFERDAM
MIN. ELEV. = 231.0



COFFERDAM TOP EL. UPSTREAM = 231.0
COFFERDAM TOP EL. DOWNSTREAM = 229.5
2-YR. STORM UPSTREAM EL. = 230.2
2-YR. STORM DOWNSTREAM EL. = 228.4

TEMPORARY DEWATERING BASIN (APPROX. LOCATION) (TYP.)

SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS ROADS.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY WATER HANDLING FACILITIES, INCLUDING TEMPORARY WATER-HANDLING-COFFERDAM AND TEMPORARY BYPASS PIPE.
5. POWERWASH INTERIOR OF PIPE AND FILL VOIDS (SEE NOTES).
6. PARTIALLY REMOVE TEMPORARY WATER-HANDLING-COFFERDAM, AND REMOVE BYPASS PIPE.
7. INSTALL TEMPORARY TIMBER MATTING TO PROTECT STREAMBED (IF REQUIRED, SEE WATER HANDLING NOTES) AND INSTALL 54" HDPE LINING PIPE IN THE WET. AFTER PIPE IS INSTALLED, REMOVE TEMPORARY TIMBER MATTING (IF UTILIZED).
8. REBUILD TEMPORARY WATER-HANDLING-COFFERDAM AND REINSTALL TEMPORARY BYPASS PIPE.
9. PERFORM HEADWALL AND WINGWALL REPAIRS AND GROUT ANNULAR SPACE AROUND LINING.
10. REGRADE EXISTING STREAMBED MATERIAL TO NEW INVERT ELEVATION AT INLET AND OUTLET.
11. REMOVE TEMPORARY WATER-HANDLING-COFFERDAM AND BYPASS PIPE.
12. RESTORE TEMPORARILY DISTURBED AREAS AND INSTALL NATIVE PLANTS ACCORDING TO PMT-07.
13. REMOVE EROSION AND SEDIMENTATION CONTROL UPON PERMANENT STABILIZATION.

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY BYPASS PIPE AS SHOWN DURING CONSTRUCTION OF THE NEW LINING.

EQUIPMENT SHALL NOT BE PERMITTED IN THE STREAM WHEN TEMPORARY BYPASS PIPE IS NOT IN PLACE WITHOUT APPROVAL FROM THE ENGINEER.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

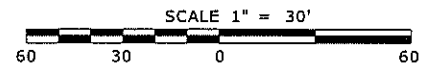
WATER FROM POWERWASHING OPERATIONS MUST BE COMPLETELY CONTAINED AND PUMPED INTO A SETTLING BASIN.

TIMBER MATTING IS REQUIRED WHEN UTILIZING MACHINERY WITHIN THE WATERCOURSE. LIMITS MUST BE WITHIN PERMITTED IMPACT AREAS (SEE PMT-03).

WATER HANDLING PLAN

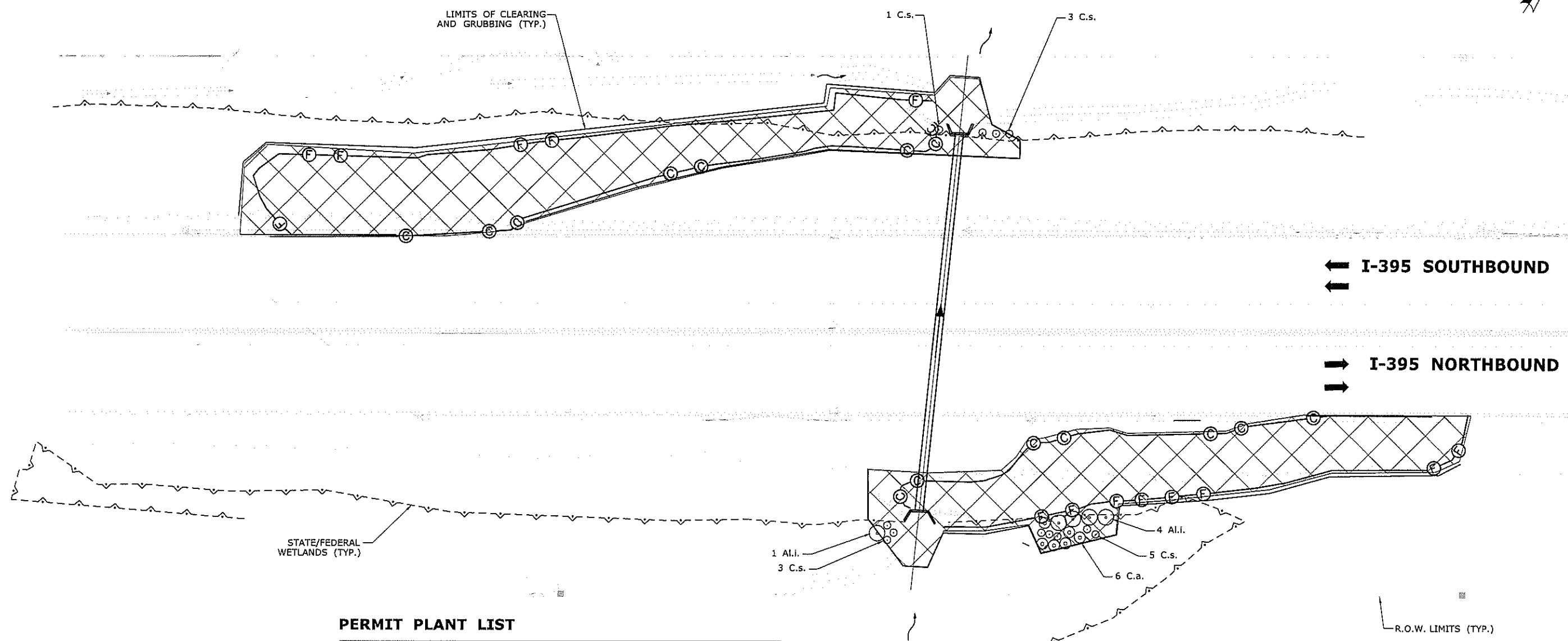
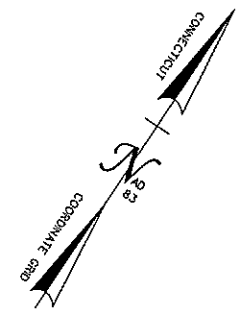
TEMPORARY HYDRAULIC DATA 06796	
AVERAGE DAILY FLOW	2 CFS
AVERAGE SPRING FLOW	3 CFS
2-YEAR FREQUENCY DISCHARGE	5 CFS
TEMPORARY DESIGN DISCHARGE	5 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	230.2 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	228.4 FT

- LEGEND:**
- OHW - ORDINARY HIGH WATER
 - - - - - STATE/FEDERAL WETLANDS
 - SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/24/2019

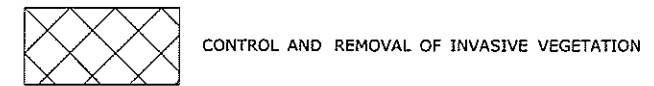
<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>DESIGNER/DRAFTER: MAM CHECKED BY: MJM</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>SIGNATURE/BLOCK: LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)</p>	<p>TOWN: NORWICH</p> <p>DRAWING TITLE: BR. NO. 06796 WATER HANDLING PLAN</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-06</p> <p>SHEET NO.</p>
<p>REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/24/2019</p>	<p>Filename: ...JHW_MSH_0103-0266_Br 06796_WHP_PLN-01.DGN.dgn</p>					



PERMIT PLANT LIST

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	WETLAND INDICATOR
Al.i.	5	Speckled Alder	<i>Alnus incana</i>	18"-24" HT. B.B.	3'-5' o.c.	FACW
C.a.	6	Silky Dogwood	<i>Cornus amomum</i>	18"-24" HT. B.B.	3'-5' o.c.	FACW
C.s.	12	Red-Osier Dogwood	<i>Cornus sericea</i>	18"-24" HT. B.B.	3'-5' o.c.	FACW

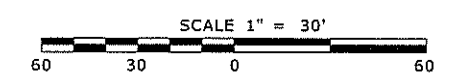
LEGEND:



NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
3. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

NOTE:
SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/24/2019

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REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/24/2019	Filename: ...UHW_MSH_0103-0266_Br_06796_INV_PLN-01.DGN.dgn	DRAWING TITLE: BR. NO. 06796 PERMIT PLANTING PLAN	DRAWING NO PMT-07 SHEET NO.

Attachment C
Site Photos







Ponded area downstream of
culvert outlet, Bridge No. 06796



Attachment D

Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06796 Carrying Byron Brook under Interstate 395
Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06796 in the city of Norwich, Connecticut. Bridge No. 06796 is a 72 inch diameter asphaltic coated corrugated metal pipe (ACCOMP) culvert that conveys Byron Brook under Interstate 395 (I-395). The bridge was originally built in 1956 to allow I-395 to pass over Byron Brook. The total structure is approximately 211 feet long. The culvert is situated below the roadway, underneath approximately 20 feet of fill. The existing culvert is considered to be structurally deficient due to the presence of coating loss and perforation to the pipe and requires rehabilitation. The existing concrete headwalls and wingwalls also exhibit areas with deterioration. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54 inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Project No. 103-266 also includes Bridge Nos. 06795 and 06797. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06795 and 06797 are being processed under separate permits.

Site Information

Byron Brook has a drainage area of 0.84 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The watershed is located in the northeastern portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural land, grasses, and water (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat area. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map number 09011C0204G (Panel 204 of 554), New London County, Connecticut (effective date July 18, 2011), the area of the crossing is located within FEMA Flood Zone X, where areas are subject to inundation with 0.2% chance of flood.

Study Area

Bridge No. 06796 is located on I-395 over Byron Brook, approximately 0.4 miles south of Bridge No. 00279 (Lawler Lane over I-395). Land in the vicinity of the site includes transportation (roadway), forest land, and scrub-shrub wetlands. A pond is located approximately 200 feet upstream of the inlet and is separated by fallen trees and large boulder deposits, which resulted in a shallow pool at the inlet. During the December 2013 state inspection, a beaver dam at the inlet was reported and was subsequently removed by the Department. According to the December 2015 state inspection report, the beaver dam appeared to have been reconstructed continuing to cause inundation. At the outlet, a pond is present, likely due to presence of another beaver dam 2,000 feet further downstream. This pond also appears to back up into the culvert and results in standing water throughout the entire length of the culvert.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are associated with the watercourse that flows through Bridge No. 06796 near the inlet and outlet. Byron Brook flows southeast to northwest and ultimately discharges to a swamp area beyond the state right-of-way. The watercourse of Byron Brook is classified as riverine (R5UBH), permanently flooded perennial stream with unconsolidated bottom. The channel width is mostly straight without a well-defined channel bank. The primary streambed material is silt and sand with deposits of boulders and cobbles. Byron Brook flows through a secondary deciduous forest dominated by red maples and oak trees. Wetlands within the project area are impacted by beaver activity and has caused ponding. At the inlet, there is no mapped wetland within the area, however, there are wetland soils present consistent with those found downstream of the structure. At the outlet, there is a 0.84 acre Freshwater Forested/Shrub Wetland (PFO1E). Immediately located to the east of the outlet's wetland system is a 12.90-acre Freshwater Pond (PABH). This pond is permanently flooded and consists of wetlands and deepwater habitats. The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

Wetlands within the area have a partial tree canopy dominated by Red Maple (*Acer rubrum*) and Northern Red Oak (*Quercus rubra*). The vegetation bordering the ponded area at the inlet include Northern Lady Fern (*Athyrium angustum*) and a *Carex* spp. At the outlet, the dominate wetland species bordering the ponded area is Broadleaf Cattail (*Typha latifolia*) and Sensitive fern (*Onoclea sensibilis*). The area adjacent to the roadway includes trees and saplings of the facultative upland species Northern Red Oak, Eastern Red Cedar (*Juniperus virginiana*), Red Maple, and Black Oak (*Quercus Velutina*). Other species present include Japanese Barberry (*Berberis thunbergii*), Virginia-Creeper (*Parthenocissus quinquefolia*) and Asiatic bittersweet (*Celastrus orbiculatus*).

Soils

Wetland soils present within the project area include areas of mucky mineral and organic material. These soils found within the project area mapped by the Natural Resource Conservation Service (NRCS) predominantly includes Charlton-Chatfield complex with varying percent slopes and is characteristically very rocky. Soils encompassing the culvert inlet and outlet is mapped as Charlton-Chatfield complex (Map #73C). Further north past the culvert outlet is mapped as Catden and Freetown soils (Map #18). Charlton-Chatfield complex (Map #73E) is located east of the project area. The soils associated with I-395 include highway fill material and can be classified as Udorthents-Urban land complex (Map # 306) though not mapped on the NRCS map, these soils were confirmed by wetland delineation.

Functions and Values

The primary wetland functions and values of Byron Brook and wetlands in the project area are fisheries and wildlife habitat, flood flow alteration, and sediment/nutrient retention. The stream channel functions within the culvert are limited to fish and wildlife passage, and flood flow alteration. The field environmental assessment was limited to observations made during wetland delineation. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest. There is a heavy presence of beaver activity within the project area. The proposed project will have very limited effects on wetland function and values in the project area as it pertains to wildlife habitat. The two critical issues with culvert slip lining are alteration of flood flows and impacts to fish passage. This project is designed to minimize changes to the existing conditions and prevent long-term impacts to both flows and fish passage. The design process for this project included hydraulic modeling of the proposed culvert slip lining. The slip lining repair requires

inserting a smaller 54-inch interior diameter corrugated HDPE pipe within the existing culvert. The hydraulic modeling analysis show that the reduction in the hydraulic opening results in an increase of the 50-year water surface elevations upstream of the crossing. The slight increase in water surface elevation at the culvert inlet will remain primarily unchanged with respect to the existing conditions. The proposed water surface elevations are not expected to adversely impact existing structures or properties adjacent to the project site as the land upstream of the structure inlet is largely undeveloped. The hydraulic modeling shows that the proposed culvert maintains approximately 20.0 feet of freeboard in the modeled conditions. The velocities through the slip lined culvert will be slightly increased from the existing velocities through the existing culvert for the range of discharges evaluated. However, backwater from the pond is present at the culvert outlet due to beaver activity and the low slope of the culvert; therefore, no additional culvert outlet protection is proposed.

Short-term effects as a result of construction activities are minimized by:

- Utilizing an erosion and sedimentation control plan.
- Utilizing a water handling plan.
- Adherence to the time-of-year restriction for unconfined in stream work.
- Minimizing work area in the watercourse and wetlands.
- Limiting areas of disturbance in uplands.
- Restoration of temporarily disturbed areas.

Regulatory Impacts

To gain access to the structure to perform the proposed work, permanent access roads will be constructed at the inlet and outlet of Bridge No. 06796 to allow materials and heavy construction equipment to access the culvert. The construction of these access roads will require clearing and grubbing, invasive species control, as well as some permanent impacts to wetlands. A temporary staging area will be constructed along the access road at the inlet of the bridge. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction. To minimize traffic impacts on I-395, the workzone on I-395 will be contained to the shoulder of both the northbound and southbound lanes. Off-peak temporary shoulder and/or lane closures may be used for equipment or construction personnel to enter and exit the access roads, as required.

Construction Access and Water Handling

In order to access the culvert to perform the proposed repairs, permanent access roads will be constructed at the inlet and outlet. A temporary staging area will be constructed at the inlet. The construction is anticipated to take place in one stage. In Stage 1, the sedimentation and erosion control measures will be established. A temporary water-handling bypass pipe will be installed within the existing culvert and temporary water-handling-cofferdam surrounding the inlet and outlet will be installed. Water will be confined to the temporary bypass pipe for work to be performed in the dry. During this step, the interior of the culvert will be power-washed and voids filled. Water from the power washing operations shall be completely contained and pumped to a settling basin. Subsequent to the power-washing, the temporary water-handling-cofferdam and bypass pipe will be removed for the slip-lining to occur in wet conditions. It is anticipated that the contractor will insert the new pipe from either the inlet or outlet access area; however, if heavy construction equipment within the watercourse is necessary, the contractor is required to temporarily utilize timber mats for channel bottom protection. Once the new 54 inch HDPE pipe is installed, the temporary bypass pipe will be relocated into the new pipe and water-handling-cofferdams reinstalled to perform the proposed grouting of the annular space between the existing pipe and the

proposed pipe , repairs to the headwalls and wingwalls, as well as the regrading of the existing natural streambed material at the inlet and outlet to bring the streambed to the new invert elevation. Once construction is complete the temporary materials, water-handling-cofferdam and bypass pipe will be removed to restore flows to the full length of the culvert. As required, dewatering of the work area will include pumping dewatering wastewater located within the cofferdam to a temporary sedimentation basin located in upland areas. Any unconfined instream activities will be limited to June 1st to September 30th. Any wetland impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. All disturbed areas will be restored at the completion of construction. A native planting plan has been included in the permit plans on PMT-07. Sedimentation and erosion control measures are to be removed upon permanent stabilization.

Slip-lining

The project proposes to use a 54 inch interior diameter corrugated HDPE pipe to slip-line the existing culvert. The annular space between the existing and proposed pipes is to be filled with low pressure grout. The slip-lining will result in a very minor change in existing conditions or wetland functions and values. The greatest concern for slip-lining is reducing hydraulic capacity and altering flooding and hydraulic conditions at the culvert. The hydraulic modeling analysis of the culvert was conducted and found that the 50-year water surface elevation will increase by approximately 1.1 feet and will maintain adequate freeboard. The culvert rehabilitation will not result in changes to the hydraulic conditions that will significantly impact flow velocities. The project meets the design criteria stipulated in the CTDOT Drainage Manual.

Fish Passage

The project includes feasible elements designed to minimize design features to fisheries while minimizing channel connectivity impacts from the slip-lining repair. Any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. CTDEEP Fisheries concurred that the proposed project complies with their initial stipulations for the project site. Fisheries design elements include:

- Regrading of salvaged natural streambed material at the inlet and outlet to raise the streambed to the new culvert invert elevation, ensuring that the proposed lining does not create a barrier to fish movement.
- Utilization of an HDPE pipe with interior corrugations to add roughness within the culvert.
- The restoration of disturbed areas.
- Plantings to provide shade for the watercourse.
- Adherence to the time of year restriction.

Proposed Impacts

The proposed project results in 1,550 square feet (0.04 acres) of permanent wetland impacts. This number accounts for the construction of permanent access roads. The project results in 1,050 square feet (0.02 acres) of permanent watercourse impacts. This number accounts for the slip-lining of the culvert and grading of the streambed at the inlet and outlet. Though this improvement is described as a permanent impact, the watercourse will remain. The project will not result in any permanent conversion of watercourse to upland. Temporary impacts include the area necessary for construction access and water handling and the proposed temporary staging area located at the culvert's inlet. Temporary impact to wetlands is 2,200 square feet (0.05 acres) and is 1,250 square feet (0.03 acres) of temporary impacts to the

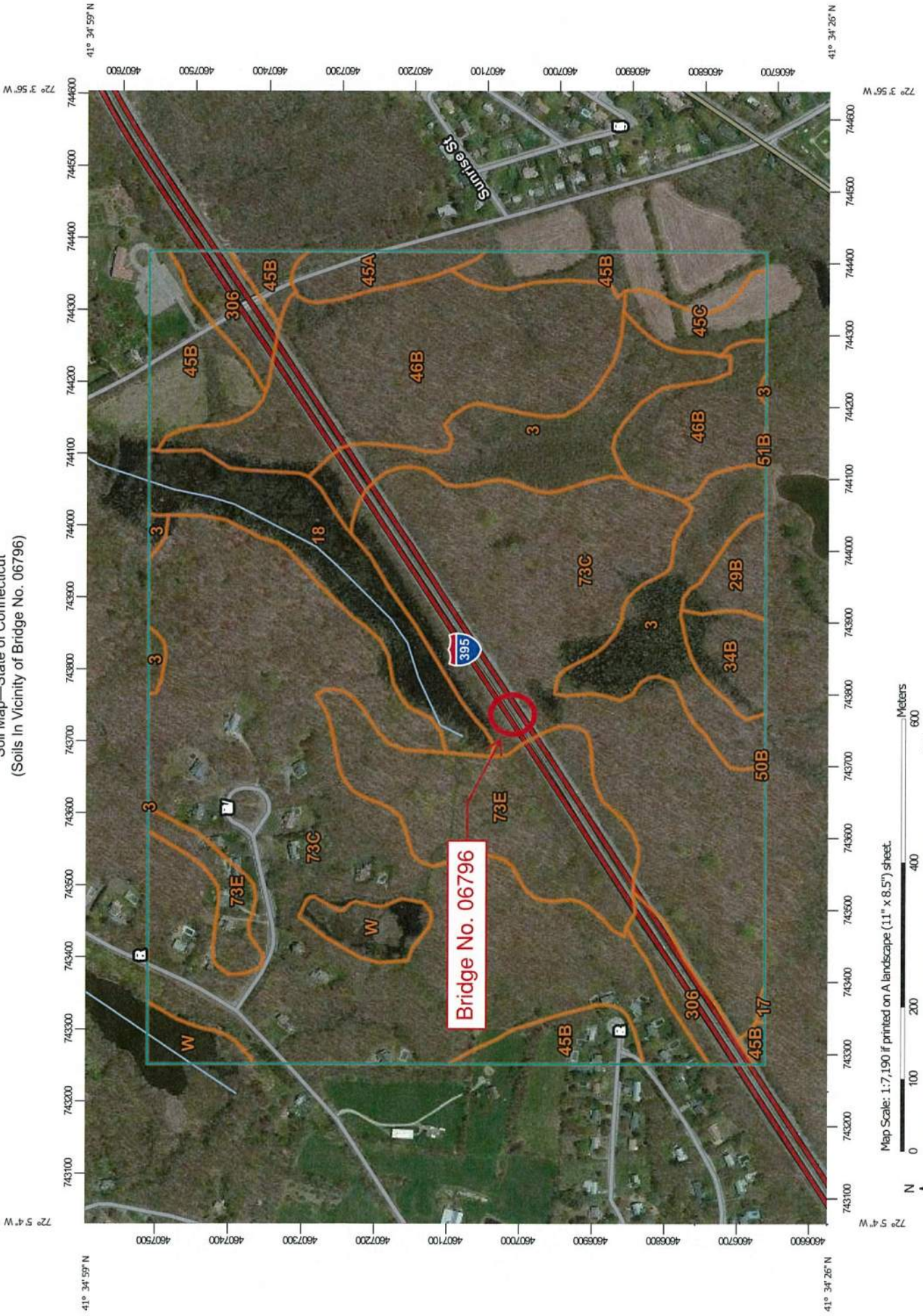
watercourse. The total wetland and watercourse impact is 6,050 square feet (0.14 acres). Impacts are described within the table below:

Bridge No. 06796 Wetland and Watercourse Impact Table			
	Wetland	Watercourses	Total
Temporary	2,200 sqft (0.05 ac)	1,250 sqft (0.03 ac)	3,450 sqft (0.08 ac)
Permanent	1,550 sqft (0.04 ac)	1,050 sqft (0.02 ac)	2,600 sqft (0.06 ac)
Total	3,750 sqft (0.09 ac)	2,300 sqft (0.05 ac)	6,050 sqft (0.14 ac)







































Minimization and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed repair to an existing culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing existing streambed material at the inlet and outlet of the culvert to grade the streambed to the new invert elevation. There will be continuous flow of water at the project culvert during construction, and any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access roads at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. Some impacts to wetlands will occur in association with the proposed access roads and staging areas associated with the roads. Any wetlands temporarily impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. A planting plan has been included in PMT-07 of the permit plans. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
(Soils In Vicinity of Bridge No. 06796)



MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
 Special Point Features	 Special Line Features
 Blowout	Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	21.7	9.1%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	0.1	0.0%
18	Catden and Freetown soils, 0 to 2 percent slopes	11.4	4.8%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	2.5	1.0%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	3.2	1.3%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	3.0	1.3%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	16.8	7.1%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	3.1	1.3%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	32.7	13.7%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	0.0	0.0%
51B	Sutton fine sandy loam, 2 to 8 percent slopes, very stony	0.1	0.0%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	113.1	47.5%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	19.4	8.2%
306	Udorthents-Urban land complex	6.3	2.6%
W	Water	4.5	1.9%
Totals for Area of Interest		237.9	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06796 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): concave Slope (%): 4
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
---	--

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <u>x</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) <u>x</u> Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
---	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Acer rubrum</i></u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>15</u>	<u>=Total Cover</u>	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	<u>=Total Cover</u>	
Herb Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Onoclea sensibilis</i></u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>
2. <u><i>Typha latifolia</i></u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>25</u>	<u>=Total Cover</u>	
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. <u><i>Berberis thunbergii</i></u>	<u>2</u>	<u>No</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>2</u>	<u>=Total Cover</u>	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
 Total Number of Dominant Species Across All Strata: 3 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>20</u>	x 1 = <u>20</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>15</u>	x 3 = <u>45</u>
FACU species <u>2</u>	x 4 = <u>8</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>42</u> (A)	<u>83</u> (B)
Prevalence Index = B/A = <u>1.98</u>	

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	2.5YR 3/2	95	7.5YR 4/4	5	C	M	Mucky Loam/Clay	
2-18	7.5YR 4/2	80	10YR 6/4	10	C	M	Mucky Loam/Clay	
			5YR 4/6	5	C	M		
			10YR 6/6	5	C	M		Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> MLRA 149B	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Dark Surface (S7)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____ Depth (inches): _____	

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06796 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
--	---

Field Observations: Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>x</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>x</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>x</u>
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>
2. <u>Quercus rubra</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
3. <u>Quercus velutina</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>22</u>	<u>=Total Cover</u>	
Sapling/Shrub Stratum (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	<u>=Total Cover</u>	
Herb Stratum (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	_____	<u>=Total Cover</u>	
Woody Vine Stratum (Plot size: <u>50 ft</u>)			
1. <u>Berberis thunbergii</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Celastrus orbiculatus</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>15</u>	<u>=Total Cover</u>	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>15</u>	x 3 = <u>45</u>
FACU species <u>7</u>	x 4 = <u>28</u>
UPL species <u>15</u>	x 5 = <u>75</u>
Column Totals: <u>37</u> (A)	<u>148</u> (B)
Prevalence Index = B/A = <u>4.00</u>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

Attachment E
Northern Long-Eared Bat Consultation

Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

Information to Determine 4(d) Rule Compliance:

	YES	NO
1. Does the project occur wholly outside of the WNS Zone ¹ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Have you contacted the appropriate agency ² to determine if your project is near known hibernacula or maternity roost trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Could the project disturb hibernating NLEBs in a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Could the project alter the entrance or interior environment of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

You are eligible to use this form if you have answered yes to question #1 or yes to question #2 and no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

Agency: FHWA – Connecticut Division

Applicant³ (Name, Email, Phone No.):

Connecticut Department of Transportation
 Amanda M. Saul, Office of Environmental Planning
DOT.NLEB@ct.gov, (860)594-2939

Project Name: CTDOT0103-0266

Project Location (include coordinates if known): I-395 Norwich (coordinates listed below) at three locations

Basic Project Description (provide narrative below or attach additional information):

This project involves the rehabilitation of three culverts under I-395 in the town of Norwich, Bridge 06795 over Hammer Brook (41.556303, -72.104585), Bridge 06796 over Byron Brook (41.577787, -72.076136), and Bridge 06797 over unnamed brook (41.583895, -72.061892).

¹ <http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>

² See <http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html>

³ If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

General Project Information	YES	NO
Does the project occur within 0.25 miles of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project occur within 150 feet of a known maternity roost tree?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project include forest conversion ⁴ ? (if yes, report acreage below)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Estimated total acres of forest conversion	1.5 ac	
If known, estimated acres ⁵ of forest conversion from April 1 to October 31		
If known, estimated acres of forest conversion from June 1 to July 31 ⁶		
Does the project include timber harvest? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of timber harvest		
If known, estimated acres of timber harvest from April 1 to October 31		
If known, estimated acres of timber harvest from June 1 to July 31		
Does the project include prescribed fire? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of prescribed fire		
If known, estimated acres of prescribed fire from April 1 to October 31		
If known, estimated acres of prescribed fire from June 1 to July 31		
Does the project install new wind turbines? (if yes, report capacity in MW below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated wind capacity (MW)		

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: Amanda M. Saul

Digitally signed by Amanda M. Saul
 DN: cn=Amanda M. Saul, o=Connecticut
 Department of Transportation, ou=Office of
 Environmental Planning,
 email=amanda.saul@ct.gov, c=US
 Date: 2019.03.15 09:14:22 -04'00'

Date Submitted: 3/15/2019

⁴ Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).

⁵ If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.

⁶ If the activity includes tree clearing in June and July, also include those acreage in April to October.

Attachment F
Fisheries Sign-Off



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

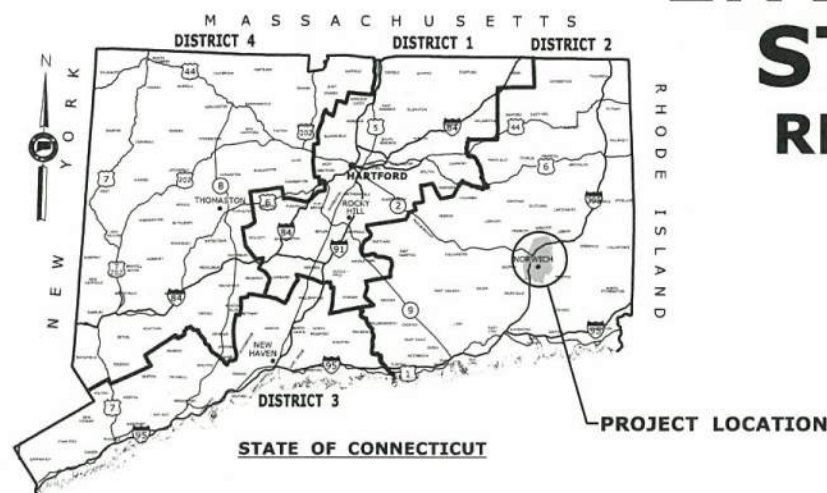
STATE PROJECT NO. 103-266

REHABILITATION OF BRIDGE NO. 06796

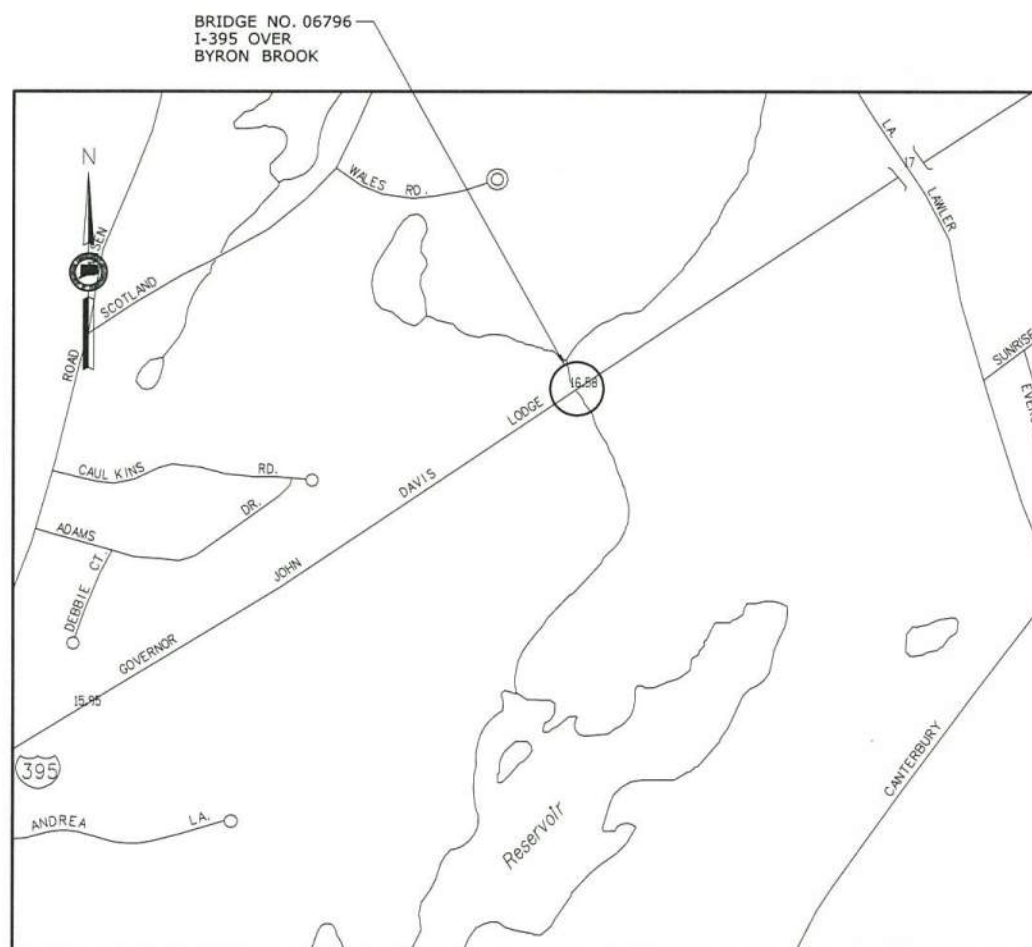
I-395 OVER BYRON BROOK

(SITE No. 2)

IN THE CITY OF NORWICH



Brian Murphy
Digitally signed by Brian Murphy
Date: 2019.06.19 12:48:02 -04'00'



LOCATION PLAN
SCALE: 1" = 500'

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

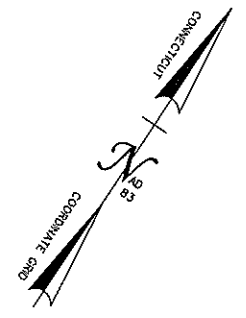
LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06796 TITLE SHEET
PMT-02	BR. NO. 06796 GENERAL SITE PLAN
PMT-03	BR. NO. 06796 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06796 CROSS-SECTIONS
PMT-05	BR. NO. 06796 ELEV. & SECTION PLAN
PMT-06	BR. NO. 06796 STAGING AND WATER HANDLING PLAN
PMT-07	BR. NO. 06796 PERMIT PLANTING PLAN

LOUIS BERGER
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Robert Lin
2019.05.10
12:54:47-04'00'

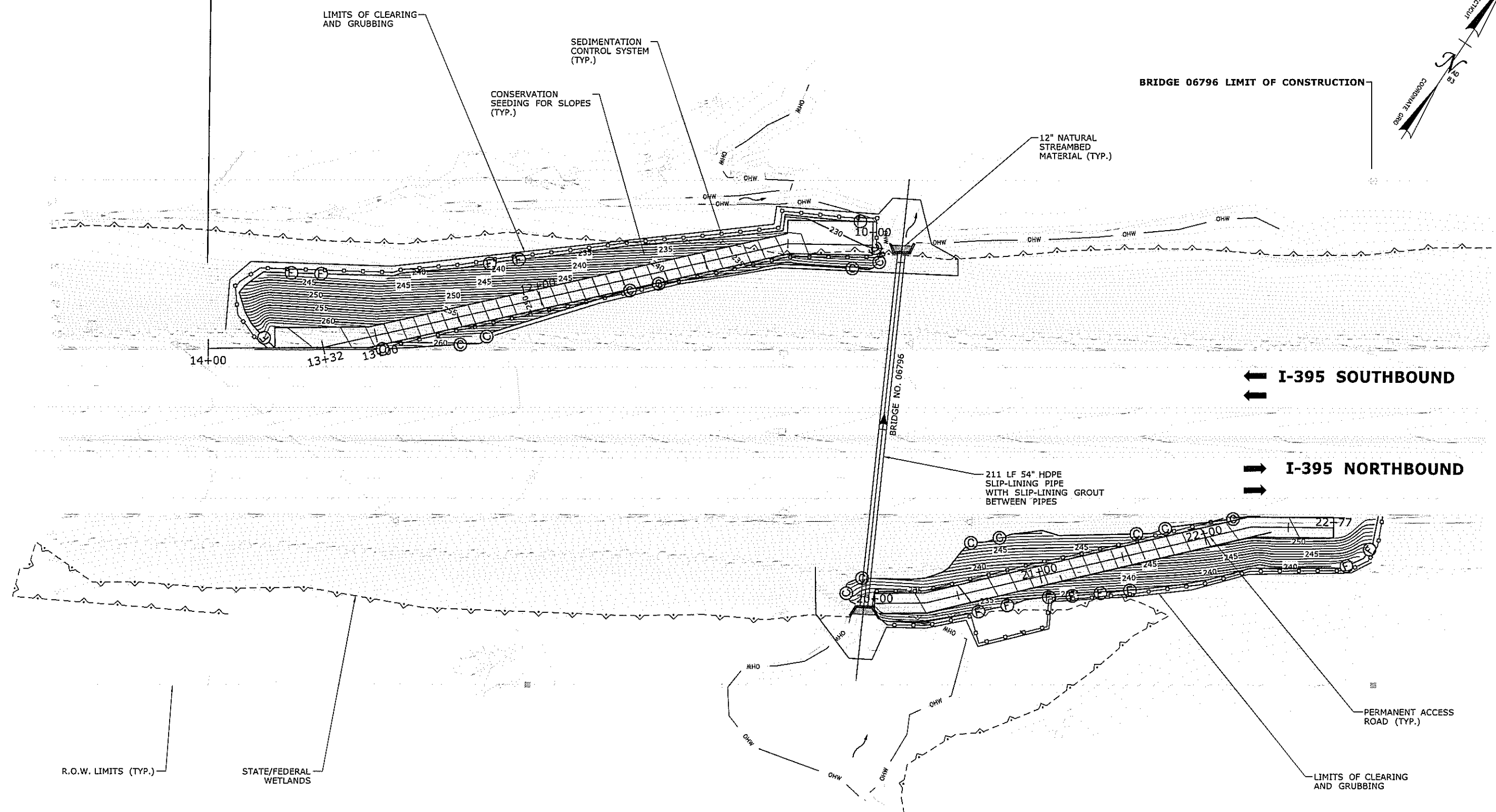
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 4/15/2019

	THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: JPM CHECKED BY: - SCALE AS NOTED	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06796 TITLE SHEET	PROJECT NO. 103-266 DRAWING NO. PMT-01 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 4/15/2019		



BRIDGE 06796 LIMIT OF CONSTRUCTION

BRIDGE 06796 LIMIT OF CONSTRUCTION



← I-395 SOUTHBOUND

→ I-395 NORTHBOUND

211 LF 54" HDPE SLIP-LINING PIPE WITH SLIP-LINING GROUT BETWEEN PIPES

PERMANENT ACCESS ROAD (TYP.)

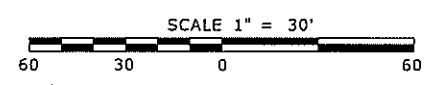
R.O.W. LIMITS (TYP.)

STATE/FEDERAL WETLANDS

LIMITS OF CLEARING AND GRUBBING

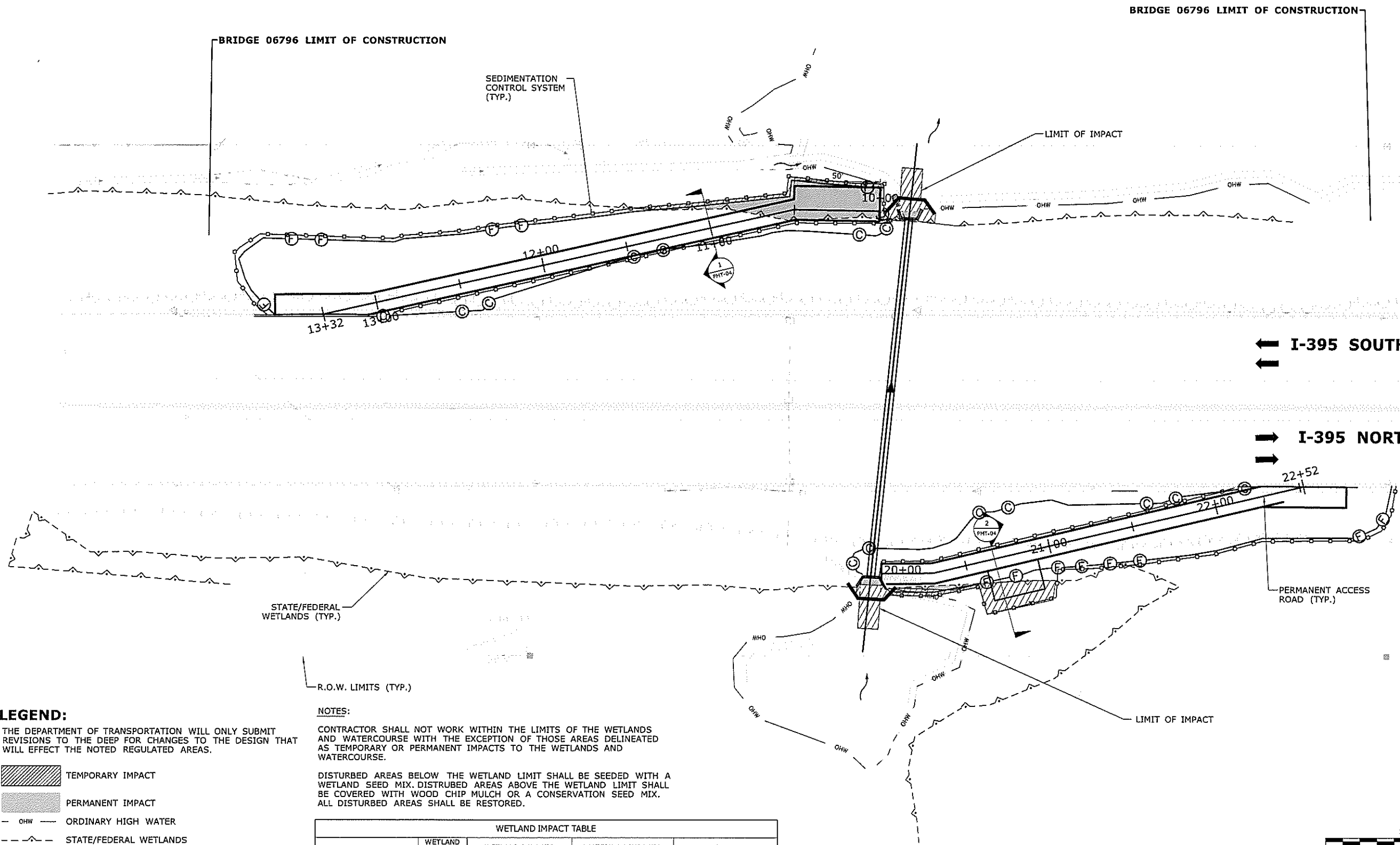
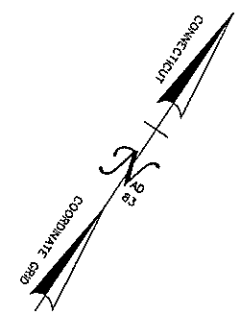
LEGEND:

- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 5/10/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED. Pbttd Date: 5/10/2019			DESIGNER/DRAFTER: MAM CHECKED BY: MJM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p>Filename: ...HW_MSH_0103-0266_Br 06796_RDP_PLN-01.DGN</p>	SIGNATURE/BLOCK: <p>Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	PROJECT TITLE: <p>REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)</p>	TOWN: <p>NORWICH</p>	PROJECT NO. <p>103-266</p>
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	FILENAME: ...HW_MSH_0103-0266_Br 06796_RDP_PLN-01.DGN		DRAWING TITLE: <p>BR. NO. 06796 GENERAL SITE PLAN</p>	DRAWING NO. <p>PMT-02</p>	SHEET NO.



LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

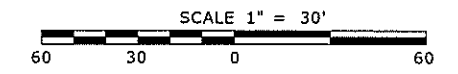
- TEMPORARY IMPACT
- PERMANENT IMPACT
- OHW — ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

NOTES:

CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE.

DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

WETLAND IMPACT TABLE				
	WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS	2	1550 S.F. (0.04 AC.)	1050 S.F. (0.02 AC.)	2600 S.F. (0.06 AC.)
TEMPORARY IMPACTS	2	1300 S.F. (0.03 AC.)	700 S.F. (0.02 AC.)	2000 S.F. (0.05 AC.)
TOTAL IMPACTS		2850 S.F. (0.07 AC.)	1750 S.F. (0.04 AC.)	4600 S.F. (0.11 AC.)



ENVIRONMENTAL PERMIT PLANS

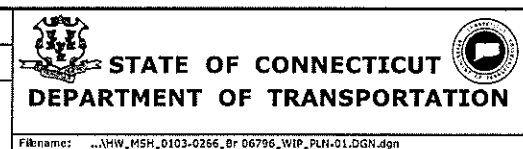
PLAN DATE 5/10/2019

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Printed Date: 5/10/2019

DESIGNER/DRAFTER: MAM
 CHECKED BY: MJM



SIGNATURE/BLOCK:

 Louis Berger
 2500 WESTCHESTER AVENUE
 SUITE 305
 PURCHASE, NEW YORK

PROJECT TITLE:
**REHABILITATION OF BRIDGE NO. 06796
 I-395 OVER BYRON BROOK
 (SITE No. 2)**

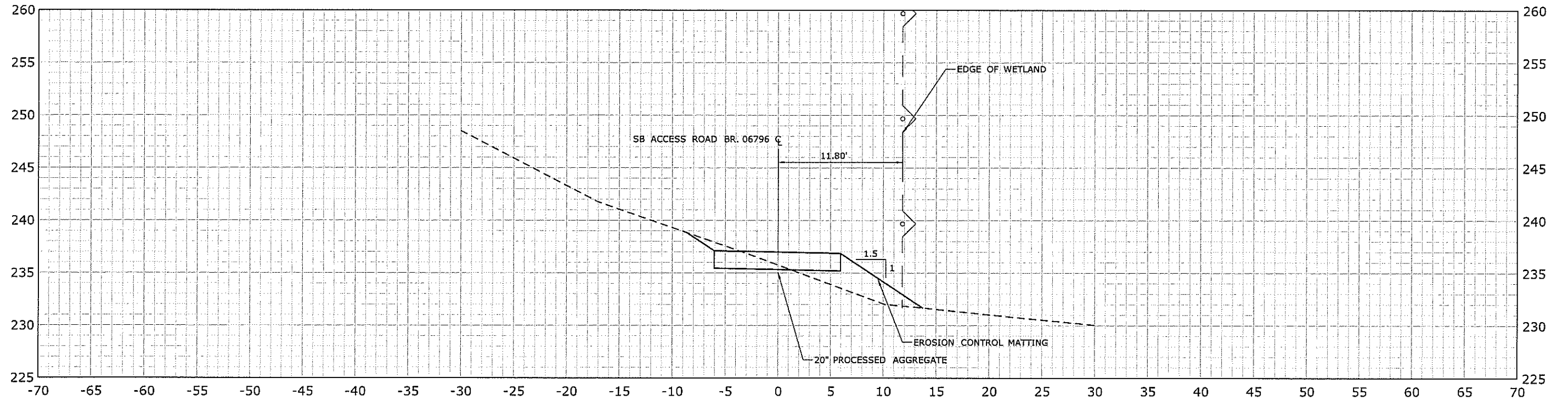
TOWN:
NORWICH

DRAWING TITLE:
**BR. NO. 06796
 WETLAND/WATERCOURSE
 IMPACT PLAN**

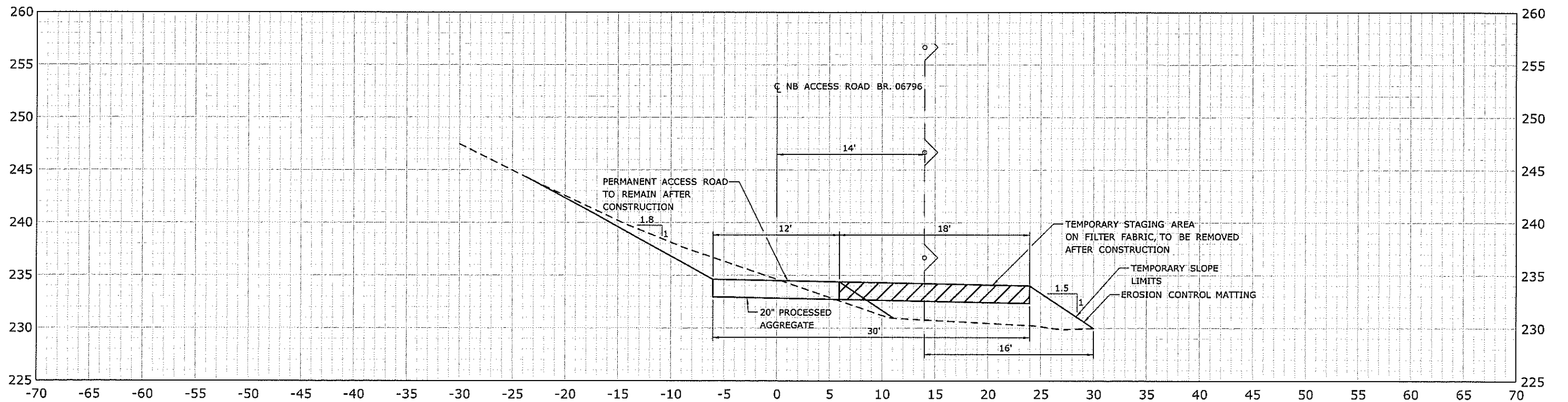
PROJECT NO.
103-266

DRAWING NO.
PMT-03

SHEET NO.



1
ACCESS ROAD SECTION
PMT-03

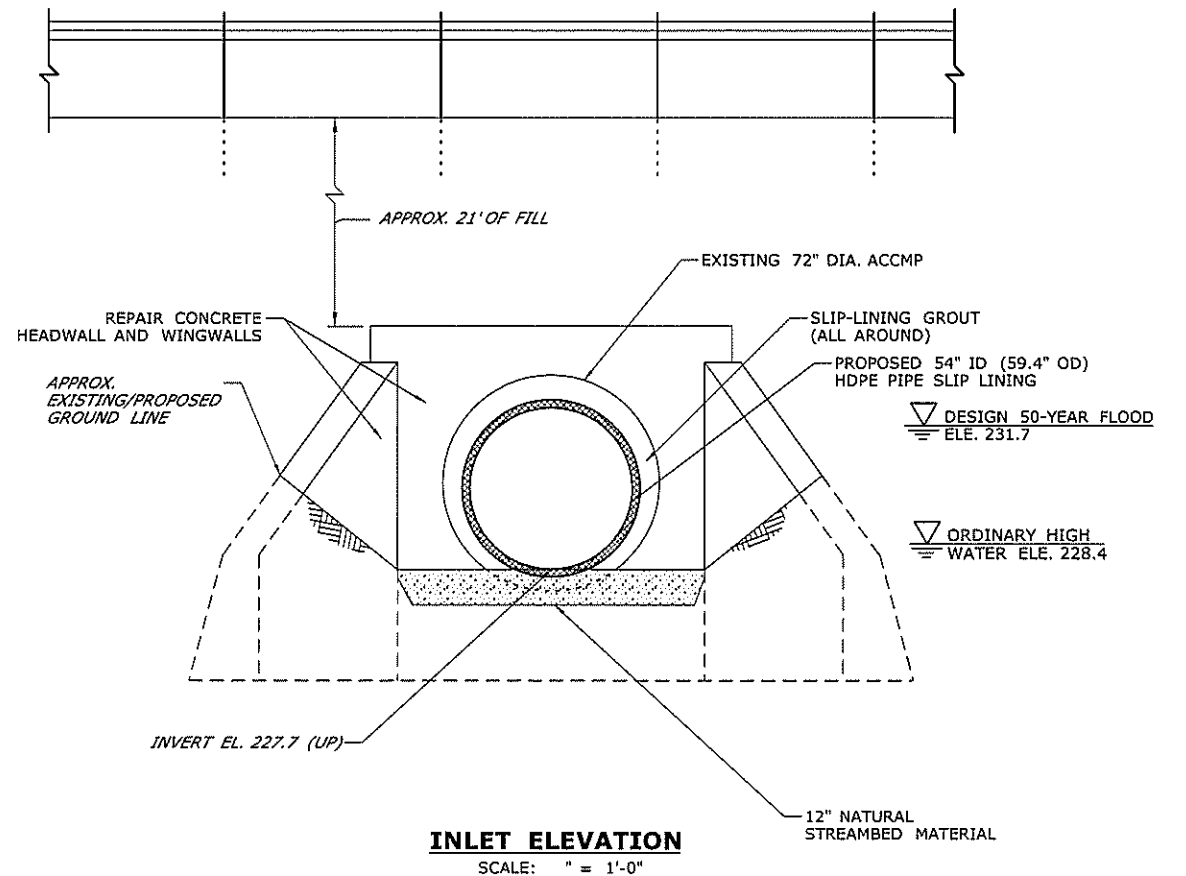
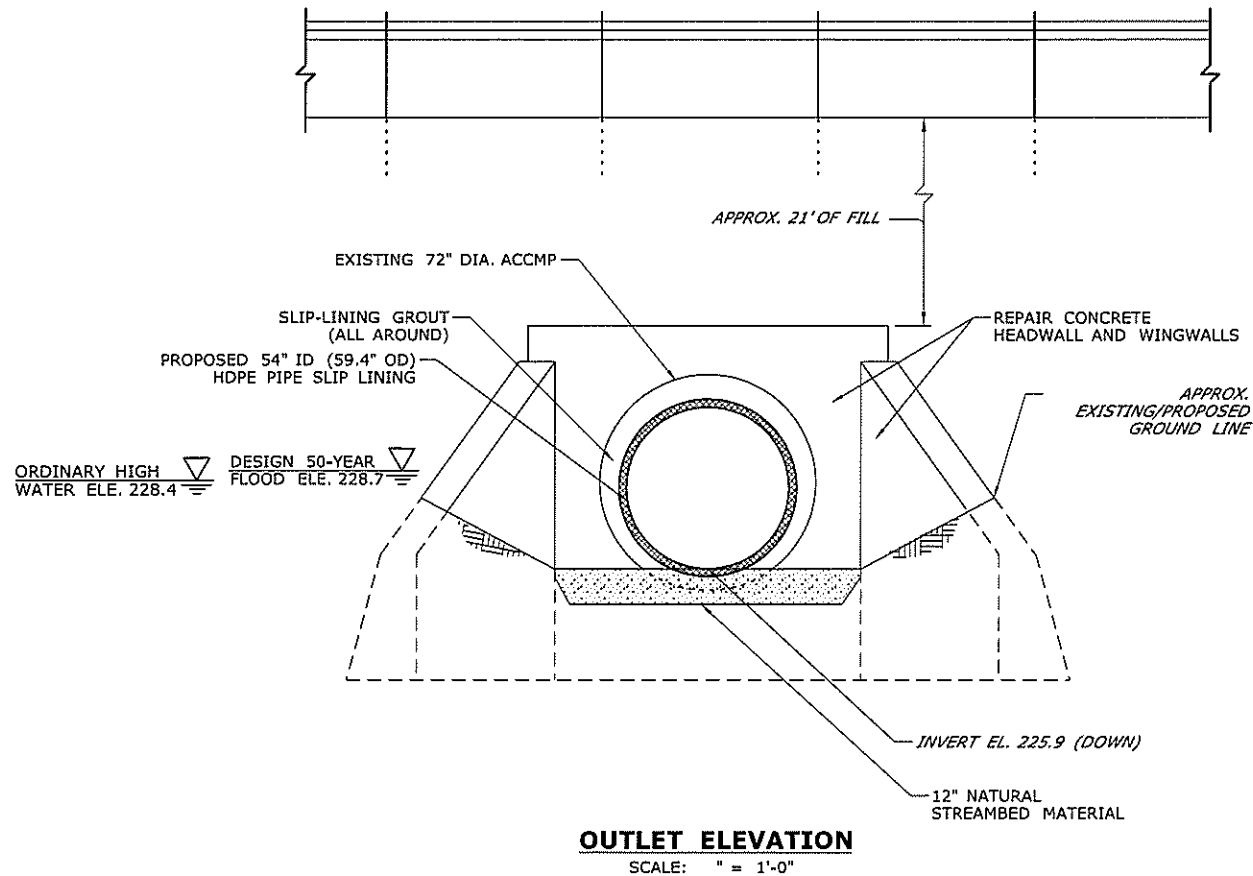


2
ACCESS ROAD SECTION
PMT-03

ENVIRONMENTAL PERMIT PLANS

PLAN DATE 5/10/2019

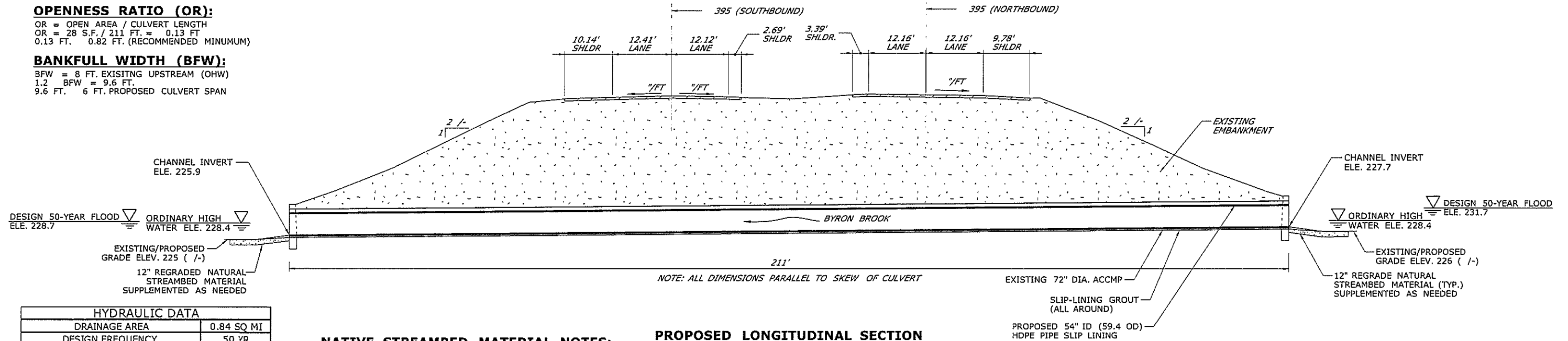
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT CHECKED BY: MAM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-04 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Printed Date: 5/10/2019	DRAWING TITLE: BR. NO. 06796 CROSS-SECTIONS		



Brian Murphy
Digitally signed by Brian Murphy
Date: 2019.05.19 12:48:33 -04'00'

OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 28 S.F. / 211 FT. = 0.13 FT
 0.13 FT. 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):
 BFW = 8 FT. EXISTING UPSTREAM (OHW)
 1.2 BFW = 9.6 FT.
 9.6 FT. 6 FT. PROPOSED CULVERT SPAN



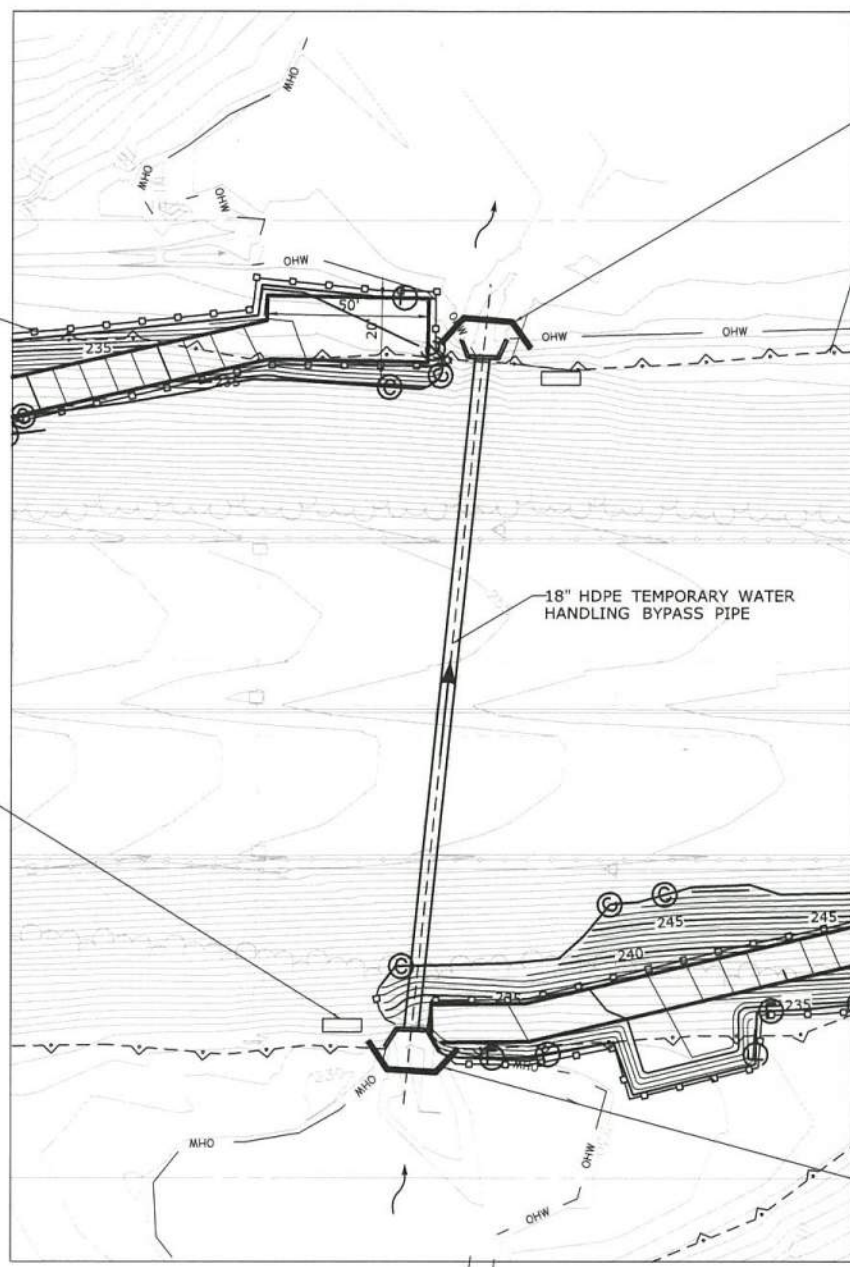
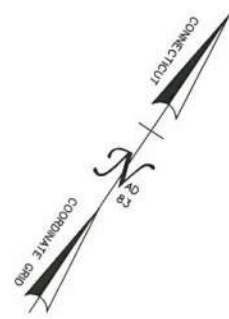
NATIVE STREAMBED MATERIAL NOTES:

1. NATIVE STREAMBED MATERIAL EXCAVATED SHALL BE STOCKPILED AND THEN REPLACED WITHIN DISTURBED AREAS AT INLET AND OUTLET TO THE DEPTH SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER AND IN ACCORDANCE WITH THE PERMIT DOCUMENTS.
2. THE STOCK PILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.

HYDRAULIC DATA	
DRAINAGE AREA	0.84 SQ MI
DESIGN FREQUENCY	50 YR
DESIGN DISCHARGE	75 CFS
AVERAGE DAILY FLOW ELEVATION	228.4 FT
UPSTREAM DESIGN SURFACE WATER ELEVATION	231.7 FT
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	228.7 FT

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 5/9/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED. Plotted Date: 5/9/2019	DESIGNER/DRAFTER: MM CHECKED BY: MJM SCALE AS NOTED	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Louis Berger 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)	TOWN: NORWICH DRAWING TITLE: BRIDGE 06796 CULVERT ELEV. SECTION PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-05 SHEET NO.
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TEMPORARY WATER-HANDLING-COFFERDAM
MIN. ELEV. = 229.5

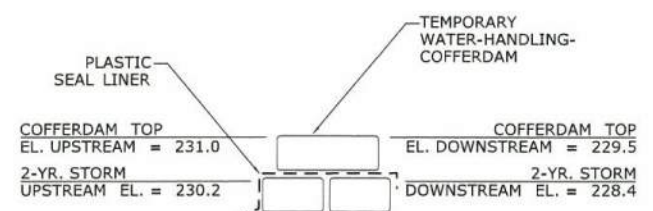
STATE/FEDERAL WETLANDS (TYP.)

18\"/>

TEMPORARY WATER-HANDLING-COFFERDAM
MIN. ELEV. = 231.0

SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS ROADS.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY WATER HANDLING FACILITIES, INCLUDING TEMPORARY WATER-HANDLING-COFFERDAM AND TEMPORARY BYPASS PIPE.
5. POWERWASH INTERIOR OF PIPE AND FILL VOIDS (SEE NOTES).
6. PARTIALLY REMOVE TEMPORARY WATER-HANDLING-COFFERDAM, AND REMOVE BYPASS PIPE.
7. INSTALL TEMPORARY TIMBER MATTING TO PROTECT STREAMBED (IF REQUIRED, SEE WATER HANDLING NOTES) AND INSTALL 54\"/>



TEMPORARY DEWATERING BASIN (APPROX. LOCATION) (TYP.)

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY BYPASS PIPE AS SHOWN DURING CONSTRUCTION OF THE NEW LINING.

EQUIPMENT SHALL NOT BE PERMITTED IN THE STREAM WHEN TEMPORARY BYPASS PIPE IS NOT IN PLACE WITHOUT APPROVAL FROM THE ENGINEER.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

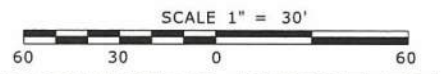
WATER FROM POWERWASHING OPERATIONS MUST BE COMPLETELY CONTAINED AND PUMPED INTO A SETTLING BASIN.

TIMBER MATTING IS REQUIRED WHEN UTILIZING MACHINERY WITHIN THE WATERCOURSE. LIMITS MUST BE WITHIN PERMITTED IMPACT AREAS (SEE PMT-03).

WATER HANDLING PLAN

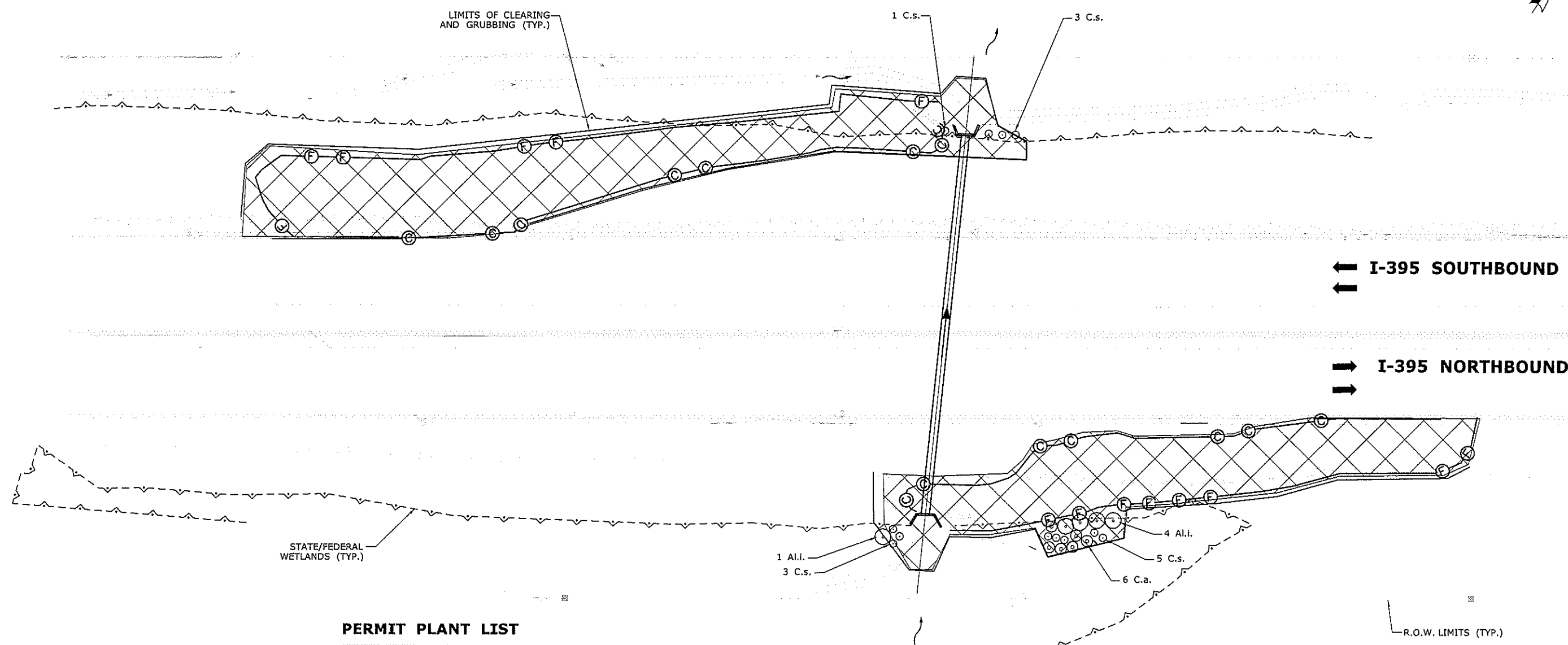
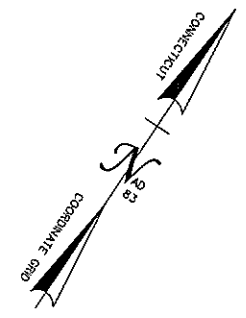
TEMPORARY HYDRAULIC DATA 06796	
AVERAGE DAILY FLOW	2 CFS
AVERAGE SPRING FLOW	3 CFS
2-YEAR FREQUENCY DISCHARGE	5 CFS
TEMPORARY DESIGN DISCHARGE	5 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	230.2 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	228.4 FT

- LEGEND:**
- OHW — ORDINARY HIGH WATER
 - - - - STATE/FEDERAL WETLANDS
 - ○ ○ SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 5/10/2019

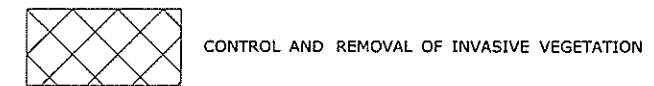
<p>DESIGNER/DRAFTER: MAM</p> <p>CHECKED BY: MJM</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>SIGNATURE/BLOCK:</p> <p>Louis Berger</p> <p>2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>PROJECT TITLE:</p> <p>REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)</p>	<p>TOWN:</p> <p>NORWICH</p> <p>DRAWING TITLE:</p> <p>BR. NO. 06796 WATER HANDLING PLAN</p>	<p>PROJECT NO.</p> <p>103-266</p> <p>DRAWING NO.</p> <p>PMT-06</p> <p>SHEET NO.</p>
<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>					
<p>REV. DATE REVISION DESCRIPTION SHEET NO. #btted Date: 5/10/2019</p>					



PERMIT PLANT LIST

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	WETLAND INDICATOR
Al.i.	5	Speckled Alder	<i>Alnus incana</i>	18"-24" HT. B.B.	3'-5' o.c.	FACW
C.a.	6	Silky Dogwood	<i>Cornus amomum</i>	18"-24" HT. B.B.	3'-5' o.c.	FACW
C.s.	12	Red-Osier Dogwood	<i>Cornus sericea</i>	18"-24" HT. B.B.	3'-5' o.c.	FACW

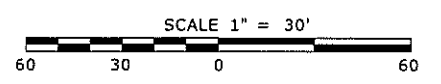
LEGEND:



NOTE:
SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.

NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
3. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 5/10/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: MAM CHECKED BY: MJM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p>2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	SIGNATURE/ BLOCK: PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06796 I-395 OVER BYRON BROOK (SITE No. 2)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06796 PERMIT PLANTING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-07 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Ploited Date: 5/10/2019 Filename: ...JHV_MSH_0103-0266_Br 06796_INV_PLN-01.DGN.dgn		

Attachment G
State Historic Preservation Office (SHPO) Exemption



STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Determination of Effect to Historic Properties

Author: Mark McMillan Date: October 20, 2015

Project: State No.: 103-266
F.A.P. No.: TBD
Project Title: Rehabilitation of Culverts #06795, 06796, and 06797
Town: Norwich

Determination of Effect: No Historic Properties Affected

Project Description

Using federal and state funds, the Connecticut Department of Transportation (CTDOT) proposes to rehabilitate three structurally deficient culverts in Norwich. All three are single-bore asphaltic coated corrugated metal pipes installed beneath I-395. They have been listed on the Bridge Program List 28 for structures requiring major rehabilitation or replacement. The undertaking is currently in its concept level of development and a Rehabilitation Study is underway.

The range of alternatives being considered includes relining the existing pipes to replacing the structures entirely. It is possible that the rehabilitation of each culvert will be different from the other, depending on their individual conditions. No widening or other modifications to the existing configuration of I-395 is included as part of this work. Construction is anticipated to being in Spring, 2018.

Technical Review of Project

The specific conditions of each culvert vary, but each is a single cell asphalt-coated corrugated metal pipe (ACCMP) with reinforced concrete headwalls. All three culverts are categorized as Not Eligible for the National Register of Historic Places the statewide bridge inventory database maintained by CTDOT. Staff from the Office of Environmental Planning concur with this assessment.

Bridge #06795

Structure #06795 conveys Hammer Brook beneath I-395 in Norwich. Its single pipe is oval in profile, measuring 7'11" wide and 5'7" tall. The pipe is 213' long and there is 10 vertical feet of overburden fill between it and the roadbed.

Recent inspections by CTDOT's Bridge Evaluation and Safety unit have determined that Bridge #06795 is in Serious condition due to the loss of its protective coating and heavy corrosion of its pipe liner. This has resulted in vertical deformations of the pipe that is measured up to five inches in some areas. At its western inlet, the bottom plate of the liner exhibits holes up to three feet long and three inches wide.

The soils surrounding the bridge are categorized as Udorthent-Urban Land Complex within the road right of way. Predictive models find this type of sediments to be of low archaeological sensitivity that would be unlikely to yield historic or cultural information. To the east and west of the right of way are Rippowam Fine Sandy Loam and Raypool Silt Loam soils, which are considered to have high archaeological potential. There are no known archaeological sites within a mile of the culvert.

Abutting the right of way of I-395 to the west is the Bean Hill Historic District.¹ This National Register District is characterized by its collection of 18th and 19th century buildings centered around the town green. Hammer Creek runs through two properties within the district. At 21 Huntington Avenue is a 1950 Cape style cottage that is categorized as 'non-contributing' in the Bean Hill NRHP Inventory form. The parcel identified as 29 Huntington Avenue is omitted from the Inventory form. According to Norwich town records, it contains a Ranch style single family residence that was constructed in 1976.

The houses on both parcels are located at the western end of their lots. They are separated from the culvert by over 400 feet of undeveloped land. Given their non-contributing status and the buffer distance they provide between the culvert and the historic district, the proposed rehabilitation of Bridge #06795 will not foreseeably impact the historic nature of the district.

Bridge #06796

Bridge #06796 conveys Byron Brook beneath I-395. It is a 6 foot diameter ACCMP that is 65 feet long and situated beneath 20 feet of overburden. It was installed in 1955 and does not appear to have undergone any significant alterations. The culvert is in Poor condition due to deterioration of its components and a backup of water within it caused by a beaver dam downstream.

Bridge #06796 is located 2.25 miles north of Bridge #06795 in an undeveloped area of Norwich. The sediments within this culvert's area of potential effect are classified as Charlton-Chatfield Complex soils, which have a moderate level of archaeological sensitivity. This is reduced by the steep (15-45%) slope of to the west of the culvert and "very rocky" condition of the soils. There are no known archaeological sites within a mile of the culvert.

¹ National Park Service, *Bean Hill Historic District (NRHP #82001006)*, listed on December 8, 1982.

Bridge #06797

Bridge #06797 is located 1200 feet northeast of Bridge #06796. It consists of an oval ACCMP pipe that is 6' wide, 3'8" tall, and 76 feet long. It conveys an unnamed brook beneath I-395, whose roadbed is 3 feet above the top of the pipe.

There are a variety of sediments surrounding this culvert, but all are characterized as being "very stony". There are no known archaeological sites within a mile of this culvert. Given the predicted low potential of the soils in the project area and the known soil disturbances caused by the construction of I-395, there is limited potential for impacting intact archaeological resources.

Determination

The work proposed under State Project #103-266 would normally be classified as a "Bridge/Culvert Related Projects" and "Interstate Related Projects". These types of Minor Transportation Projects are typically exempt from Section 106 review under Appendix B (*Screened Undertakings Not Requiring Connecticut CTSHPO Review*) of the Section 106 Programmatic Agreement². The proximity of Bridge #06795 to the Bean Hill Historic District does not allow for the application of this exemption.

It is the professional opinion of qualified staff from CTDOT's Office of Environmental Planning that the rehabilitation of this culvert will not foreseeably impact the overall historic character of the district. In accordance with the Section 106 Programmatic Agreement, CTDOT determines that the undertaking will have "No Historic Properties Affected". However, we request a further review of the plans when the project approaches final design to confirm this determination.

No further consultation with the Connecticut State Historic Preservation Officer (CTSPHO) is required. A copy of this determination will be included in the quarterly report of Minor Transportation Projects that is submitted to CTSHPO.

Because the undertaking is within the Quinebaug-Shetucket National Heritage Corridor, a copy of this letter will be sent to The Last Green Valley. As stewards of this resource, they will have thirty days to review and comment on this undertaking.



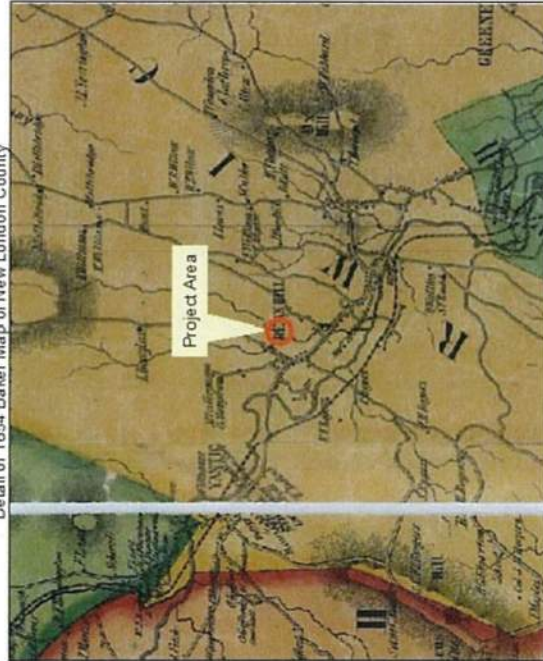
Mark McMillan
National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation

² *Programmatic Agreement among the Federal Highway Administration, the Connecticut Department of Transportation, the Connecticut State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Implementation of Minor Transportation Projects*, signed October 26, 2012. Accessible online at: www.ct.gov/culturalresources

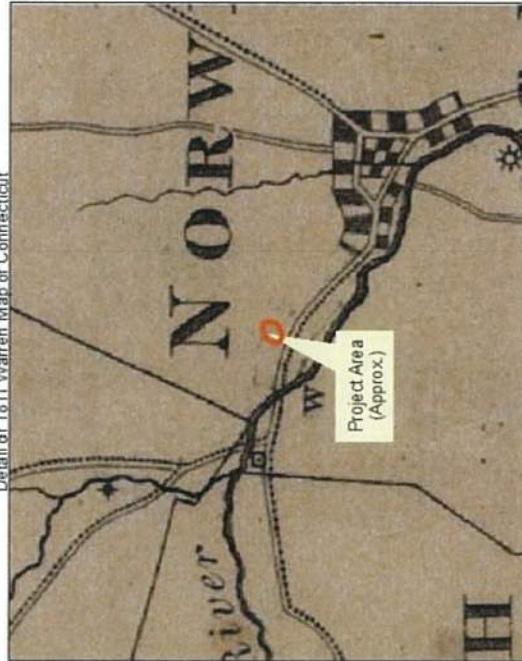
Detail of 2010 Aerial Photography



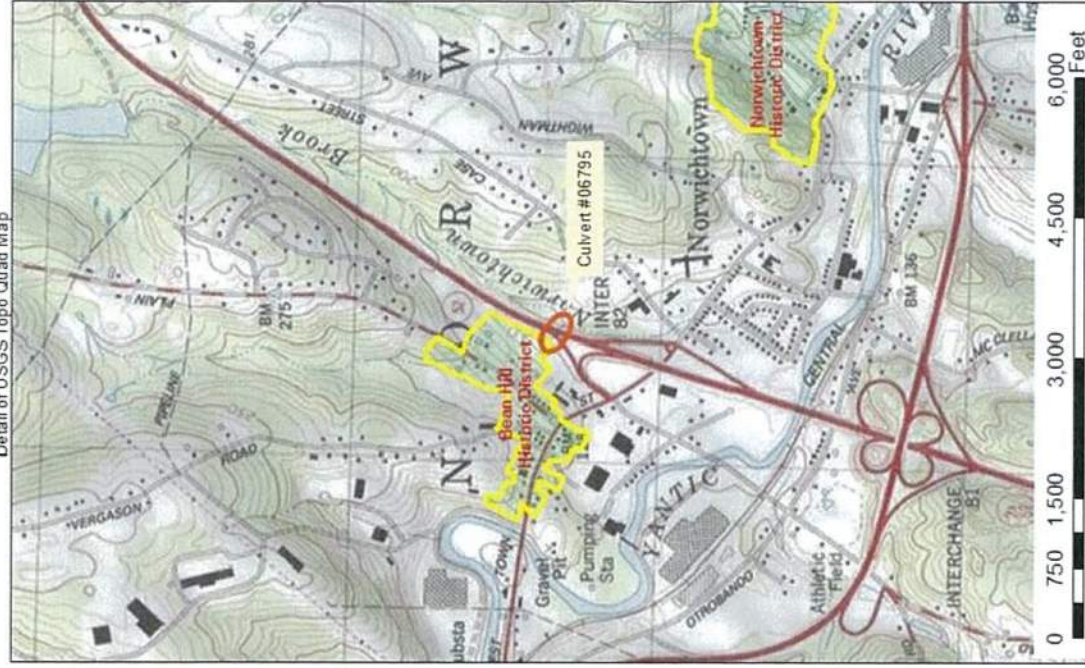
Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



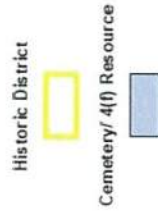
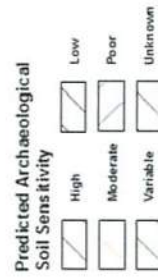
Detail of USGS Topo Quad Map



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

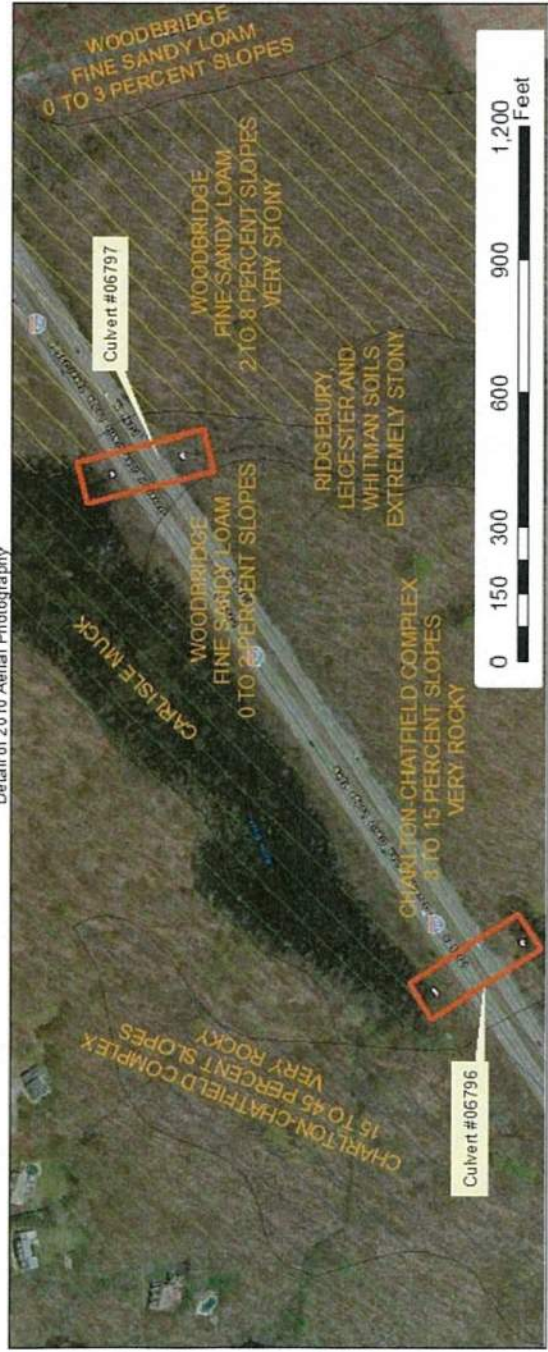
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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culvert #06795
Norwich



August 27, 2015

Detail of 2010 Aerial Photography



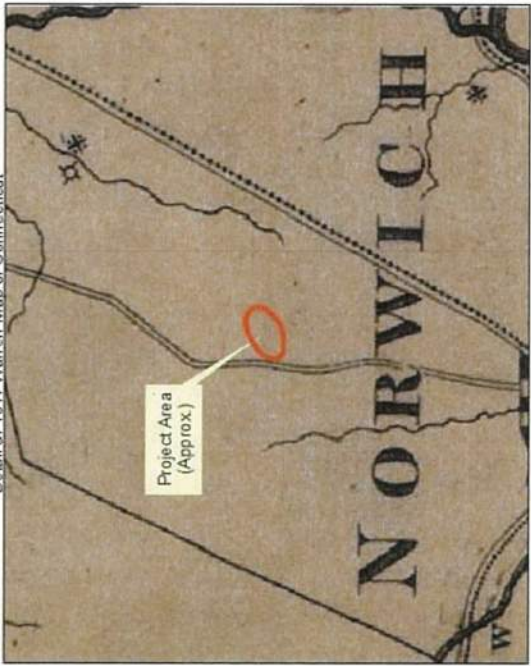
Detail of USGS Topo Quad Map



Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culverts
#06796 and 06797
Norwich

**Predicted Archaeological
Soil Sensitivity**

	High		Low
	Moderate		Poor
	Variable		Unknown

Historic District

	Historic District
	Cemetery/ 4(f) Resource

**Approximate Location
of Archaeological Site**

	Historic
	Pre-Contact
	Unknown

August 27, 2015

Attachment H
Tribal Historic Preservation Office (THPO) Exemption

From: michelle.herrell@dot.gov
Sent: Tuesday, October 27, 2015 8:18 AM
To: McMillan, Mark J.
Subject: No Tribal Consultation Required FAPN TBD/SPN0103-0266, Culvert Rehab on I-395, Norwich

Hi Mark,

I have reviewed CTDOT's proposed project which involves rehabilitating culverts #06795, #06796, and #06797, which are installed beneath I-395 in Norwich, CT. The culverts are in need of major rehabilitation or replacement. As noted in your October 20, 2015 letter, the work would occur within previously disturbed existing road right-of-way. As per the THPO Section 106 Agreements with FHWA-CT Division, dated January 4, 2012 and May 14, 2013, this project would generally fall within the category of "resurfacing or repair of existing ramps or roadways within the previously disturbed right-of-way," with no historic properties affected.

With this email, and taking all these items into consideration, the FHWA-CT Division has determined that tribal consultation would not be required for this project. Should any changes be made to the scope of work for this project that would involve additional ground disturbance beyond what is currently proposed, tribal consultation would have to be reconsidered.

Michelle Herrell
Environmental Protection Specialist
Federal Highway Administration | Connecticut Division Office
628-2 Hebron Avenue, Suite 303 | Glastonbury, CT 06033
P: (860) 494-7577 | F: (860) 659-6724
michelle.herrell@dot.gov

Attachment I
Interagency Coordination Meeting Notes



DEEP / DOT REGULATORY COORDINATION Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. Bridge No. 06795-

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCOMP) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

**DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes**

2. Bridge No. 06796-

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. Bridge No. 06797-

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.



Date December 19, 2019

Kevin R. Kotelly, Chief
Regulatory and Enforcement Branch B
U.S. Army Corps of Engineers
New England District
CENAE-RDB
696 Virginia Road
Concord, MA 01742-2751

Kimberly Lesay
2800 Berlin Turnpike
P.O Box 317546
Newington, CT 06111

SUBJECT: DEEP License #: 201908906-PGP
Bridge No. 06797 on I-395, Norwich

Dear Mrs. Lesay:

Please find attached a copy of your subject license and relevant enclosures which are being issued pursuant to your application of August 2, 2019. Your attention is directed to the conditions of the license. All work must conform to that which is specifically authorized.

Any work in regulated areas of the State which has not been authorized by a valid license is a violation of state law and subject to enforcement action by the Department of Energy & Environmental Protection and the Office of the Attorney General.

Your initiation of authorized activities will be relied upon as your agreement to comply with the terms and conditions of the license.

If you have not already done so, you should contact your local Planning and Zoning Office and the U. S. Army Corps of Engineers to determine local and federal permit requirements on your project, if any. Write the Corps' New England District, Regulatory Branch, 696 Virginia Road, Concord, MA 01742-2751; <http://www.nae.usace.army.mil/> or call 1-800-343-4789.

If you should have any questions or concerns, please contact me at 860-424-3867, or brian.golembiewski@ct.gov.

Sincerely,

Brian Golembiewski, Supervisor
Land & Water Resources Division
Bureau of Water Protection & Land Reuse

Encl(s): License # 201908906-PGP ; WQC CT GP Conditions

cc: File 201908906-PGP

cc (via email): Kimberly Lesay , Kimberly.lesay@ct.gov
Mayor Peter A. Nystrom, pnystrom@cityofnorwich.org
DEEP Fisheries, Brian.Murphy@ct.gov

Connecticut Department of Energy and Environmental Protection License*

USACE CT GP - Pre-Construction Notification Approval

Licensee(s):	Connecticut Department of Transportation
Licensee Address(s):	2800 Berlin Turnpike Newington, CT 06111
License Number(s):	201908906-PGP
Municipality:	Norwich
Project Description:	The replacement of Bridge No. 06797 on I-395 over Unnamed Tributary Watercourse to the Shetucket River.
Project Address/Location:	I-395 at Bridge No. 06797
Waters:	Un-named Tributary Watercourse to the Shetucket River.
Authorizing CT Statute(s) and/or Federal Law:	Section 401 CWA (33 USC 1341)
Applicable Regulations of CT State Agencies:	22a-426-1 to 9
Agency Contact:	Land & Water Resources Division, Bureau of Water Protection & Land Reuse, 860-424-3019
License Expiration:	Upon expiration of the Department of Army CT General Permit, August 19, 2021
Project Site Plan Set:	“Replacement of Bridge No. 06797 I-395 Over Unnamed Brook (Site No. 3) in the City of Norwich”, 8 Sheets of Plans, Drawing No., PMT-01 through PMT-08, dated July 1, 2019, prepared by the Office of Engineering at the Department of Transportation.
License Enclosures:	WQC CT GP Conditions

*Connecticut’s Uniform Administrative Procedure Act defines License to include, “the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . .”

Authorized Activities:

The Licensee is hereby authorized to conduct the following work as described in application # 201801179-PGP:

1. Replace an existing 139' long, 72" diameter culvert with a 144' long, 5' x 5' 4-sided concrete box culvert sunken at least 1' in natural existing streambed material;
2. Place temporary fill, consisting of a fully enclosed cofferdam, within 0.051 acres (2,200 square feet) of the unnamed watercourse and adjacent inland wetlands;
3. Grade and place approximately 195 cubic yards of permanent fill, consisting of roadway embankment fill, natural streambed material, granular subbase fill, concrete associated with the culvert and wingwalls, organic soil materials in the former outlet channel, and controlled low strength material in the abandoned culvert, all within 0.068 acres (2,950 square feet) of unnamed watercourse and associated riparian forested wetlands.

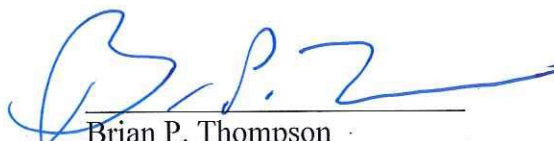
Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.
2. The Licensee shall place 1' of natural streambed material throughout the culvert and at the inlet/outlet areas.
3. The Licensee is prohibited from conducting any unconfined in-stream construction activities between October 1st and May 31st, inclusive, of any year.
4. The Licensee shall implement the Wetland Planting Plan as shown on Drawing No. PMT-08.

Issued under the authority of the Commissioner of Energy and Environmental Protection on:

December 19, 2019
Date



Brian P. Thompson
Division Director
Land & Water Resources Division

**Section 401 Water Quality Certification Conditions for Department of the Army (Corps of Engineers)
General Permits for the State of Connecticut**

1. **Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.
2. **Expiration of Certificate.** The Section 401 Water Quality Certifications contained herein shall be valid until such time as the Department of the Army General Permits for the State of Connecticut expires or is modified, suspended, revoked or reissued.
3. **Compliance with Certificate.** All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Any regulated activities carried out at the site, including but not limited to, construction of any structure, excavation, fill, obstruction, or encroachment, that are not specifically identified and authorized herein shall constitute a violation of this certificate and may result in its modification, suspension, or revocation. In carrying out the certified discharge(s) authorized herein, the permittee shall not store equipment or construction material, or discharge any material including without limitation, fill, construction materials or debris in any wetland or watercourse on or off site unless specifically authorized by this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this certificate.
4. **Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner.
5. **Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, incomplete or inaccurate, this certificate may be modified, suspended or revoked.
6. **Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:
 - a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;
 - b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24 hours) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;
 - c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;
 - d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;

- e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;
- f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.
- g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.
- h. Immediately informing the Commissioner's Inland Water Resources Division at (860) 424-3019 and the U.S. Army Corps of Engineers at (978) 318-8879, of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the following information:
 - (i) the provision(s) of this certificate that has been violated;
 - (ii) the date and time the violation(s) was first observed and by whom;
 - (iii) the cause of the violation(s), if known
 - (iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
 - (v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
 - (vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
 - (vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with condition 7 of this certificate.

For information and technical assistance, contact the DEEP Land and Water Resources Division at (860) 424-3019.

7. Unconfined Instream Work; Installation and Removal of Confining Structures.

- Unconfined instream work is limited to the period June 1 through September 30.
- Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.

- The removal of such confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.
 - The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.
 - Once a work area has been confined, in-water work within the confined area is allowed any time of the year.
8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

9. **Submission of Documents.** The date of submission to the Commissioner of any document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

Director, Land and Water Resources Division
Bureau of Water Protection and Land Reuse
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

May 29, 2020

Regulatory Division
File Number: NAE-2019-01746
CT DEEP File Number: 201908105-PCN

Kimberly Lesay
Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, Connecticut 06131
Kimberly.Lesay@ct.gov

Dear Kimberly Lesay:

We have reviewed your application to conduct culvert maintenance work. This project is located in three separate waterways along I-395 in Norwich, Connecticut, and further described as follows:

Repair of culvert 06795 carrying Hammer Brook beneath I-395. The project requires impacts to the surrounding wetlands for the rehabilitation of Bridge No. 06795. The project consists of installing a 4-inch thick reinforced concrete lining along the full length of the culvert invert. Concrete cut-off and return walls will be constructed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the culvert in order to maintain the existing headwater elevation. At the inlet, salvaged natural streambed material will be regraded to raise the streambed to the new invert elevation. A preformed riprap scour hole will be placed at the outlet to prevent additional scour. The construction of permanent access roads is required to access the culvert. These access roads will have minor impacts to the adjacent wetlands. All temporary disturbed areas will be revegetated after the completion of construction. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06795 I-395 Over Hammer Brook, (Site No. 1)," on 8 sheets, and dated "6/25/2019."

Repair of culvert 06796 carrying Byron Brook beneath I-395. The project requires impact to the channel and surrounding wetlands for the repair of the existing culvert. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54-inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Salvaged natural streambed material will be used to grade the streambed to the new invert elevation. The construction of permanent access roads is required to access the culvert. These access roads will have some temporary and permanent impacts to the adjacent wetlands. All temporary disturbed areas will be revegetated after the completion of construction. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06796 I-395 Over Byron Brook, (Site No. 2)," on 7 sheets, and dated "6/24/2019."

Repair of culvert 06797 carrying UNT beneath I-395. The project requires impacts to the channel for the replacement of the existing culvert. Work within the UNT will include installation of new culvert and its cut-off walls, flared wingwalls, and beveled opening at the inlet. Salvaged natural streambed material will be placed at the culvert inlet and outlet. The new proposed box culvert will contain 1 foot of natural streambed material. The brook will be regraded and realigned to its original course before the construction of I-395. The existing culvert will be discontinued and filled with low strength material. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06797 I-395 Over Unnamed Brook, (Site No. 3)," on 8 sheets, and dated "6/27/2019."

Based on the information you have provided, we verify that the activity is authorized under General Permit No. 19 of the enclosed August 19, 2016 Federal permit known as the Connecticut General Permits (GPs).

Please review the enclosed GPs and general conditions carefully to be sure that you and whoever does the work understand its requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with any special condition provided above and all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on August 19, 2021. You must commence or have under contract to commence the work authorized herein by August 19, 2021, and complete the work by August 19, 2022. If not, you must contact this office to determine the need for further authorization *before* beginning or continuing the activity. We recommend that you contact us *before* this authorization expires to discuss reissuance. Please contact us immediately to discuss modification of this authorization if you change the plans or construction methods for work within our jurisdiction. We must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

The Connecticut Department of Energy & Environmental Protection (DEEP) has issued a Water Quality Certification (WQC) for this project, as required under Section 401 of the Clean Water Act, based on their review of the project.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Please contact Alex Kostra, of my staff, at (978) 318-8651 if you have any questions.

Sincerely,

Handwritten signature of Kevin R. Kotelly in black ink.

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosure:

cc:

CT DEEP, Chief, Land & Water Resources Division, john.natale@ct.gov

Nate Margason, U.S. EPA, Region 1, Boston, Massachusetts, margason.nathan@epa.gov



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

860-594-2931

July 31, 2019

Ms. Susan Lee
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Subject: State Project No. 103-266
Bridge No. 06797: Interstate 395 over Unnamed Brook
City of Norwich

Dear Ms. Lee,

Enclosed please find the Section 404 permit application for the General Permit 19 – Stream, River and Brook Crossings for your review and approval. An application for a 401 Water Quality Certification (via the Connecticut Addendum) was previously submitted to the Connecticut Department of Energy and Environmental Protection under a separate cover letter for processing. Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner of my staff, at 860-594-2157.

Very truly yours,

A handwritten signature in blue ink that reads "Kimberly C. Lesay".

Kimberly C. Lesay
Transportation Assistant Planning Director
Bureau of Policy and Planning

Attachments

cc: Nathan Margason – USEPA

bcc: Kimberly Lesay
Andrew H. Davis – Christopher W. Samorajczyk – Alexander T. Finch
Rabih M. Barakat – Andrew J. Cardinali – Ryan Martin
Robert E. Obey – Eileen Ego (District 2 Construction)
Donald P. Wurst – Aaron J. Foster (CME)

U.S. Army Corps of Engineers (USACE)
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
 33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -
 OMB No. 0710-0003
 Expires: 01-08-2018*

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at . Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website:

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - Connecticut Department of Transportation E-mail Address - kimberly.lesay@ct.gov	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- 2800 Berlin Turnpike City - Newington State - CT Zip - 06131 Country - USA	9. AGENT'S ADDRESS: Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax 860-594-2931 860-594-3028	10. AGENTS PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT

DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) Replacement of culvert 06797 carrying Unnamed Brook beneath I-395 located in Norwich	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Unnamed Brook	14. PROJECT STREET ADDRESS (if applicable) Address N/A. Culvert on Interstate 395
15. LOCATION OF PROJECT Latitude: °N 41°35'2.01" Longitude: °W 72° 3'42.76"	City - Norwich State- CT Zip-
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID Municipality Section - Township - Range -	

17. DIRECTIONS TO THE SITE

The project site is Interstate 395 over an Unnamed Brook in Norwich, CT. Directions from the US Army Corps of Engineers New England District Main Office include: MA-2A E to I-95 S. Then take exit 25 to I-90 W. Take exit 10 toward MA-12 N, and keep right at the fork to merge onto I-395 S. The culvert is approximately 0.18 miles south (traveling along I-395 northbound) of the Canterbury Turnpike over pass, and approximately 0.48 miles north (traveling North along I-395 northbound) of Lawler Lane.

18. Nature of Activity (Description of project, include all features)

See attached.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of the project is to address items identified in the December 2014 inspection. The inspection report noted corrosion, section loss, and perforations. ConnDOT recommends the culvert to be replaced. The structure is in serious condition and exhibits spotty areas of asphalt coating loss on corner and bottom plates with heavy laminar rust and minor section loss. There are perforations up to 8 inches by 2 inches. At inlet and outlet there is heavy laminar rust and section loss down to knife edge for approximately 10 feet long.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

The project requires impacts to the channel for the replacement culvert of the existing culvert. Work within the unnamed brook watercourse will include installation of new culvert and its cut-off walls, flared wingwalls, and beveled opening at the inlet. Salvaged natural streambed material will be placed at the culvert inlet and outlet. The new proposed box culvert will contain 1 foot of natural streambed material. The brook will be regraded and realigned to its original course before the construction of I-395. The existing culvert will be discontinued and filled with low strength material.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type
Amount in Cubic Yards

Type
Amount in Cubic Yards

Type
Amount in Cubic Yards

See attached.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See attached.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

The project limits disturbance to the channel of the Unnamed Brook at the existing bridge and at the inlet and outlet of the culvert. See attached for more information.

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- Anna S Alfiero, 43 Bayberry Hill Road

City - Norwich State - CT Zip - 06360

b. Address- Bryon Brook Country Club LLC, 649 Route 25A Suite 1, P.O. Box 702

City - Rockypoint State - NY Zip - 11780

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CTDEEP	PGP Addendum	Concurrently			
CTDEEP	Water Res. Const. GP	Post PCN Approval			

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Thomas J. Mazian 8-1-2019 _____ _____
 SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ACOE Block 18: Nature of Activity

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06797 Culvert Carrying Unnamed Brook under Interstate 395
Norwich, Connecticut

Bridge No. 06797 is an asphalt-coated corrugated metal pipe (ACCMP) arch culvert with an approximate 71 inch span by 47 inch rise (72 inch by 44 inch per original construction plans) that conveys an unnamed brook under Interstate 395 (I-395) in the city of Norwich, Connecticut. The bridge was originally built in 1956 to allow I-395 to pass over the unnamed brook under Project No. 327-01. The total structure length of the ACCMP is 139 feet long and the culvert is located under approximately 3 feet of fill. There are reinforced concrete headwalls and wingwalls at both ends of the culvert. This structure carries four lanes of traffic, including two northbound lanes and two southbound lanes, with a small grassy median located between both bounds. Metal beam guiderails extend along the sides of the roadway. The existing culvert is considered to be in serious condition. It is structurally deficient due to the heavy laminar rust and minor section losses, and perforation to the pipe, which requires rehabilitation. The existing concrete headwalls, cut-off walls, and wingwalls also exhibit areas with deterioration. The existing ACCMP structure results in approximately 1.7 feet of backwater at the approach cross-section and is hydraulically inadequate due to insufficient freeboard.

The unnamed brook has a drainage area of 0.09 square mile. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The unnamed brook at Bridge No. 06797 is not included in the FEMA New London County Flood Insurance Study. This culvert replacement 35 feet to the west of the existing structure is part of State Project No. 103-266 and in conjunction with Bridge Nos. 06795 and 06796, also located along I-395.

The project proposes a replacement box culvert 35 feet to the west of the existing pipe arched culvert. The pre-cast concrete box culvert will be 5 feet wide by 5 feet high with a total length of 144 feet. The structure will be installed under both bounds of I-395. This replacement requires the realignment of the unnamed brook. U-Type concrete wingwalls will be constructed at both ends of the culvert to improve the flow of the newly aligned brook. Concrete cut-off and return walls will be installed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the box, reducing headwater. Once the new culvert is constructed, the existing culvert will be taken out of service and filled with controlled low strength material. Natural streambed material will be installed at the inlet and outlet to grade the streambed to the new invert elevation. A minimum of one foot of natural streambed material will also be employed along the culvert invert. The new structure will be hydraulically adequate. The proposed water surface elevations are not expected to impact any existing structures on properties adjacent to the project site. The slight decrease in water surface elevation at the culvert inlet will not have any adverse impacts. In the hydraulically modeled conditions for a 50-year storm, the freeboard is approximately 1.2 feet. The surrounding project area is relatively flat. It is anticipated that the wetland will remain within the existing limits, secondary impacts are not anticipated. The project is scheduled to be constructed in Spring of 2020 and is anticipated to be completed in one construction season.

Construction Sequencing:

The construction sequencing involves a pre-stage, six stages, and a final stage. The brook will flow under its present alignment through the existing culvert until Stage 6. During the pre-stage and stages 1-3, I-395 southbound lanes will be impacted. During Stages 3-5, I-395 northbound lanes will be impacted.

The pre-stage involves the construction of the northern permanent access shoulder. A temporary cofferdam will restrict potential flows from entering the work area. Temporary earth retaining systems (TERS) will be utilized to install the pre-cast sections of the culvert. The cut-off wall, wingwalls, box culvert sections, and headwall will be constructed at the downstream outlet (north). In Stages 1 through 5, the excavation and installation of each box culvert section will be completed progressively from north to south. The roadway will be removed and then re-constructed in order to complete the work. Stage 6 work includes the construction of the southern permanent access shoulder. A temporary water-handling-cofferdam and a temporary bypass extension pipe to the inlet of the existing pipe will be installed for the construction of the inlet cut-off wall, wingwalls, headwall and final box culvert sections. At the proposed outlet, a temporary water-handling-cofferdam will be installed for the channel regrading. Once the final portion of the proposed culvert is constructed, the channel will be regraded at the inlet and outlet and a minimum of one foot of natural streambed material will be placed along the invert of the proposed culvert. The final step of stage 6 includes the removal of the temporary water handling facilities which will allow the stream to pass through the proposed culvert. In the final stage of construction, a temporary water-handling cofferdam will be constructed at the inlet and outlet of the existing culvert to restrict any potential flows. This will allow the existing culvert to be filled with controlled low strength material under dry conditions. The final slope grading will also occur during this stage. Once work is concluded and project area is stabilized, all temporary water-handling systems will be removed. As required, dewatering of the work area will include pumping dewatered groundwater to a temporary sedimentation basin located in an upland area. Any wetland temporarily impacted by the work shall be restored utilizing native plantings and a wetland seed mix. All disturbed areas will be restored at the completion of construction and temporary sedimentation and erosion controls will be removed upon permanent stabilization.

Additional permits being sought includes a State of Connecticut Addendum to the Army Corps of Engineers General Permit and CTDEEP General Permit for Water Resources Construction Activities.

ACOE Block 21: Types of Material Being Discharged and the Amount of Each Type in Cubic Yards

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge No. 06797 Culvert Carrying Unnamed Brook under Interstate 395
Norwich, Connecticut

Material	Volume (Cubic Yards)	Comment
Embankment Fill	60 CY	For the construction of the access shoulders of I-395.
Streambed Material	10 CY	To grade the streambed to the new culvert invert elevation at the inlet and outlet.
Granular Fill	5 CY	Placed below the culvert cutoff walls located within wetlands.
Concrete End Treatment	15 CY	For the construction of the headwalls, wingwalls, and cutoff walls.
Controlled Low Strength Material	105 CY	To be filled within in the existing culvert.

ACOE Block 22: Surface Area in Acres of Wetlands or Other Waters Filled

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
 Rehabilitation of Bridge 06797 Carrying Unnamed Brook under Interstate 395
 Norwich, Connecticut

The replacement of Bridge No. 06797 results in 1,200 square feet (0.027 acres) of permanent wetland impacts. Permanent impacts are a result of the installation of the box culvert, and grading required within the wetland for the proposed stream alignment. Some grading impacts will also occur as a result of the construction of permanent access shoulders. The project results in 1,350 square feet (0.030 acres) of permanent watercourse impacts. This number accounts for the full closure of the existing bridge and new stream alignment as well as and the construction at the cut-off walls, and wingwalls. Though this is described as a permanent impact, the watercourse will remain, but will be redirected through the new, hydraulically adequate structure. Temporary impacts include the areas necessary for the water handling and access to the project culverts. Temporary impact to the wetlands is 2,100 square feet (0.048 acres) and to the watercourse is 100 square feet (0.002 acres). Secondary watercourse impacts are also proposed where the channel at the outlet will be abandoned due to the new stream alignment. This results in 400 square feet (0.009 acres) of impact. The total wetland and watercourse impact is 5,150 square feet (0.118 acres). Impacts are described within the table below:

Bridge No. 06797 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	2,100 sqft (0.048 ac)	100 sqft (0.002 ac)	2,200 sqft (0.051 ac)
Permanent	1,200 sqft (0.027 ac)	1,350 sqft (0.030 ac)	2,550 sqft (0.059 ac)
Secondary	0 sqft (0.000 ac)	400 sqft (0.009 ac)	400 sqft (0.009 ac)
Total	3,300 sqft (0.076 ac)	1,850 sqft (0.042 ac)	5,150 sqft (0.118 ac)

ACOE Block 23: Description of Avoidance, Minimization, and Compensation

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266
Rehabilitation of Bridge 06797 Culvert Carrying Unnamed Brook under Interstate 395
Norwich, Connecticut

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed replacement box culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing a water handling plan for the continuous flow of the unnamed brook, placing 1 foot of natural streambed material throughout the culvert as well as at the proposed inlet and outlet to grade the streambed to the new invert elevation. The project also minimizes impacts by utilizing pre-cast structures to minimize the construction duration, installing cutoff walls, flared wingwalls, and a beveled opening at the inlet to improve stream flow. To address fish passage concerns, unconfined instream work shall be limited to June 1st to September 30th, inclusive, to avoid impacts to potential fish passage during construction.

Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access shoulders at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. The watercourse will be disturbed in association with the proposed replacement box culvert and new watercourse alignment. The watercourse will remain and will flow through the new culvert following the completion of the project. Disturbed areas in the streambed will be restored with native natural channel bed material. Any wetlands impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Attachments

Attachment A: Location Maps

- o USGS Map
- o Aerial Map

Attachment B: Site Permit Plans

Attachment C: Site Photos

Attachment D: Environmental Report, NRCS Soil Map and Wetland Delineation Datasheets

Attachment E: Northern Long-Eared Bat Consultation

Attachment F: Fisheries Sign-off

Attachment G: State Historic Preservation Office (SHPO) Exemption

Attachment H: Tribal Historic Preservation Office (THPO) Exemption

Attachment I: Interagency Coordination Meeting Notes

Attachment A

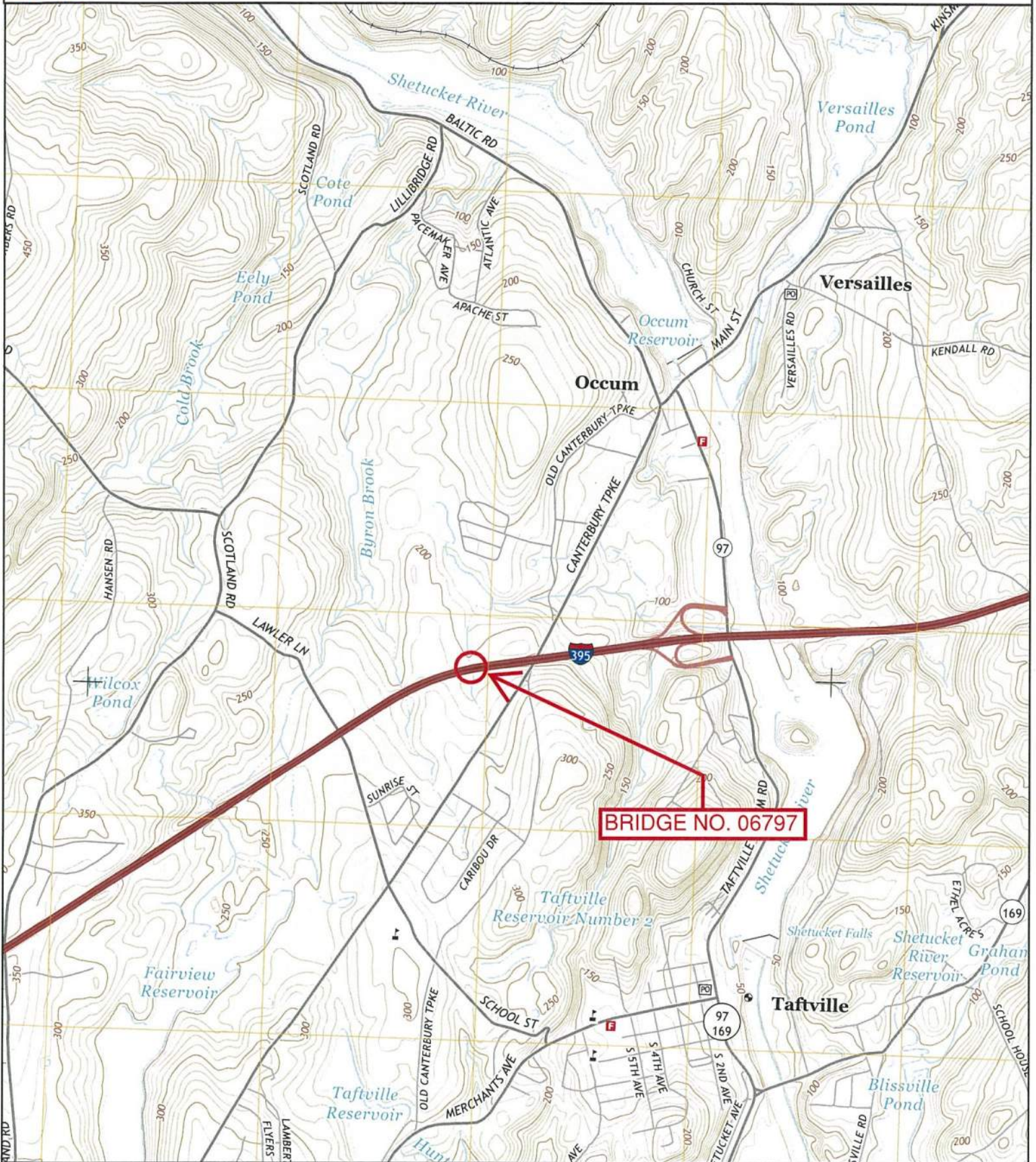
Location Maps

- USGS Map
- Aerial Map

USGS QUADRANGLE MAP

BRIDGE NO. 06797 IN NORWICH, CT

INTERSTATE 395 OVER UNNAMED BROOK



USGS MAP #72
NORWICH



Created: 2019

1 INCH = 2,000 FEET



DETAILED AERIAL MAP
 BRIDGE NO. 06797 IN NORWICH, CT
 INTERSTATE 395 OVER UNNAMED BROOK



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CTECO AERIAL
 MAP
 NORWICH,
 CONNECTICUT


 Created: 2019

1 INCH = 500 FEET



Attachment B
Site Plans



CONNECTICUT DEPARTMENT OF TRANSPORTATION



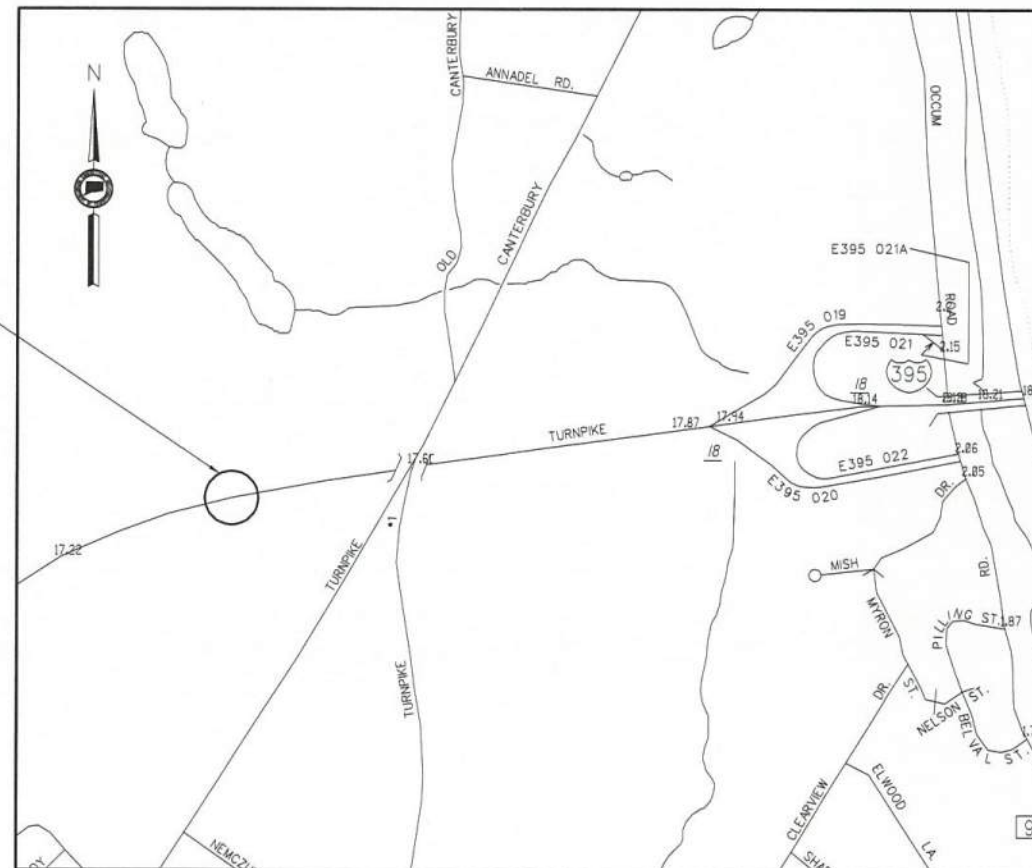
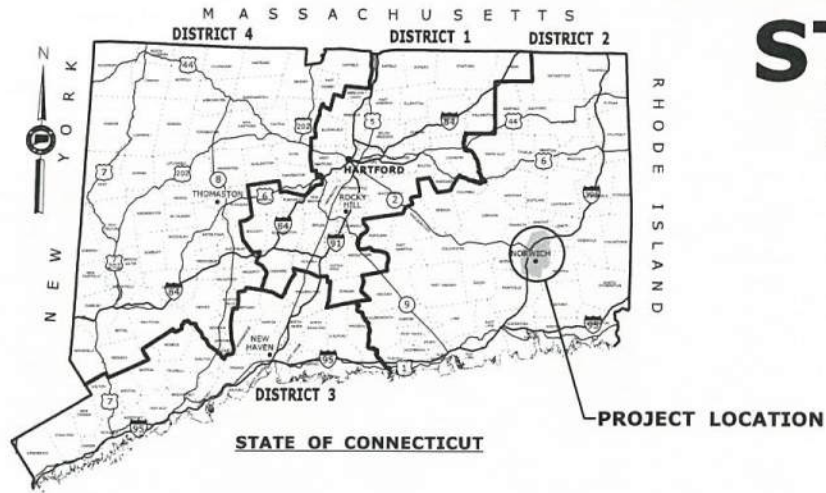
ENVIRONMENTAL PERMIT PLANS

STATE PROJECT NO. 103-266

REPLACEMENT OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK

(SITE No. 3)

IN THE CITY OF NORWICH



LOCATION PLAN

SCALE: 1" = 500'

BRIDGE NO. 06797
I-395 OVER
BYRON BROOK

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06797 TITLE SHEET
PMT-02	BR. NO. 06797 GENERAL SITE PLAN
PMT-03	BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06797 ELEV. & SECTION PLAN
PMT-05	BR. NO. 06797 STAGING AND WATER HANDLING PLAN
PMT-06	BR. NO. 06797 UPSTREAM GRADING PLAN
PMT-07	BR. NO. 06797 DOWNSTREAM GRADING PLAN
PMT-08	BR. NO. 06797 PERMIT PLANTING PLAN

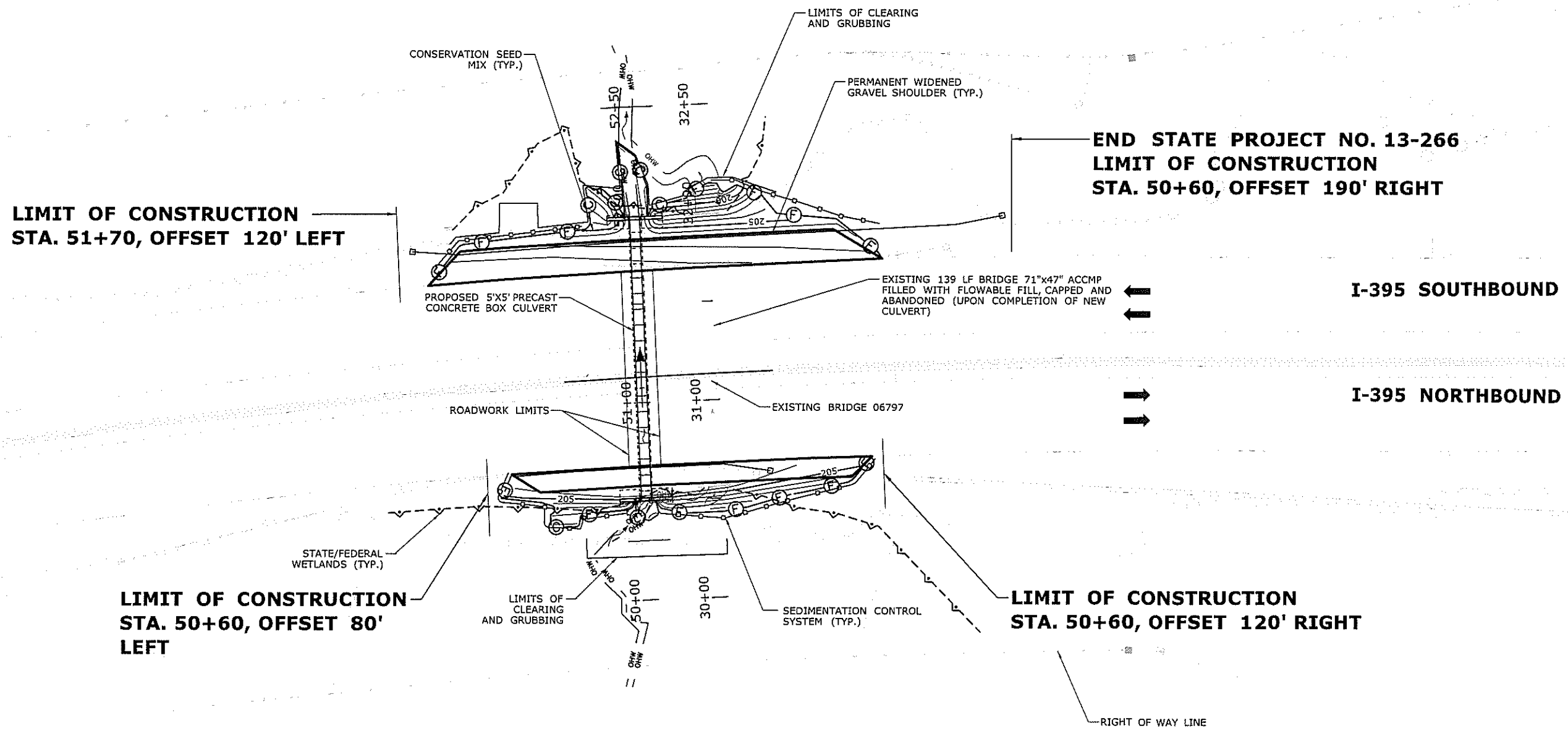
LOUIS BERGER US, Inc.
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Digitally signed
by Robert Lin
Date:
2019.07.01
10:44:55-04'00'

ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/27/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED. Plotted Date: 6/27/2019	DESIGNER/DRAFTER: JPM CHECKED BY: - SCALE AS NOTED	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...\\HV MSH 0103 0266 06797 TSH.dgn	SIGNATURE/BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06797 TITLE SHEET	PROJECT NO. 103-266 DRAWING NO. PMT-01 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO.	Plotted Date: 6/27/2019	Filename: ...\\HV MSH 0103 0266 06797 TSH.dgn	LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	NORWICH BR. NO. 06797 TITLE SHEET	103-266 PMT-01



**END STATE PROJECT NO. 13-266
LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 190' RIGHT**

**LIMIT OF CONSTRUCTION
STA. 51+70, OFFSET 120' LEFT**

I-395 SOUTHBOUND

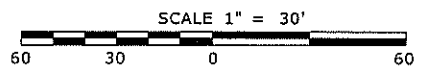
I-395 NORTHBOUND

**LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 80'
LEFT**

**LIMIT OF CONSTRUCTION
STA. 50+60, OFFSET 120'
RIGHT**

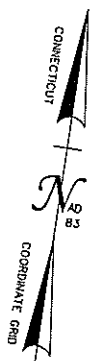
LEGEND:

- OHW - ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- o - o - SEDIMENTATION CONTROL SYSTEM (SCS)



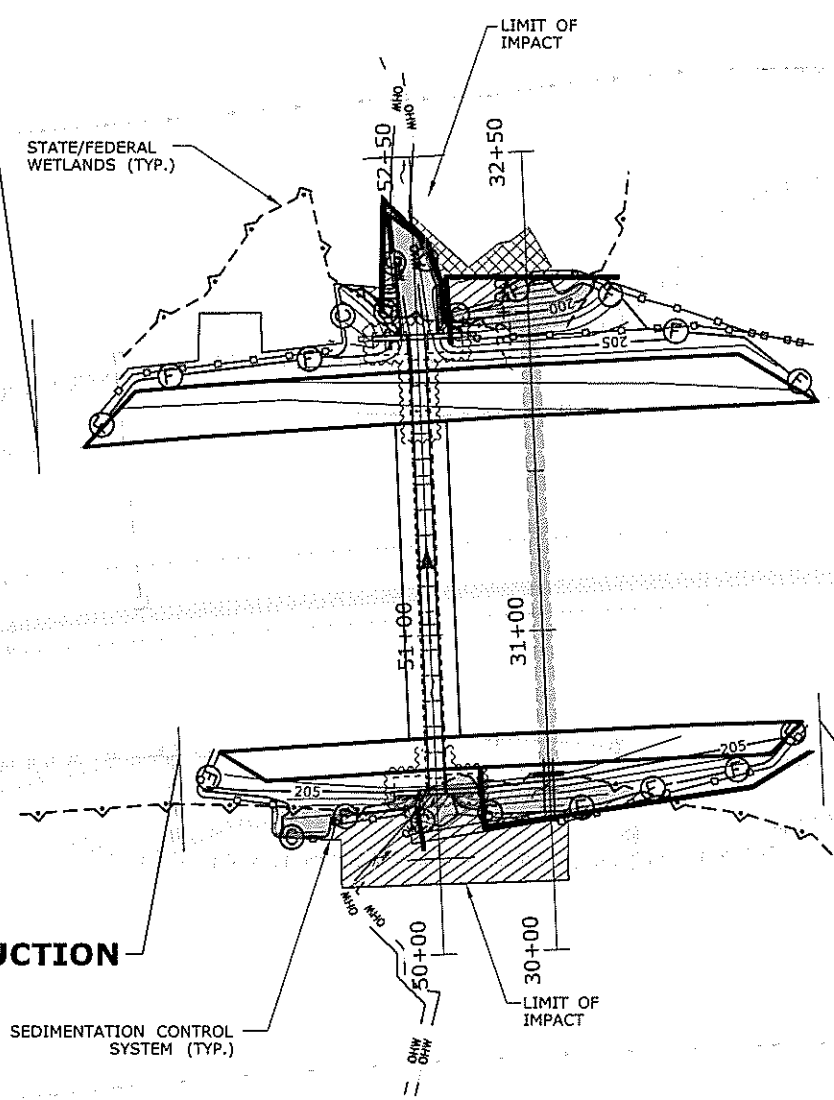
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.			DESIGNER/DRAFTER: MAM CHECKED BY: MJM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-02 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019	Filename: ...HW_MSH_0103-0266_Br_06797_RDP_PLN-01.DGN.dgn			



LIMIT OF CONSTRUCTION

LIMIT OF CONSTRUCTION



I-395 SOUTHBOUND

I-395 NORTHBOUND

LIMIT OF CONSTRUCTION

LIMIT OF CONSTRUCTION

NOTE:

CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

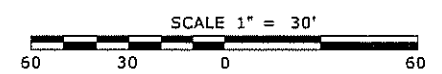
DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

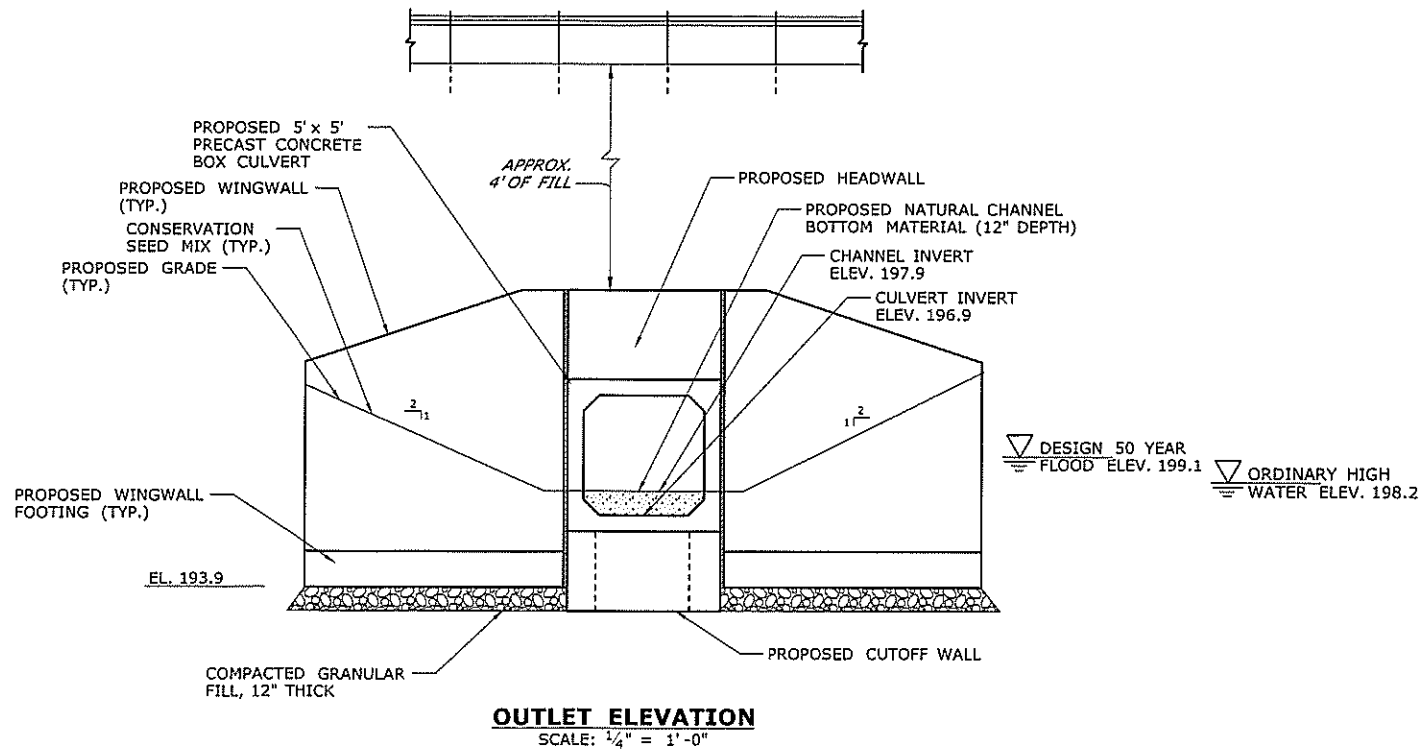
- TEMPORARY IMPACT
- SECONDARY IMPACT
- PERMANENT IMPACT
- OHW — ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

WETLAND IMPACT TABLE				
	WETLAND SITE NO.	WETLAND IMPACTS	WATERWAY IMPACTS	TOTAL
PERMANENT IMPACTS	3	1200 S.F. (0.027 AC.)	1350 S.F. (0.030 AC.)	2550 S.F. (0.059 AC.)
TEMPORARY IMPACTS	3	2100 S.F. (0.048 AC.)	100 S.F. (0.002 AC.)	2200 S.F. (0.051 AC.)
SECONDARY IMPACTS	3		400 S.F. (0.009 AC.)	400 S.F. (0.009 AC.)
TOTAL IMPACTS		3300 S.F. (0.076 AC.)	1850 S.F. (0.042 AC.)	5150 S.F. (0.118 AC.)

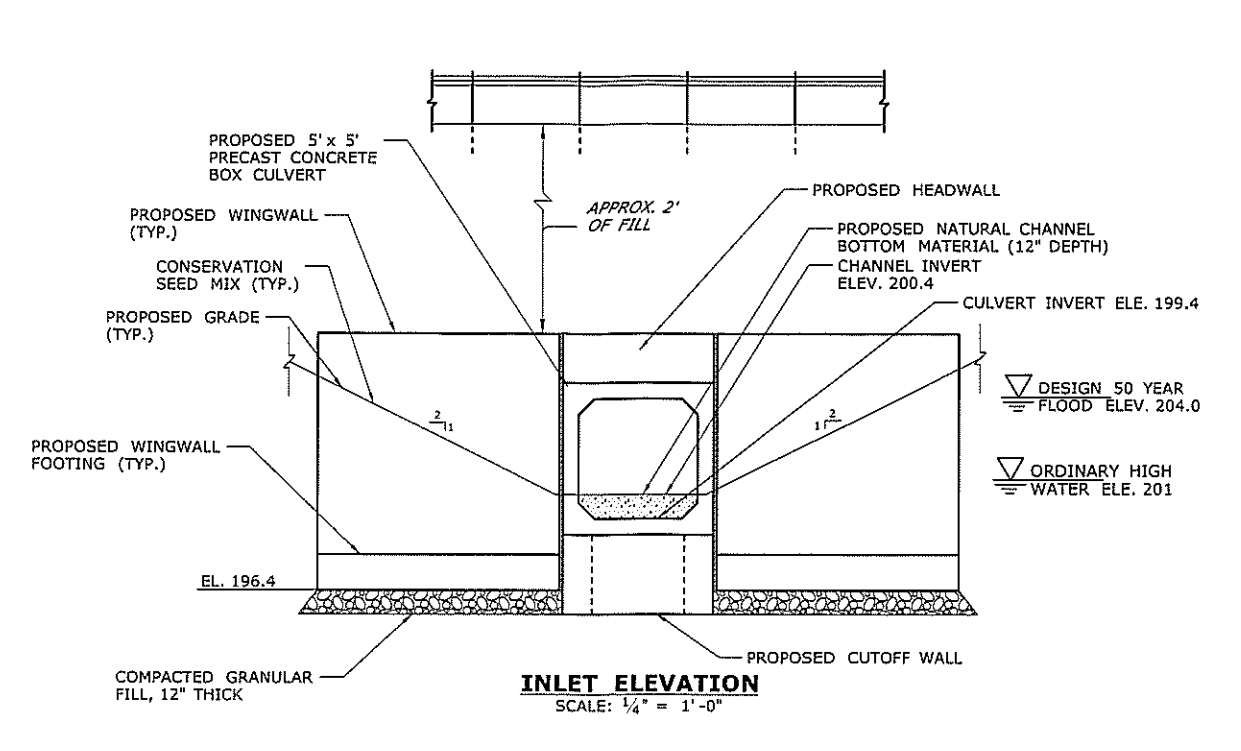


ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

DESIGNER/DRAFTER: MAM	CHECKED BY: MJM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		SIGNATURE/BLOCK:	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		LOUIS BERGER, US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK		DRAWING TITLE: BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN		DRAWING NO. PMT-03 SHEET NO.	
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019	Filename: ...\\HW HSH 0103-0266 Br 06797 WIP PLH-01.DGN.dgn		



OUTLET ELEVATION
SCALE: 1/4" = 1'-0"



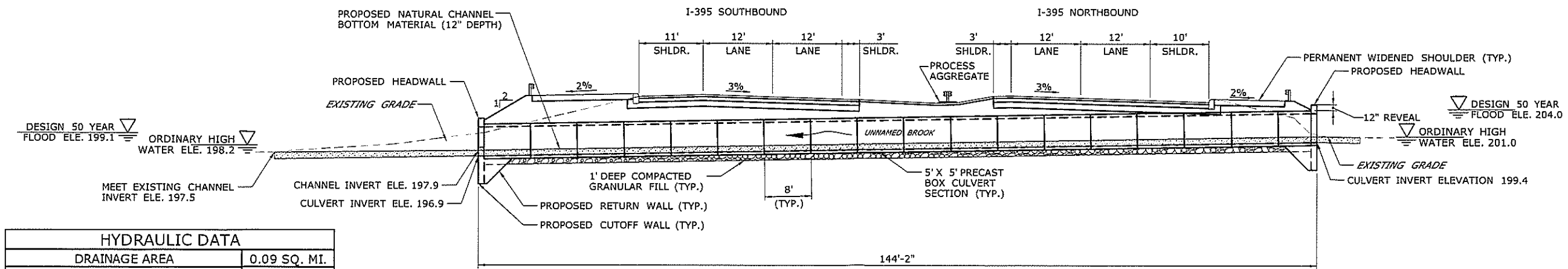
INLET ELEVATION
SCALE: 1/4" = 1'-0"

OPENNESS RATIO (OR):

OR = OPEN AREA / CULVERT LENGTH
 OR = 20 S.F. / 144 FT. = 0.14 FT
 0.14 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):

BFW = 4 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 4.8 FT.
 4.8 FT. < 5 FT. PROPOSED CULVERT SPAN

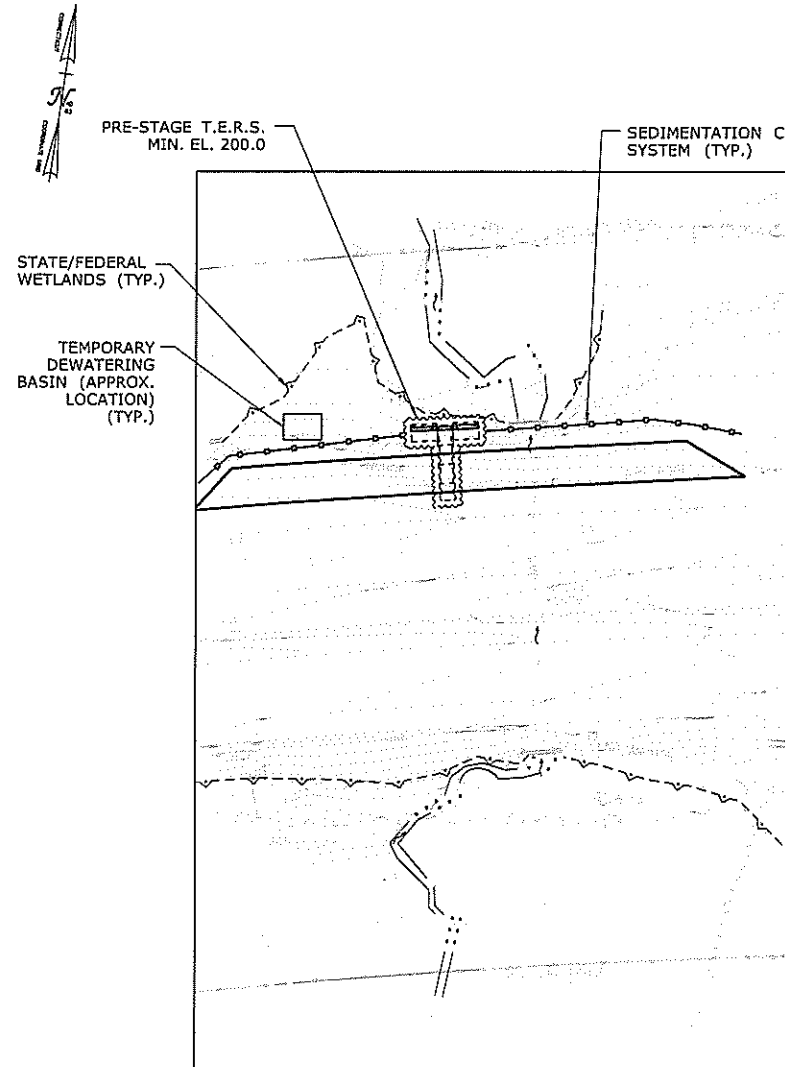


LONGITUDINAL SECTION
SCALE: 1" = 10'

HYDRAULIC DATA	
DRAINAGE AREA	0.09 SQ. MI.
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	95 CFS
AVERAGE DAILY FLOW ELEVATION	201.0 FT.
UPSTREAM DESIGN SURFACE WATER ELEVATION	204.0 FT.
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	199.1 FT.

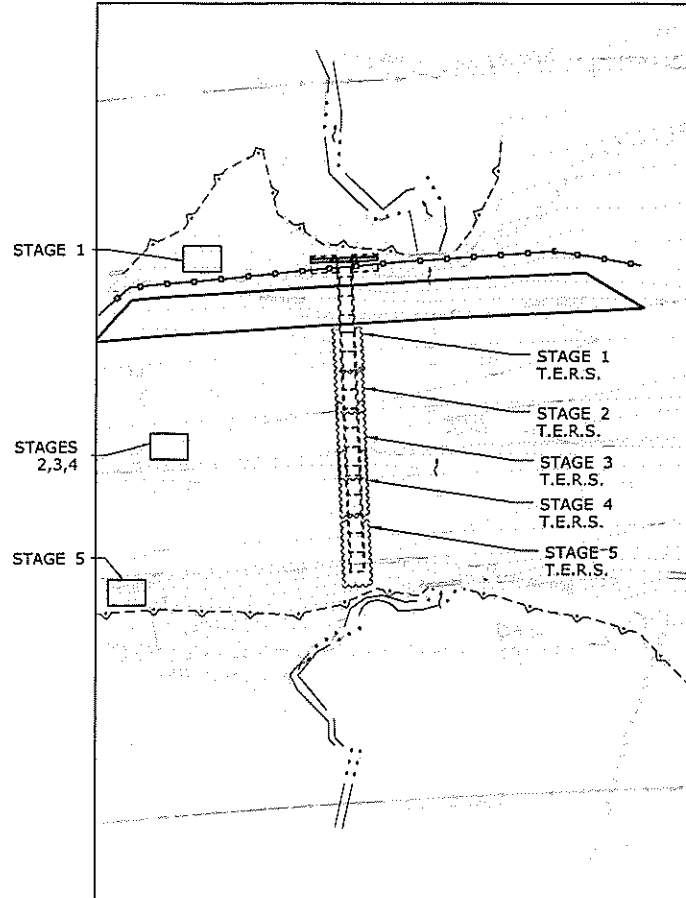
ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

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	CHECKED BY: MJM					
SCALE AS NOTED	FILENAME: ...LSB.MSH_0103-0266_Br_06797_ES_PLAN.dgn	DRAWING TITLE: BR. NO. 06797 CULVERT ELEV. & SECTION PLAN	SHEET NO.			



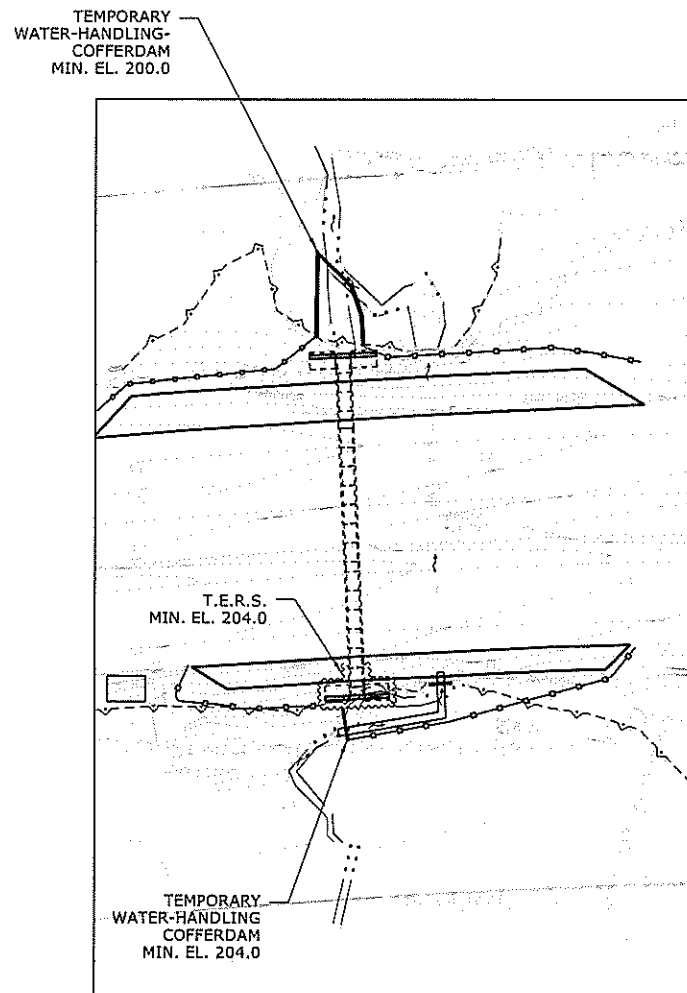
PRE-STAGE - SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.



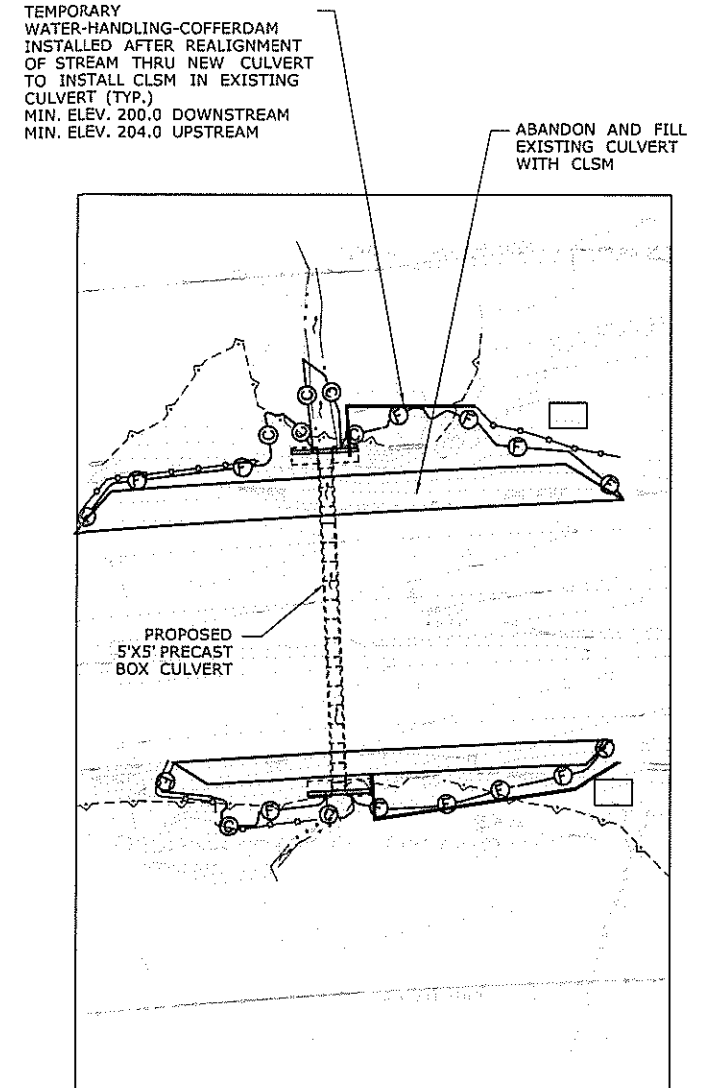
STAGE 1-5 SUGGESTED SEQUENCE

- REPEAT THESE STEPS FOR STAGES 1 THROUGH 5
1. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
 2. EXCAVATE AND INSTALL BOX CULVERT SECTIONS.
 3. REMOVE TEMPORARY EARTH RETAINING SYSTEM.



STAGE - 6 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. INSTALL TEMPORARY WATER HANDLING FACILITIES, INCLUDING WATER-HANDLING COFFERDAM, TEMPORARY 36" BYPASS PIPES.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.
7. REGRADE CHANNEL AT INLET AND OUTLET.
8. INSTALL 12" OF NATURAL STREAMBED MATERIAL ALONG THE INVERT OF THE CULVERT.
9. REMOVE TEMPORARY WATER HANDLING FACILITIES TO ALLOW STREAM THROUGH PROPOSED CULVERT.



FINAL STAGE - SUGGESTED SEQUENCE

1. INSTALL TEMPORARY WATER-HANDLING COFFERDAM
2. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM).
3. COMPLETE GRADING AS REQUIRED.
4. REMOVE TEMPORARY WATER-HANDLING COFFERDAM.
5. RESTORE TEMPORARILY DISTURBED AREAS AND INSTALL NATIVE PLANTS ACCORDING TO PMT-06.
6. REMOVE SEDIMENTATION AND EROSION CONTROLS UPON PERMANENT STABILIZATION.

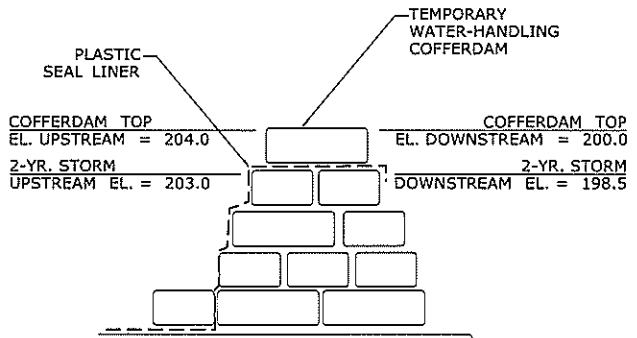
TEMPORARY HYDRAULIC DATA 06797	
AVERAGE DAILY FLOW	0.2 CFS
AVERAGE SPRING FLOW	0.3 CFS
2-YEAR FREQUENCY DISCHARGE	15 CFS
TEMPORARY DESIGN DISCHARGE	15 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	203.0 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	198.5 FT

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE EXISTING CULVERT AS SHOWN DURING CONSTRUCTION OF THE NEW STRUCTURE.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.

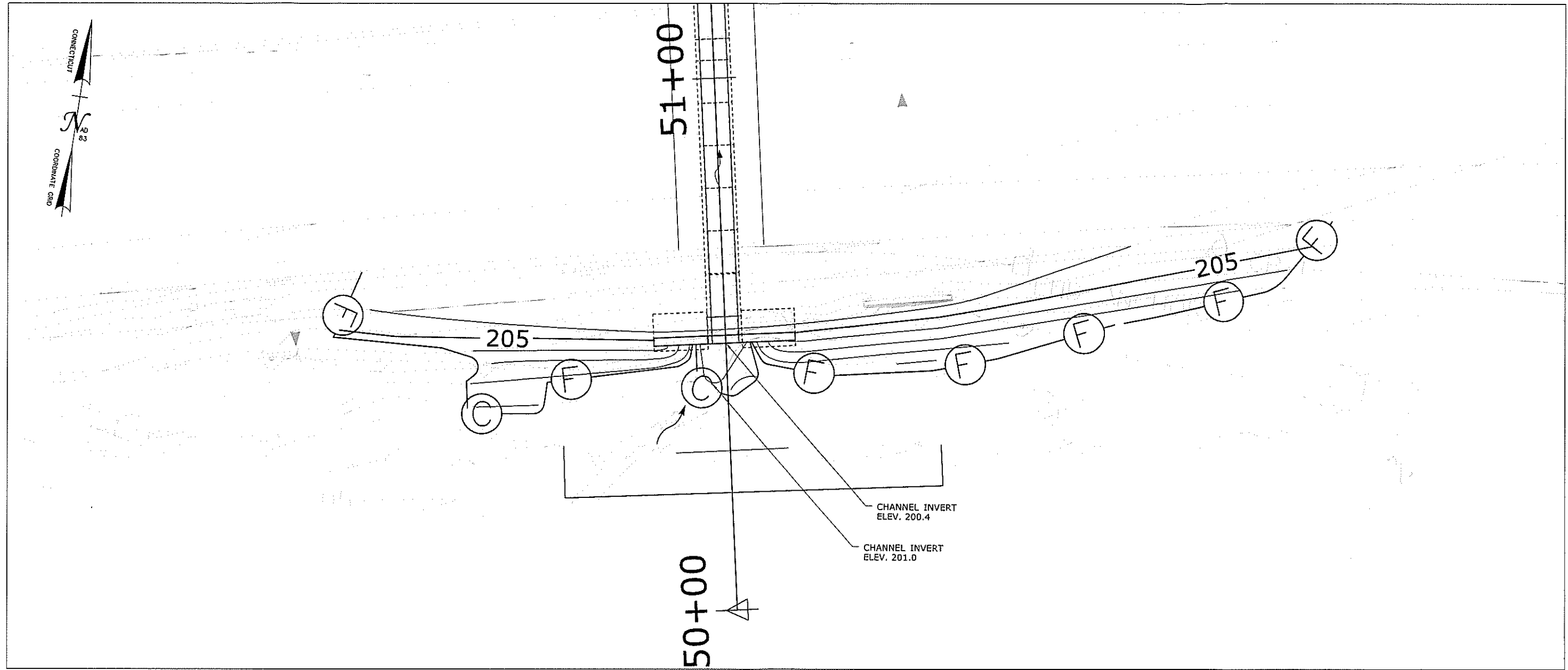


LEGEND:

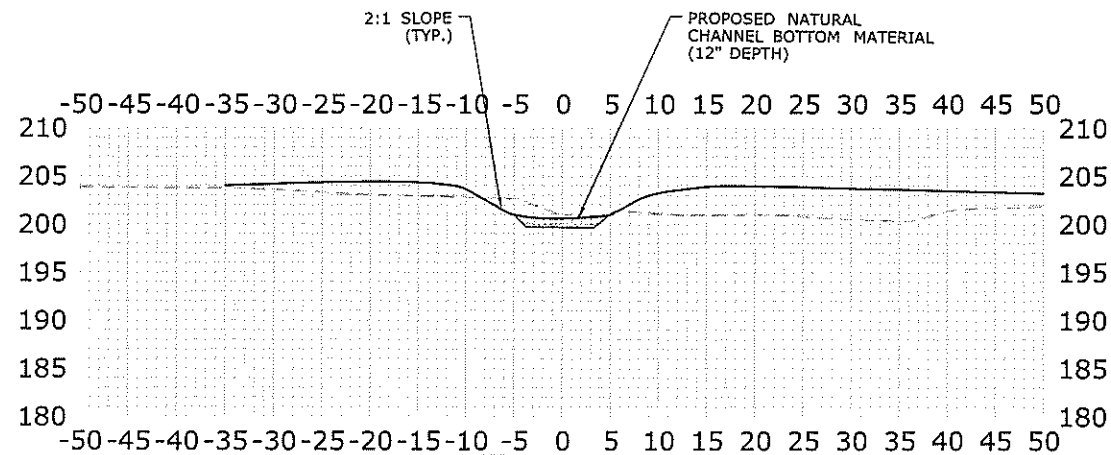
- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

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REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019						



**BR. NO. 06797
UPSTREAM GRADING PLAN**



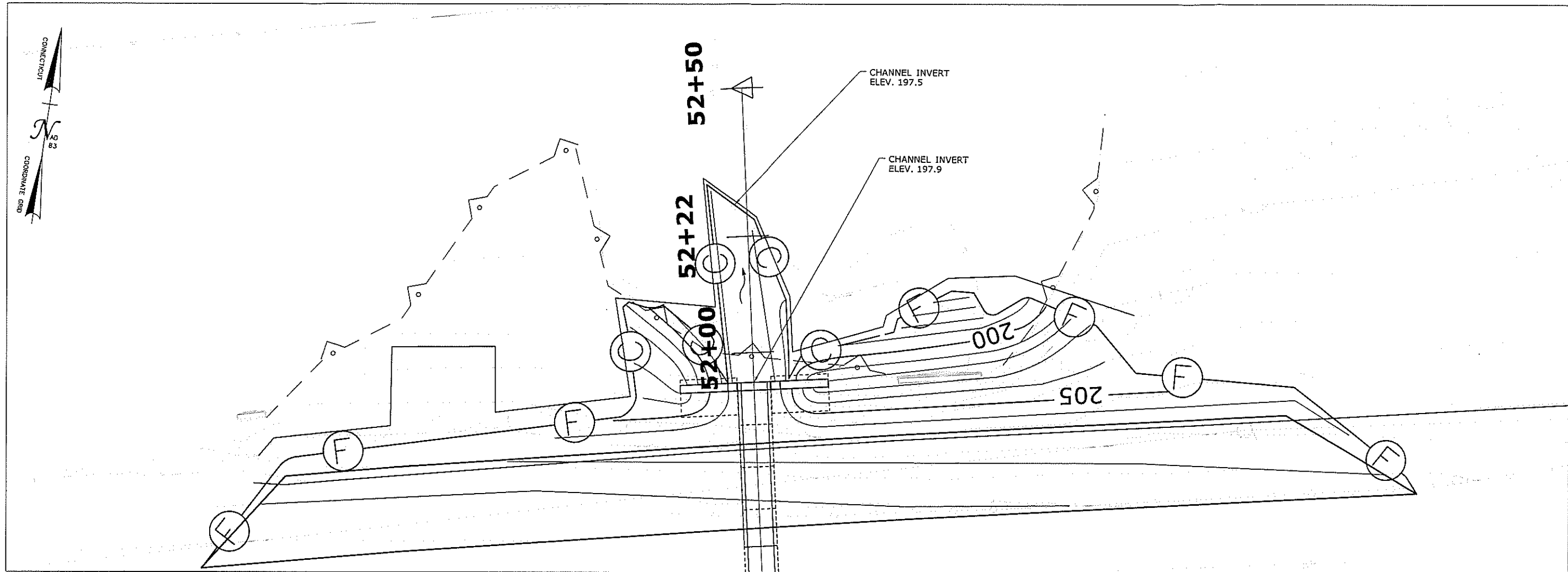
50+50

(SECTION AT FACE OF HEADWALL)

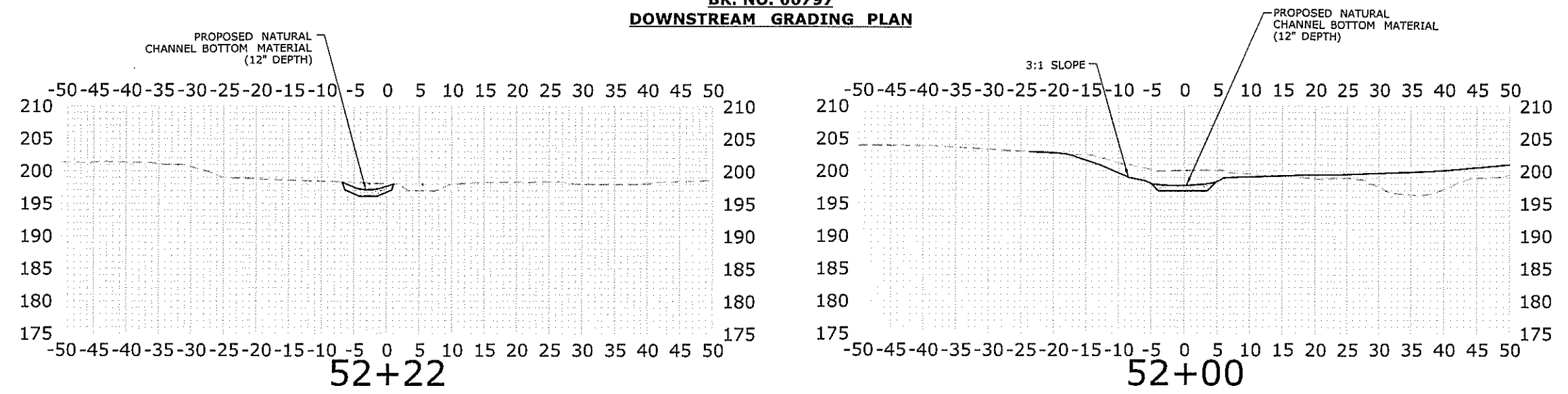
ENVIRONMENTAL PERMIT PLANS

PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT/MJM CHECKED BY: JH SCALE IN FEET 0 10 20 SCALE 1"=10'	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-06 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019	Filename: ...JHW MSH 0103-0266 Br 06797 GRD PLN-01.DGN.dgn		

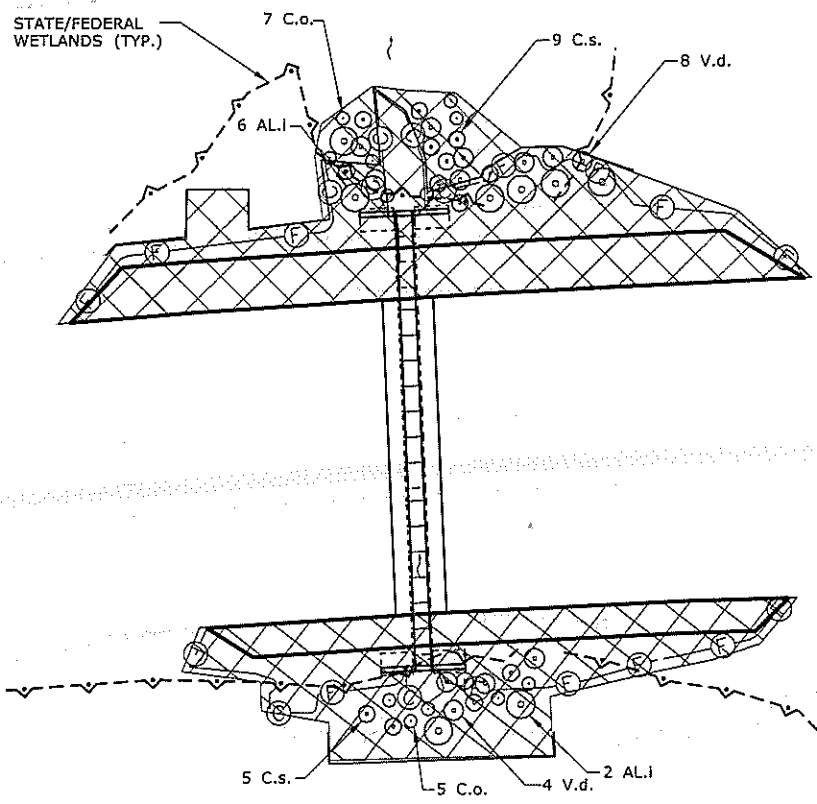
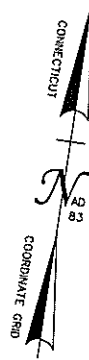


**BR. NO. 06797
DOWNSTREAM GRADING PLAN**



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: JCT/MJM CHECKED BY: JH SCALE IN FEET SCALE 1"=10'	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...HWV.MSH.0103-0266.Br.06797.GRD.PLN-01.DGN.dgn	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-07 SHEET NO.
	REV. I DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019		DRAWING TITLE: BRIDGE 06797 CULVERT DOWNSTREAM GRADING PLAN			



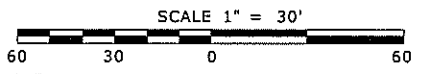
CONTROL AND REMOVAL OF INVASIVE SPECIES
(SEE NOTE 5)

NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.

PERMIT PLANT LIST

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	WETLAND INDICATOR
Al.i.	8	Speckled Alder	<i>Alnus incana</i>	18"-24" HT. B.B.	Field Located	FACW
C.s.	14	Red-Osier Dogwood	<i>Cornus sericea</i>	18"-24" HT. B.B.	Field Located	FACW
V.d.	12	Northern Arrowwood	<i>Viburnum dentatum</i>	18"-24" HT. B.B.	Field Located	FACW
C.o.	12	Common Buttonbush	<i>Cephalanthus occidentalis</i>	18"-24" HT. B.B.	Field Located	OBL



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 7/1/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BRIDGE 06797 PERMIT PLANTING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-08 SHEET NO.
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 7/1/2019	Filename: ...:\HW MSH 0103-0266 Br 06797.PP.PLN-01.DGN.dgn					

Attachment C
Site Photos





Inlet of Bridge No. 06797



Outlet of Bridge No. 06797



Outlet of Bridge No. 06797



Downstream of Outlet,
Bridge No. 06797

Attachment D

Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

CT-PGP PCN Authorization and CT DEEP Addendum Environmental Report

Applicant: Connecticut Department of Transportation

Project: State Project No. 103-266

Rehabilitation of Bridge No. 06797 Carrying Unnamed Brook under Interstate 395
Norwich, Connecticut

Introduction

The following environmental report was prepared by CME Associates, Inc., on behalf of the Connecticut Department of Transportation (CTDOT) for the rehabilitation of Bridge No. 06797 in Norwich, Connecticut. Bridge No. 06797 is a 72 inch span by 48 inch rise arched asphalt coated corrugated metal pipe (ACCMP) culvert that conveys an unnamed brook under Interstate 395 (I-395). The bridge was originally built in 1956 to allow I-395 to pass over the unnamed brook. The total structure length of the ACCMP is 139 feet long. The culvert is below the roadway and it is underneath approximately 3 feet of fill. The existing culvert is considered to be in serious condition. It is structurally deficient due to the heavy laminar rust and minor section losses, and perforation to the pipe, which requires rehabilitation. The existing concrete headwalls, cut-off walls, and wingwalls also exhibit areas with deterioration. The project involves constructing a new box culvert approximately 35 feet west of the existing culvert. The replacement culvert will be 5 foot wide by 5 foot high pre-cast concrete box culvert with a total structure length of 144 feet. Cut-off walls and U-type wingwalls will be installed at the inlet and outlet. The boxed culvert will have a rounded entrance lip at the inlet. The brook will be realigned to its original course prior to the construction of I-395 through the new culvert. The existing culvert will be abandoned in place and filled with controlled low strength material. Project No. 103-266 also includes Bridges No. 06795 and 06796. All the bridges carry I-395 over a different watercourse in the city of Norwich. The rehabilitation of Bridges No. 06795 and 06796 are being processed under separate permits.

Site Information

The unnamed brook has a drainage area of 0.09 square miles. The watercourse lies within the Shetucket River Regional Basin No. 3800 and in the Thames River Major Basin No. 3. The watershed is located in the northeastern portion of Norwich and can be characterized as largely forested with areas of forested wetland, developed land (roadway), and agricultural fields (CLEAR Land Use 2015). The project is not within a Natural Diversity Database mapped area, per CT Department of Energy and Environmental Protection (CTDEEP) mapping. Nor is it located in an Aquifer Protection Area or a Critical Habitat area. The unnamed brook at Bridge No. 06797 is not included in the FEMA New London County Flood Insurance Study.

Study Area

Bridge No. 06797 is located on I-395 over an unnamed brook, approximately 0.4 miles north of Bridge No. 00279 (Lawler Lane). Land use in the vicinity of the site includes transportation (roadway), forest, wetlands, and pasture and row crop agricultural uses.

Site Wetland Resources

A wetland delineation was originally conducted January 2015 and again July 2017. Wetlands are adjacent to the unnamed brook at the inlet and outlet of Bridge No. 06797. The unnamed brook is riverine (R4SBC) flows south to north. The culvert creates channelized flow in a wetland area that is bisected by I-395. Upstream of the project culvert, the discernable channel leads to forested wetland with pit and mound topography. Downstream of the project culvert, flows remain channelized up to the margin of a

pasture/wet meadow. The channel width is a meandering stream with gradually varying width, a moderate gradient, and occasional shape changes to the floodplain. Within the project area, the unnamed brook flows through a deciduous forest dominated by red maples. The ordinary high water (OHW) elevation was obtained using ACOE methodology.

Vegetation

The area adjacent to the unnamed brook is relatively flat with some pits and mounds and dominated by brush and Red Maple (*Acer rubrum*). The vegetation bordering the stream includes Chicory (*Cichorium intybus*), Skunk Cabbage (*Symplocarpus foetidus*), and Sensitive Fern (*Onoclea sensibilis*). The area adjacent to the roadway includes Goldenrod (*Solidago canadensis*), Common Blackberry (*Rubus allegheniensis*), as well as Japanese Barberry (*Berberis thunbergii*), and Japanese knotweed (*Fallopia japonica*).

Soils

Soils found within the project area are mapped by the Natural Resource Conservation Service (NRCS). The roadway as well as the adjacent side slopes are disturbed soils mapped as Udorthents-Urban Land complex (Map # 306). The soils located immediately adjacent to the existing and proposed inlet and outlet of the structures are Raypol silt loam (Map #12). The NRCS Web Soil Survey Map is attached.

Functions and Values

The primary functions and values of the unnamed brook and wetlands in the project area are wildlife and fish habitat and groundwater recharge. The stream channel functions within the culvert are limited to fish and wildlife habitat/passage. The wooded area surrounding the culvert would support typical wildlife species of fragmented forest. The habitat in the project area is of low quality to fish within the watershed. The existing structure creates a barrier to fish movement, however fish species were observed within the stream within the project area. The proposed project will have very limited effects on wetland function and values in the project area as it pertains to wildlife habitat. The project proposes to maintain the existing wildlife capacity of the wetland area. Direct impacts have been minimized to the fullest extent. Access points have been designed to utilize a portion of the existing shoulders of I-395 reducing the need to further encroach into the adjacent wetlands. The critical issue with the proposed culvert replacement is the alteration of the existing stream channel and the proposed permanent impacts to the existing watercourse. The replacement requires installing a new 5 foot wide by 5 foot high pre-cast box culvert spanning a length of 144 feet approximately 35 feet to the west of the existing culvert. The existing brook will be regraded and realigned to flow through the replacement culvert. The existing culvert will be filled with controlled low strength material and abandoned in place. The box culvert will provide a larger hydraulic opening, meet the 1.2x bankfull width recommendation, eliminate the bridge from being classified as structurally deficient, and reduce flow velocities due to placement of one foot of natural streambed material which in turn will facilitate fish and wildlife passage, all of which are not provided by the existing culvert. The design process for this project included hydraulic modeling of the proposed box culvert replacement for the 50-year design storm. The larger hydraulic opening and rounded inlet will reduce the upstream backwater elevation and increase the freeboard above the minimum of one foot, meeting the ConnDOT Drainage Manual criteria that the existing culvert does not currently provide. The proposed channel construction will mimic the existing channel conditions in depth and width. The proposed channel bottom will also be created with native streambed material. The surrounding project area is relatively flat. It is anticipated that the wetland will remain within the existing limits. Secondary impacts as a result of the project are anticipated due to the outlet watercourse realignment. Due to the relatively flat and low topography of the surrounding area, it is anticipated that this area will remain classified as a wetland.

Short-term effects as a result of construction activities are minimized by:

- Limiting areas of disturbance in uplands.
- Utilizing an erosion and sedimentation control plan.
- Inclusion of a water handling plan.
- Adherence to the time-of-year restriction for unconfined in stream work.
- Minimizing work area in the watercourse and wetlands.
- Restoration of temporarily disturbed areas with plantings and seeding.

Regulatory Impacts

To gain access to the structure to perform the proposed work, permanent access shoulders will be constructed within the shoulders of I-395. These constructed widened shoulders will allow heavy construction equipment and material required to conduct work, to access the existing and proposed culverts as well as minimize impacts to the adjacent wetland and watercourse. These proposed access areas will require limited clearing and grubbing, invasive species control, as well as some minor permanent impacts to wetlands. A sedimentation and erosion control system will be employed along the access routes and utilized throughout all phases of construction.

Construction access and water handling:

To minimize traffic impacts, the work zone on I-395 will be handled progressively from north to south and with temporary lane closures for 36-48 hours per stage. With the installation of each box culvert section, the roadway pavement will be removed, and the structure excavation initiated; the excavated area will then be backfilled and the road re-constructed. Off-peak temporary shoulder and lane closures will be used for equipment and construction personnel to enter and exit the access areas, as required.

The construction sequencing involves a pre-stage, six stages, and a final stage. The brook will flow under its present alignment through the existing culvert until Stage 6. During the pre-stage and stages 1-3, I-395 southbound lanes will be impacted. During Stages 3-5, I-395 northbound lanes will be impacted. The pre-stage involves the construction of the northern permanent access shoulder. A temporary cofferdam will restrict potential flows from entering the work area. Temporary earth retaining systems (TERS) will be utilized to install the pre-cast sections of the culvert. The cut-off wall, wingwalls, box culvert sections, and headwall will be constructed at the downstream outlet (north). In Stages 1 through 5, the excavation and installation of each box culvert section will be completed progressively from north to south. The roadway will be removed and then re-constructed in order to complete the work. Stage 6 includes the construction of the southern permanent access shoulder. A temporary water-handling-cofferdam and a temporary bypass extension pipe to the inlet of the existing pipe will be installed for the construction of the inlet cut-off wall, wingwalls, headwall and final box culvert sections. At the proposed outlet, a temporary water-handling-cofferdam will be installed for the channel regrading. Once the final portion of the proposed culvert is constructed, the channel will be regraded at the inlet and outlet and a minimum of one foot of natural streambed material will be placed along the invert of the proposed culvert and as the proposed channel bottom. The final step of stage 6 includes the removal of the temporary water handling facilities which will allow the stream to pass through the proposed culvert. In the final stage of construction, a temporary water-handling cofferdam will be constructed at the inlet and outlet of the existing culvert to restrict any potential flows. This will allow the existing culvert to be filled with controlled low strength material under dry conditions. The final slope grading will also occur during this stage. Once work is concluded and project area is stabilized, all temporary water-handling systems will be removed. As

required, dewatering of the work area will include pumping dewatered water to a temporary sedimentation basin located in an upland area. Any wetland temporarily impacted by the work shall be restored utilizing native plantings and a wetland seed mix. All disturbed areas will be restored at the completion of construction and temporary sedimentation and erosion controls will be removed upon permanent stabilization.

Culvert Replacement:

The proposed project involves abandoning in place a severely deteriorated culvert and realigning the existing stream through a new 5 foot wide by 5 foot high pre-cast concrete box culvert spanning a length of 144 feet. The culvert replacement and stream realignment will result in impacts to the existing conditions and wetland functions and values. The greatest concern for this replacement is altering of the existing flows and hydraulic conditions at the culvert. Hydraulic modeling analysis of the culvert was conducted and found that the 50-year water surface elevation will decrease by approximately 0.3 feet. The culvert replacement will not result in changes to the hydraulic conditions that will significantly impact flow velocities. The project meets the design criteria for the CTDOT Drainage Manual. This project also proposes to improve wildlife and fish access to the culvert by increasing the hydraulic opening, removing the perched culvert, and providing minimum 1 foot of natural streambed material within the structure.

Fish Passage:

The project includes feasible elements designed to minimize project impacts to fisheries resources while minimizing channel connectivity impacts from the proposed project. Any unconfined instream construction activities will be limited to June 1st to September 30th, inclusive, to avoid impacts to fish passage during construction. Current fish passage is considered low due to the inconsistent flows, the presence of swamp wetlands in the area, as well as the culvert being perched. The completed project should not have significant impacts, but will improve fish passage within the area. CTDEEP Inland Fisheries Division has confirmed that the project complies with their conditions. Fisheries design elements include:

- Regrading of natural streambed material at the inlet and outlet to grade the streambed to the new channel culvert invert elevation, ensuring that the outlet does not create a barrier to fish movement.
- The placement of minimum 1 foot of natural streambed material within the culvert bottom to create a more continuous habitat through the structure.
- The discontinuation of the deficient culvert.
- Adherence to the time-of-year restriction.
- The restoration of disturbed areas with plantings and seeding.

Proposed Impacts:

The replacement of Bridge No. 06797 results in 1,200 square feet (0.027 acres) of permanent wetland impacts. Permanent impacts are a result of the installation of the box culvert, and grading required within the wetland for the proposed stream alignment. Some grading impacts will also occur as a result of the construction of permanent access shoulders. The project results in 1,350 square feet (0.030 acres) of permanent watercourse impacts. This number accounts for the full closure of the existing bridge and new stream alignment as well as and the construction at the cut-off walls, and wingwalls. Though this is described as a permanent impact, the watercourse will remain, but will be redirected through the new, hydraulically adequate structure. Temporary impacts include the areas necessary for the water handling and access to the project culverts. Temporary impact to the wetlands is 2,100 square feet (0.048 acres) and

to the watercourse is 100 square feet (0.002 acres). Secondary watercourse impacts are also proposed where the channel at the outlet will be abandoned due to the new stream alignment. This results in 400 square feet (0.009 acres) of impact. The total wetland and watercourse impact is 5,150 square feet (0.118 acres). Impacts are described within the table on the following page:

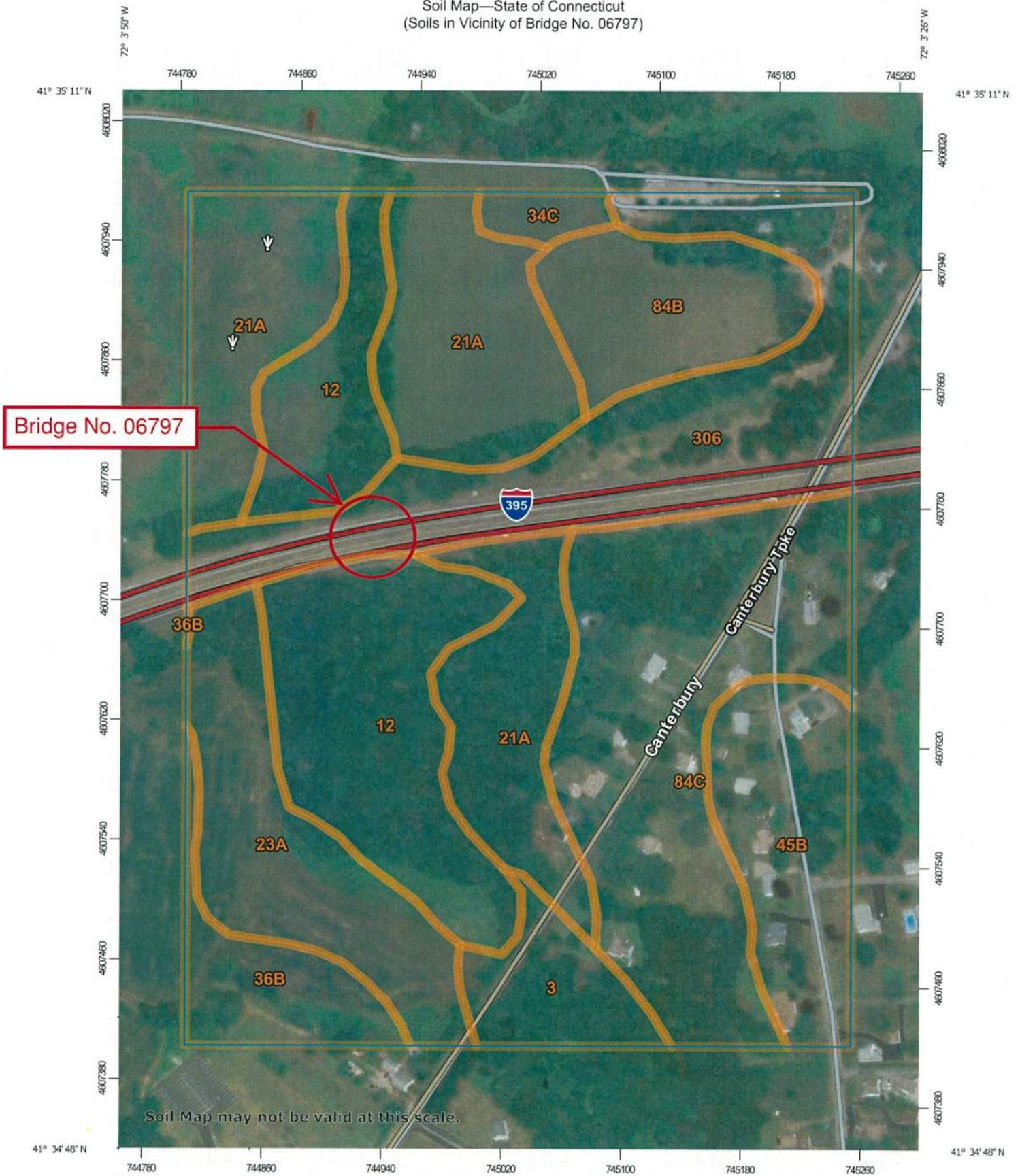
Bridge No. 06797 Wetland and Watercourse Impact Table			
	Wetland	Watercourse	Total
Temporary	2,100 sqft (0.048 ac)	100 sqft (0.002 ac)	2,200 sqft (0.051 ac)
Permanent	1,200 sqft (0.027 ac)	1,350 sqft (0.030 ac)	2,550 sqft (0.059 ac)
Secondary	0 sqft (0.000 ac)	400 sqft (0.009 ac)	400 sqft (0.009 ac)
Total	3,300 sqft (0.076 ac)	1,850 sqft (0.042 ac)	5,150 sqft (0.118 ac)

Minimization and Avoidance

This project cannot completely avoid impacts to the surrounding wetland and watercourse as part of the proposed replacement box culvert. The project includes minimization measures and design features to limit the effects of project impacts. These design elements include utilizing a water handling plan for the continuous flow of the unnamed brook, placing 1 foot of natural streambed material throughout the culvert as well as at the proposed inlet and outlet to grade the streambed to the new invert elevation. The project also minimizes impacts by utilizing pre-cast structures to minimize the construction duration, installing cutoff walls, flared wingwalls, and a beveled opening at the inlet to improve stream flow. To address fish passage concerns, unconfined instream work shall be limited to June 1st to September 30th, inclusive, to avoid impacts to potential fish passage during construction.

Project disturbance is minimized by limiting the project work areas, by the installation of erosion control barriers and by the revegetation of disturbed areas following completion of the project. The project requires vegetation removal and ground disturbance to establish permanent access shoulders at the inlet and outlet of the structure. The ground to be disturbed is primarily the fill slopes of I-395. The watercourse will be disturbed in association with the proposed replacement box culvert and new watercourse alignment. The watercourse will remain and will flow through the new culvert following the completion of the project. Disturbed areas in the streambed will be restored with native natural channel bed material. Any wetlands impacted by the work shall be restored utilizing a wetland seeding mix and revegetated following construction. This project utilizes best management practices (Form 817), 2002 Erosion and Sedimentation Control Guidelines, and 2004 Stormwater Quality Manual. As well as the removal of invasive species within the project limits CT DOT Specifications "Control & Removal of Invasive Vegetation".

Soil Map—State of Connecticut
(Soils in Vicinity of Bridge No. 06797)



Map Scale: 1:3,440 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

7/20/2018
Page 1 of 3

MAP LEGEND

- Area of Interest (AOI)**
 - Area of Interest (AOI)
- Soils**
 - Soil Map Unit Polygons
 - Soil Map Unit Lines
 - Soil Map Unit Points
- Special Point Features**
 - Blowout
 - Borrow Pit
 - Clay Spot
 - Closed Depression
 - Gravel Pit
 - Gravelly Spot
 - Landfill
 - Lava Flow
 - Marsh or swamp
 - Mine or Quarry
 - Miscellaneous Water
 - Perennial Water
 - Rock Outcrop
 - Saline Spot
 - Sandy Spot
 - Severely Eroded Spot
 - Sinkhole
 - Slide or Slip
 - Sodic Spot
- Water Features**
 - Streams and Canals
- Transportation**
 - Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads
- Background**
 - Aerial Photography
- Other Features**
 - Spill Area
 - Stony Spot
 - Very Stony Spot
 - Wet Spot
 - Other
 - Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 14, 2011—Aug 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	2.2	3.5%
12	Raypol silt loam	9.9	15.8%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	12.9	20.5%
23A	Sudbury sandy loam, 0 to 5 percent slopes	5.6	8.9%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	0.7	1.1%
36B	Windsor loamy sand, 3 to 8 percent slopes	2.5	3.9%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	4.6	7.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	3.9	6.3%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	11.3	18.0%
306	Udorthents-Urban land complex	9.2	14.7%
Totals for Area of Interest		62.9	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06797 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Wet
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat/pits Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5836 Long: -72.0619 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present?	Yes _____ No _____	Depth (inches): _____		
Water Table Present?	Yes _____ No _____	Depth (inches): _____		
Saturation Present? (includes capillary fringe)	Yes <u>x</u> No _____	Depth (inches): <u>0</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet

<u>Tree Stratum</u> (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	10	Yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	10 =Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____ =Total Cover		
<u>Herb Stratum</u> (Plot size: <u>50 ft</u>)			
1. <u>Cichorium intybus</u>	5	No	FACU
2. <u>Symplocarpus foetidus</u>	15	Yes	OBL
3. <u>Onoclea sensibilis</u>	10	Yes	FACW
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	30 =Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>50 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	_____ =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>15</u>	x 1 = <u>15</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>10</u>	x 3 = <u>30</u>
FACU species <u>5</u>	x 4 = <u>20</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>40</u> (A)	<u>85</u> (B)
Prevalence Index = B/A = <u>2.13</u>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bridge No. 06797 City/County: Norwich Sampling Date: Jan 2015
 Applicant/Owner: Connecticut Department of Transportation State: CT Sampling Point: Up
 Investigator(s): RWC Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): flat Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 41.5779 Long: -72.0763 Datum: NAD83
 Soil Map Unit Name: Charlton-Chatfield Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No _____
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up

Tree Stratum (Plot size: <u>50 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	10	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>20.0%</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	10	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>65</u></td> <td>x 4 = <u>260</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>315</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>3.94</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>65</u>	x 4 = <u>260</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>80</u> (A)	<u>315</u> (B)	Prevalence Index = B/A = <u>3.94</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>10</u>	x 3 = <u>30</u>																			
FACU species <u>65</u>	x 4 = <u>260</u>																			
UPL species <u>5</u>	x 5 = <u>25</u>																			
Column Totals: <u>80</u> (A)	<u>315</u> (B)																			
Prevalence Index = B/A = <u>3.94</u>																				
Sapling/Shrub Stratum (Plot size: <u>50 ft</u>)																				
1. <u>Rubus allegheniensis</u>	50	Yes	FACU																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	50	=Total Cover																		
Herb Stratum (Plot size: <u>50 ft</u>)				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is $\leq 3.0^1$ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Solidago canadensis</u>	10	Yes	FACU																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	10	=Total Cover																		
Woody Vine Stratum (Plot size: <u>50 ft</u>)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
1. <u>Berberis thunbergii</u>	5	Yes	FACU																	
2. <u>Celastrus orbiculatus</u>	5	Yes	UPL																	
3. _____																				
4. _____																				
	10	=Total Cover																		
Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>																				

Remarks: (Include photo numbers here or on a separate sheet.)

Attachment E
Northern Long-Eared Bat Consultation

Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

Information to Determine 4(d) Rule Compliance:

	YES	NO
1. Does the project occur wholly outside of the WNS Zone ¹ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Have you contacted the appropriate agency ² to determine if your project is near known hibernacula or maternity roost trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Could the project disturb hibernating NLEBs in a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Could the project alter the entrance or interior environment of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

You are eligible to use this form if you have answered yes to question #1 or yes to question #2 and no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

Agency: FHWA – Connecticut Division

Applicant³ (Name, Email, Phone No.):

Connecticut Department of Transportation
 Amanda M. Saul, Office of Environmental Planning
DOT.NLEB@ct.gov, (860)594-2939

Project Name: CTDOT0103-0266

Project Location (include coordinates if known): I-395 Norwich (coordinates listed below) at three locations

Basic Project Description (provide narrative below or attach additional information):

This project involves the rehabilitation of three culverts under I-395 in the town of Norwich, Bridge 06795 over Hammer Brook (41.556303, -72.104585), Bridge 06796 over Byron Brook (41.577787, -72.076136), and Bridge 06797 over unnamed brook (41.583895, -72.061892).

¹ <http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>

² See <http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html>

³ If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

General Project Information	YES	NO
Does the project occur within 0.25 miles of a known hibernaculum?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project occur within 150 feet of a known maternity roost tree?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the project include forest conversion ⁴ ? (if yes, report acreage below)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Estimated total acres of forest conversion	1.5 ac	
If known, estimated acres ⁵ of forest conversion from April 1 to October 31		
If known, estimated acres of forest conversion from June 1 to July 31 ⁶		
Does the project include timber harvest? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of timber harvest		
If known, estimated acres of timber harvest from April 1 to October 31		
If known, estimated acres of timber harvest from June 1 to July 31		
Does the project include prescribed fire? (if yes, report acreage below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated total acres of prescribed fire		
If known, estimated acres of prescribed fire from April 1 to October 31		
If known, estimated acres of prescribed fire from June 1 to July 31		
Does the project install new wind turbines? (if yes, report capacity in MW below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Estimated wind capacity (MW)		

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: Amanda M. Saul

Digitally signed by Amanda M. Saul
 DN: cn=Amanda M. Saul, o=Connecticut
 Department of Transportation, ou=Office of
 Environmental Planning,
 email=amanda.saul@ct.gov, c=US
 Date: 2019.03.15 09:14:22 -04'00'

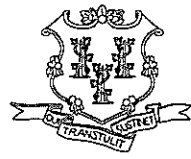
Date Submitted: 3/15/2019

⁴ Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).

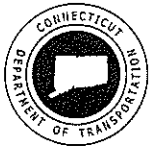
⁵ If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.

⁶ If the activity includes tree clearing in June and July, also include those acreage in April to October.

Attachment F
Fisheries Sign-Off



CONNECTICUT DEPARTMENT OF TRANSPORTATION



ENVIRONMENTAL PERMIT PLANS

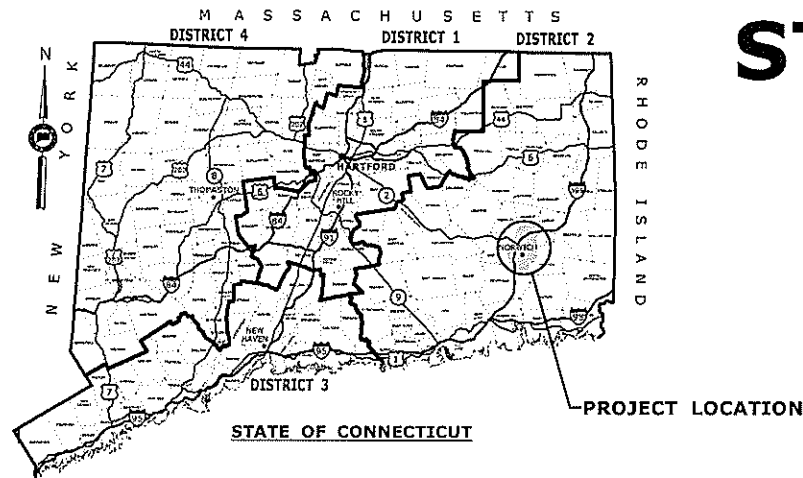
STATE PROJECT NO. 103-266

REPLACEMENT OF BRIDGE NO. 06797

I-395 OVER UNNAMED BROOK

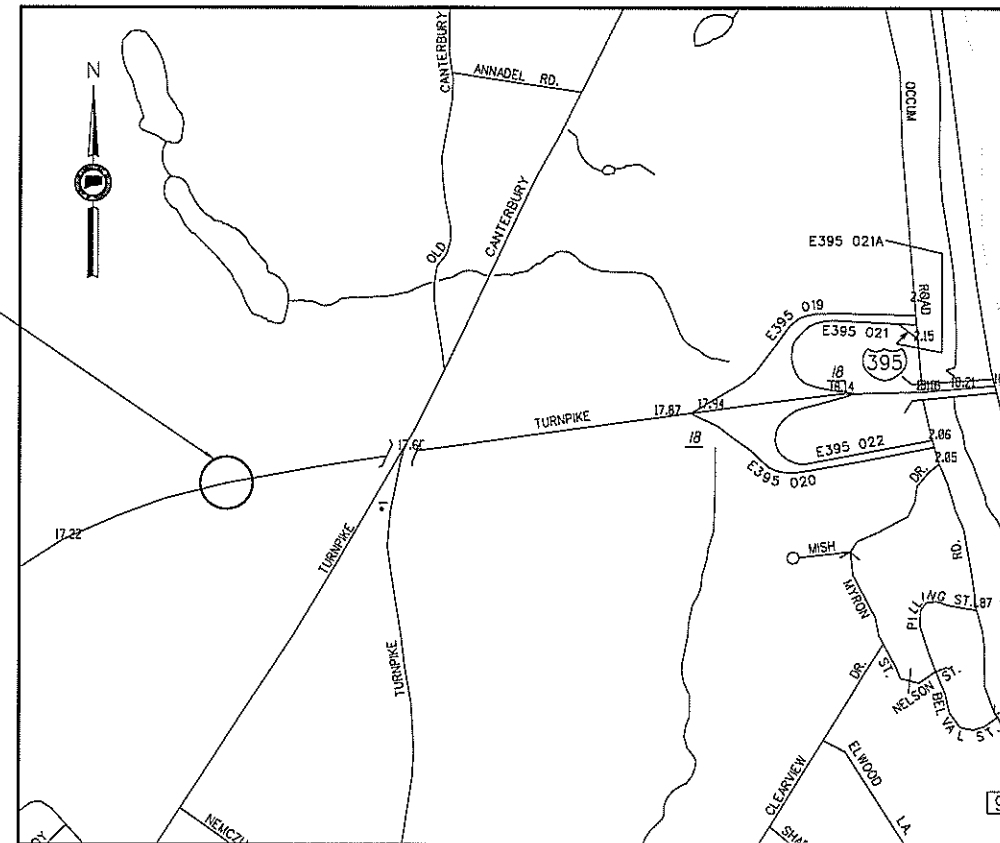
(SITE No. 3)

IN THE CITY OF NORWICH



Brian Digitally signed
Murphy by Brian Murphy
Date: 2019.07.30
13:47:21 -04'00'

BRIDGE NO. 06797
I-395 OVER
BYRON BROOK



LOCATION PLAN

SCALE: 1" = 500'

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	BR. NO. 06797 TITLE SHEET
PMT-02	BR. NO. 06797 GENERAL SITE PLAN
PMT-03	BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN
PMT-04	BR. NO. 06797 ELEV. & SECTION PLAN
PMT-05	BR. NO. 06797 STAGING AND WATER HANDLING PLAN
PMT-06	BR. NO. 06797 UPSTREAM GRADING PLAN
PMT-07	BR. NO. 06797 DOWNSTREAM GRADING PLAN
PMT-08	BR. NO. 06797 PERMIT PLANTING PLAN

GENERAL NOTES:

1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL AFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 83 VERTICAL DATUM BASED ON NAVD OF 1988.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND INCIDENTAL CONSTRUCTION, FORM 817, SECTION 1.10 AND WILL ALSO FOLLOW BEST MANAGEMENT PRACTICES (BMPs) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION & SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LOUIS BERGER US, Inc.
A WSP COMPANY
2500 WESTCHESTER AVENUE
SUITE 305
PURCHASE, NY 10577

Digitally signed
by Robert Lin
Date:
2019.07.01
10:44:55-04'00'

ENVIRONMENTAL PERMIT PLANS

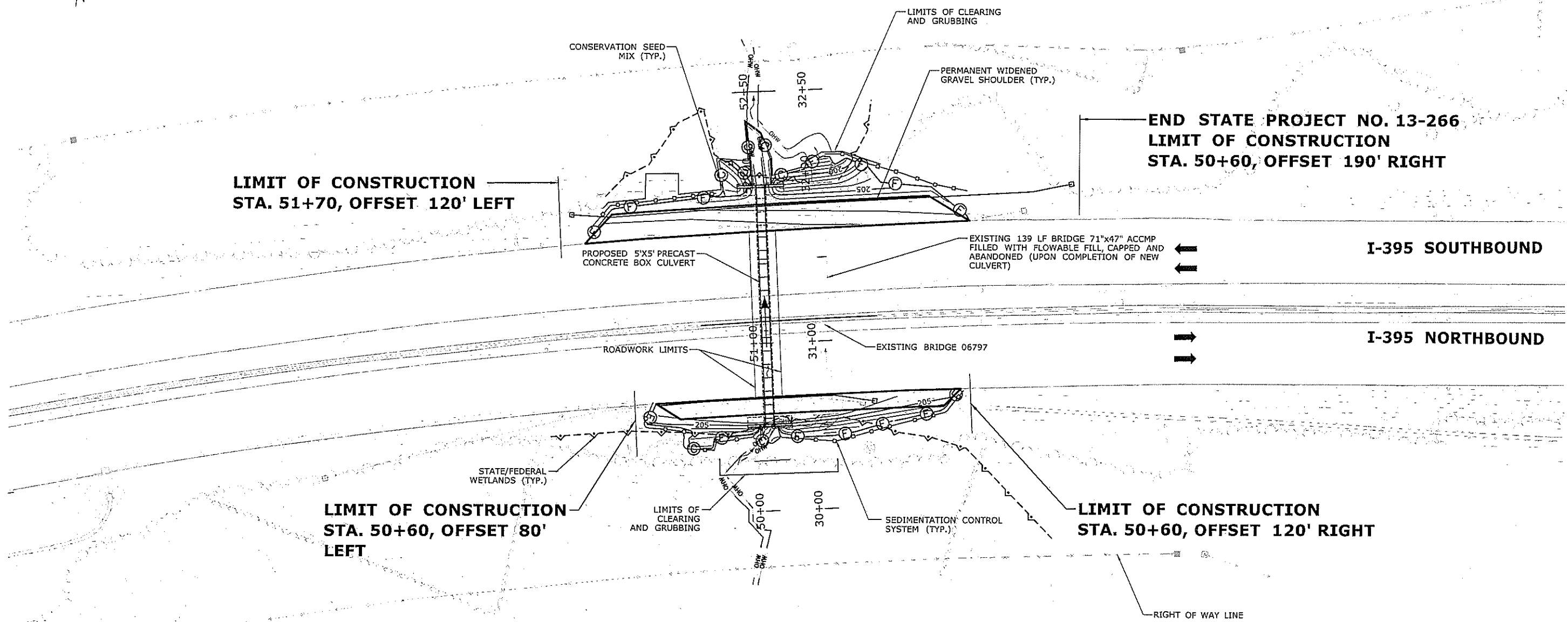
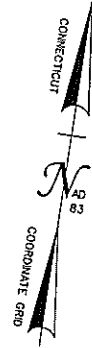
PLAN DATE 6/27/2019

<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>DESIGNER/DRAFTER: JPM</p> <p>CHECKED BY: -</p> <p>SCALE AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <p>LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK</p>	<p>SIGNATURE/ BLOCK:</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)</p>	<p>TOWN: NORWICH</p> <p>DRAWING TITLE: BR. NO. 06797 TITLE SHEET</p>	<p>PROJECT NO. 103-266</p> <p>DRAWING NO. PMT-01</p> <p>SHEET NO.</p>
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REV.	DATE	REVISION/ DESCRIPTION	SHEET NO.

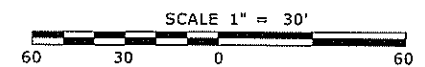
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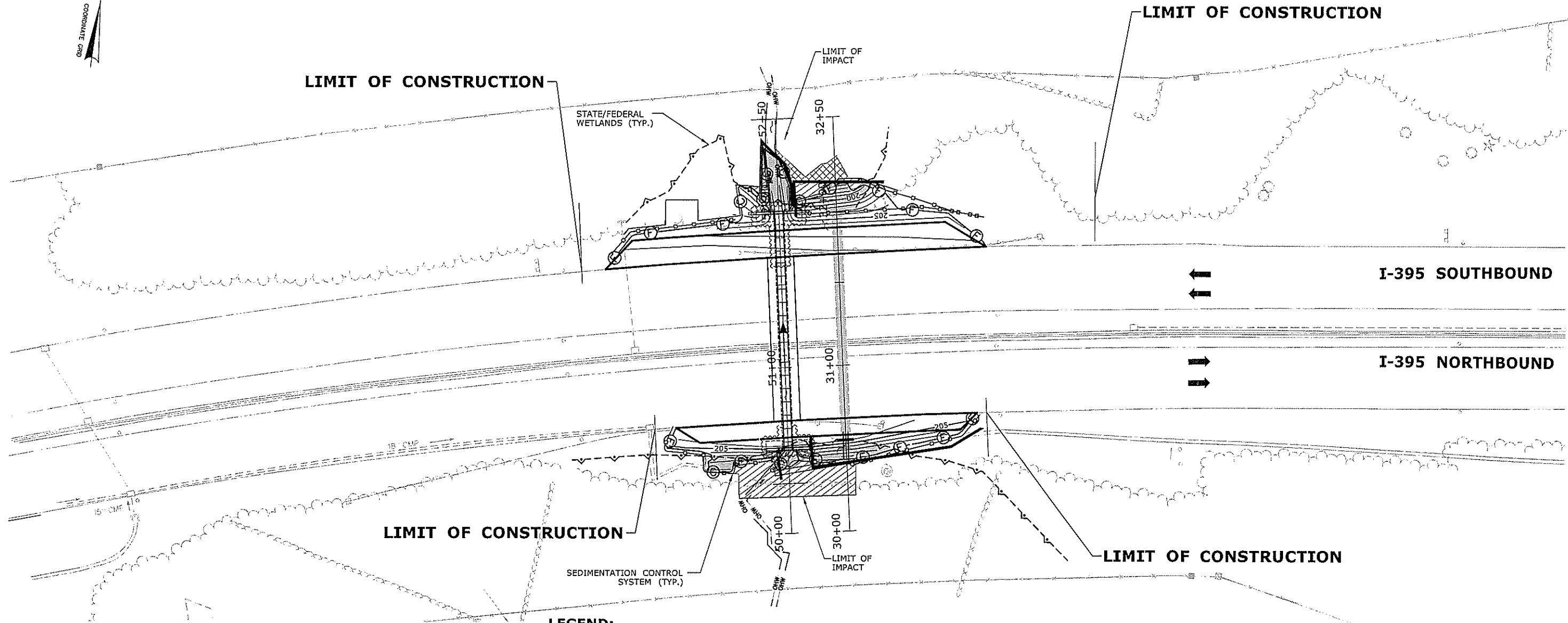
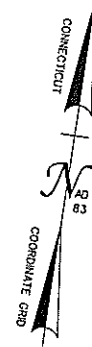
LEGEND:

- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: MAM CHECKED BY: MJM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-95 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266 DRAWING NO. PMT-02 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019	Filename: ...LHW_MSH_0103-0266_Br 06797_RDP_PLN-01.DGN	BR. NO. 06797 GENERAL SITE PLAN	



NOTE:

CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.

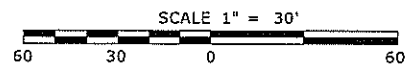
DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH WOOD CHIP MULCH OR A CONSERVATION SEED MIX. ALL DISTURBED AREAS SHALL BE RESTORED.

LEGEND:

THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO THE DEEP FOR CHANGES TO THE DESIGN THAT WILL EFFECT THE NOTED REGULATED AREAS.

- TEMPORARY IMPACT
- SECONDARY IMPACT
- PERMANENT IMPACT
- OHW — ORDINARY HIGH WATER
- STATE/FEDERAL WETLANDS
- SEDIMENTATION CONTROL SYSTEM (SCS)

WETLAND IMPACT TABLE			
	WETLAND SITE NO.	WETLAND IMPACTS	TOTAL
PERMANENT IMPACTS	3	1200 S.F. (0.027 AC.)	2550 S.F. (0.059 AC.)
TEMPORARY IMPACTS	3	2100 S.F. (0.048 AC.)	2200 S.F. (0.051 AC.)
SECONDARY IMPACTS	3	400 S.F. (0.009 AC.)	400 S.F. (0.009 AC.)
TOTAL IMPACTS		3300 S.F. (0.076 AC.)	5150 S.F. (0.118 AC.)

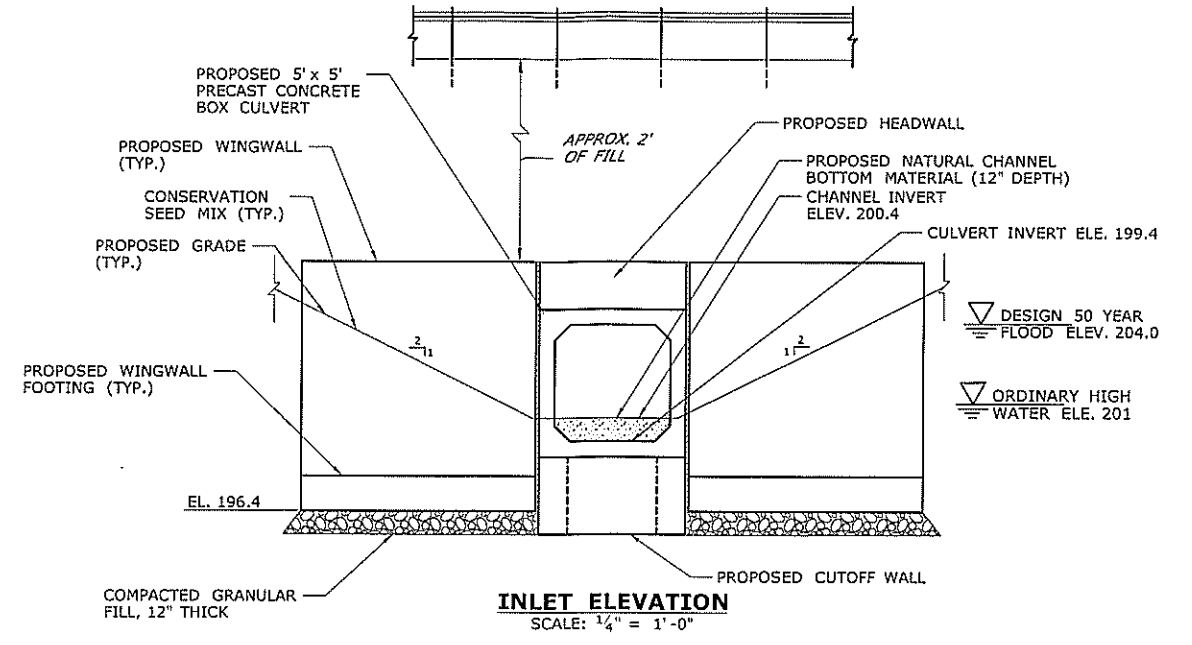
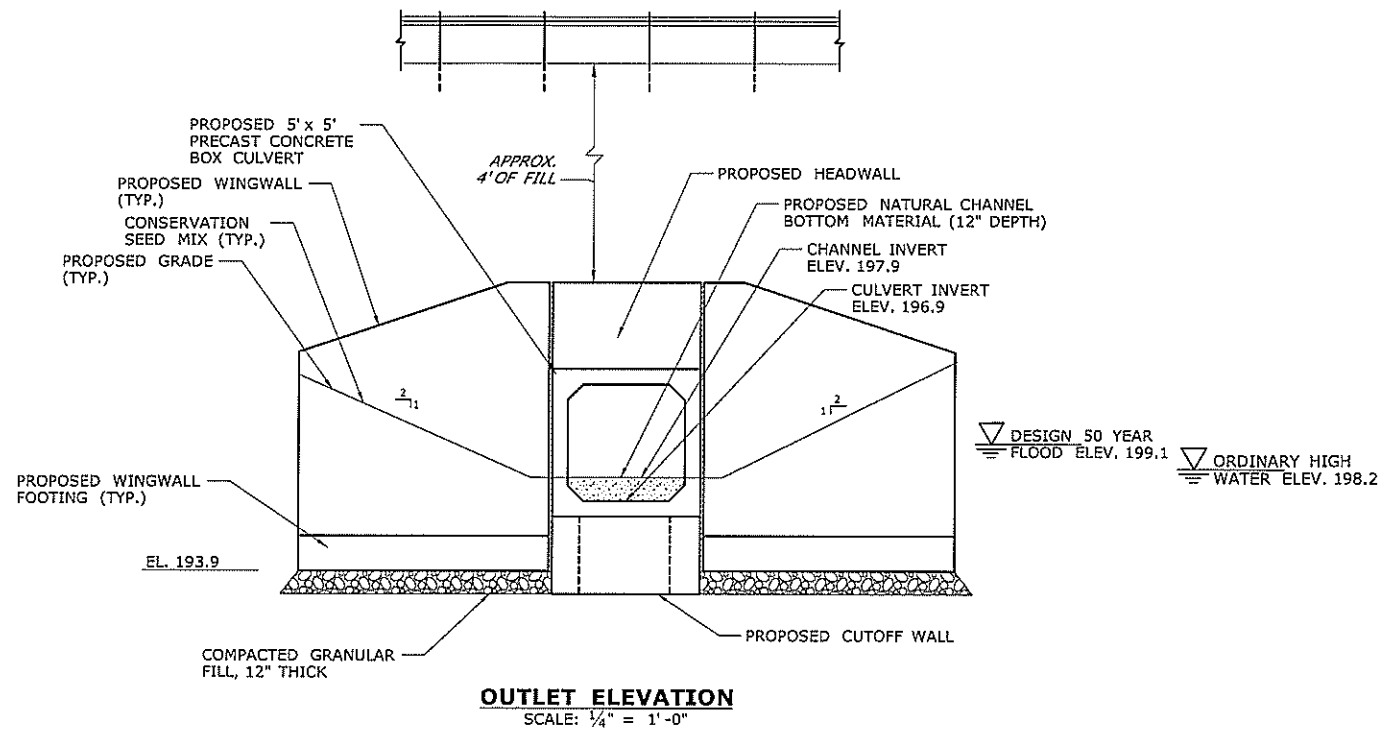


ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK: LOUIS BERGER, US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06797 WETLAND/WATERCOURSE IMPACT PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-03 SHEET NO.
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REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019

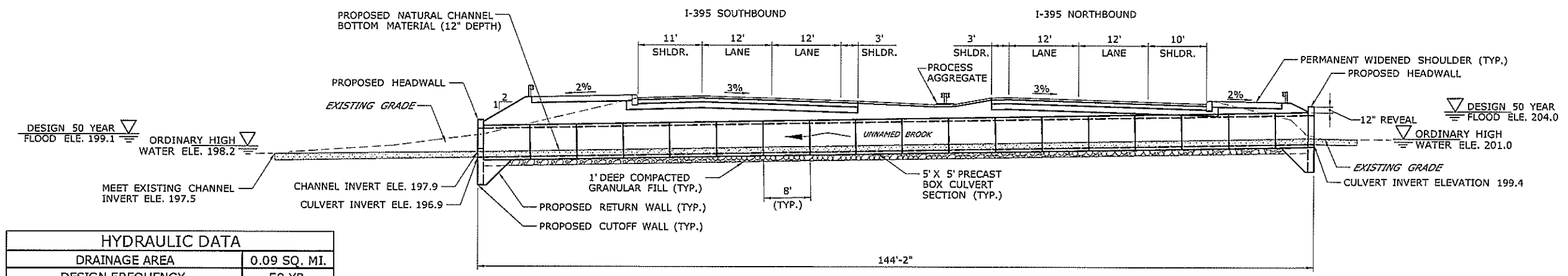
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Brian Murphy
 Digitally signed by Brian Murphy
 Date: 2019.07.30 13:48:00 -04'00'

OPENNESS RATIO (OR):
 OR = OPEN AREA / CULVERT LENGTH
 OR = 20 S.F. / 144 FT. = 0.14 FT
 0.14 FT. < 0.82 FT. (RECOMMENDED MINIMUM)

BANKFULL WIDTH (BFW):
 BFW = 4 FT. EXISTING UPSTREAM (OHW)
 1.2 x BFW = 4.8 FT.
 4.8 FT. < 5 FT. PROPOSED CULVERT SPAN

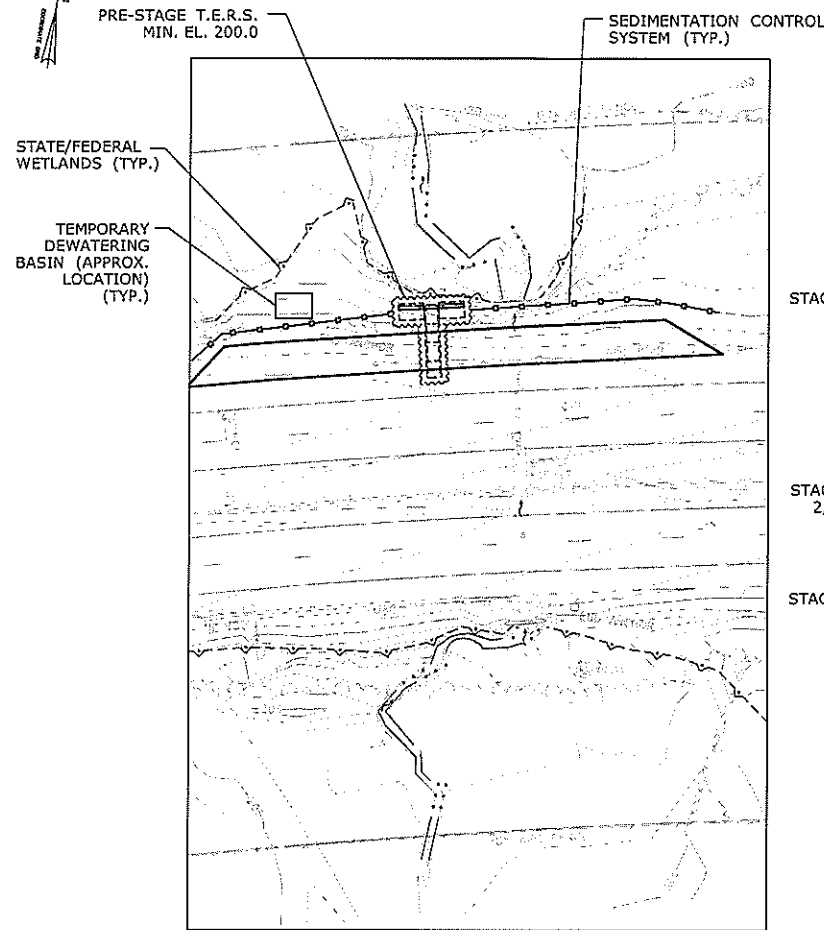


HYDRAULIC DATA	
DRAINAGE AREA	0.09 SQ. MI.
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	95 CFS
AVERAGE DAILY FLOW ELEVATION	201.0 FT.
UPSTREAM DESIGN SURFACE WATER ELEVATION	204.0 FT.
DOWNSTREAM DESIGN SURFACE WATER ELEVATION	199.1 FT.

LONGITUDINAL SECTION
 SCALE: 1" = 10'

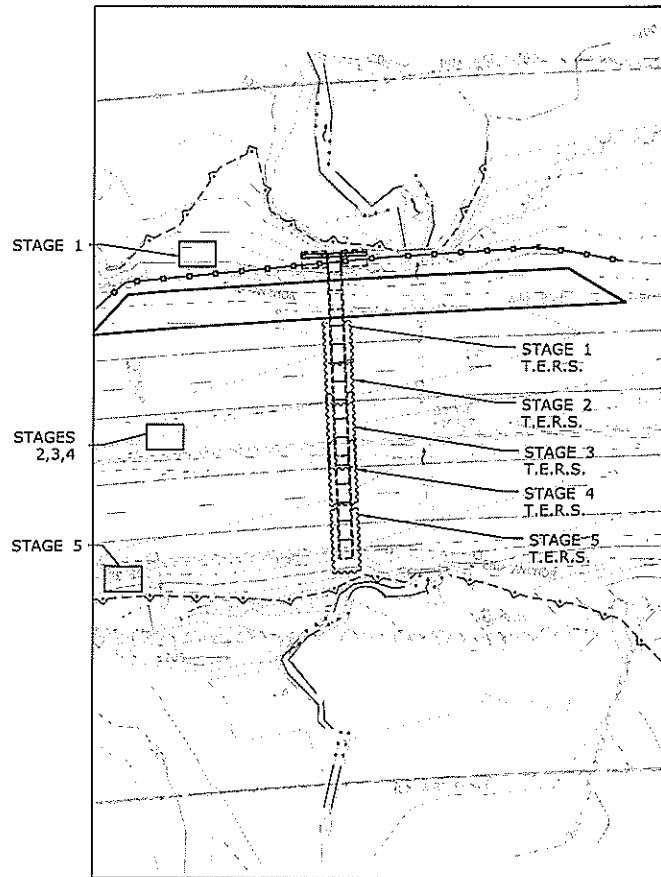
ENVIRONMENTAL PERMIT PLANS
 PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM		LOUIS BERGER US, Inc A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266
	CHECKED BY: MJM					
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019	SCALE AS NOTED	Filename: ...\\SB_MSH_0103-0266_Br 06797_ES_PLAN.dgn	SHEET NO.	SHEET NO.	SHEET NO.	SHEET NO.



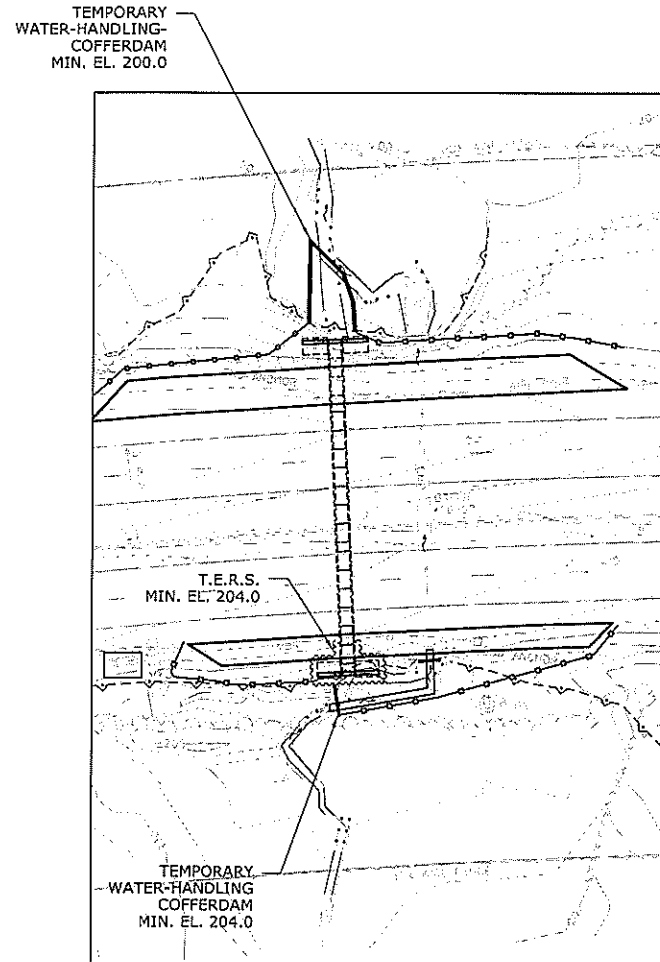
PRE-STAGE - SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. CONSTRUCT TEMPORARY DEWATERING BASINS.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.



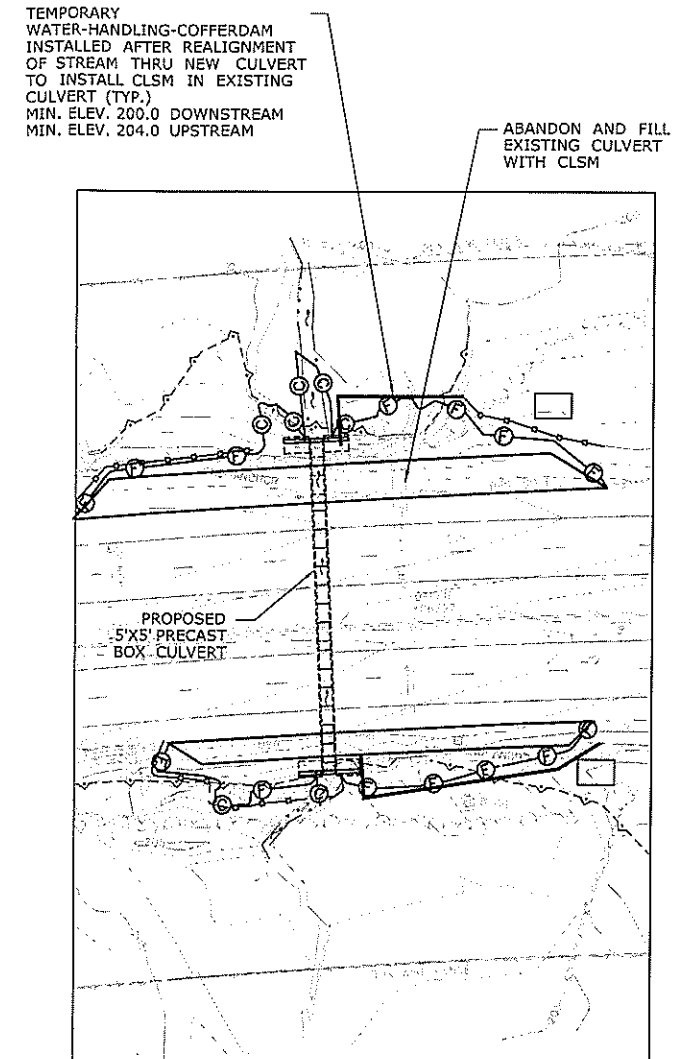
STAGE 1-5 SUGGESTED SEQUENCE

- REPEAT THESE STEPS FOR STAGES 1 THROUGH 5
1. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
 2. EXCAVATE AND INSTALL BOX CULVERT SECTIONS.
 3. REMOVE TEMPORARY EARTH RETAINING SYSTEM.



STAGE - 6 SUGGESTED SEQUENCE

1. INSTALL SEDIMENTATION CONTROL SYSTEM (SCS).
2. CONSTRUCT PERMANENT ACCESS SHOULDER.
3. INSTALL TEMPORARY WATER HANDLING FACILITIES, INCLUDING WATER-HANDLING COFFERDAM, TEMPORARY 36" BYPASS PIPES.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEM.
5. EXCAVATE AND CONSTRUCT PROPOSED CUT-OFF WALL, WINGWALLS, BOX CULVERT SECTIONS & HEADWALL.
6. REMOVE T.E.R.S.
7. REGRADE CHANNEL AT INLET AND OUTLET.
8. INSTALL 12" OF NATURAL STREAMBED MATERIAL ALONG THE INVERT OF THE CULVERT.
9. REMOVE TEMPORARY WATER HANDLING FACILITIES TO ALLOW STREAM THROUGH PROPOSED CULVERT.



FINAL STAGE - SUGGESTED SEQUENCE

1. INSTALL TEMPORARY WATER-HANDLING COFFERDAM
2. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM).
3. COMPLETE GRADING AS REQUIRED.
4. REMOVE TEMPORARY WATER-HANDLING COFFERDAM.
5. RESTORE TEMPORARILY DISTURBED AREAS AND INSTALL NATIVE PLANTS ACCORDING TO PMT-06.
6. REMOVE SEDIMENTATION AND EROSION CONTROLS UPON PERMANENT STABILIZATION.

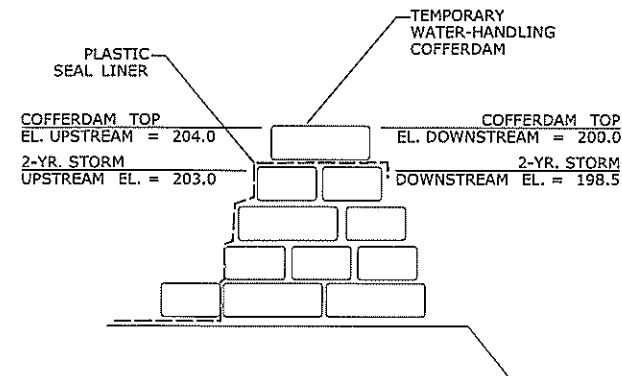
TEMPORARY HYDRAULIC DATA 06797	
AVERAGE DAILY FLOW	0.2 CFS
AVERAGE SPRING FLOW	0.3 CFS
2-YEAR FREQUENCY DISCHARGE	15 CFS
TEMPORARY DESIGN DISCHARGE	15 CFS
TEMPORARY DESIGN FREQUENCY	2 YR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	203.0 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	198.5 FT

WATER HANDLING NOTES:

THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE EXISTING CULVERT AS SHOWN DURING CONSTRUCTION OF THE NEW STRUCTURE.

A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.

TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF PLASTIC LINER, SANDBAGS, OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.



LEGEND:

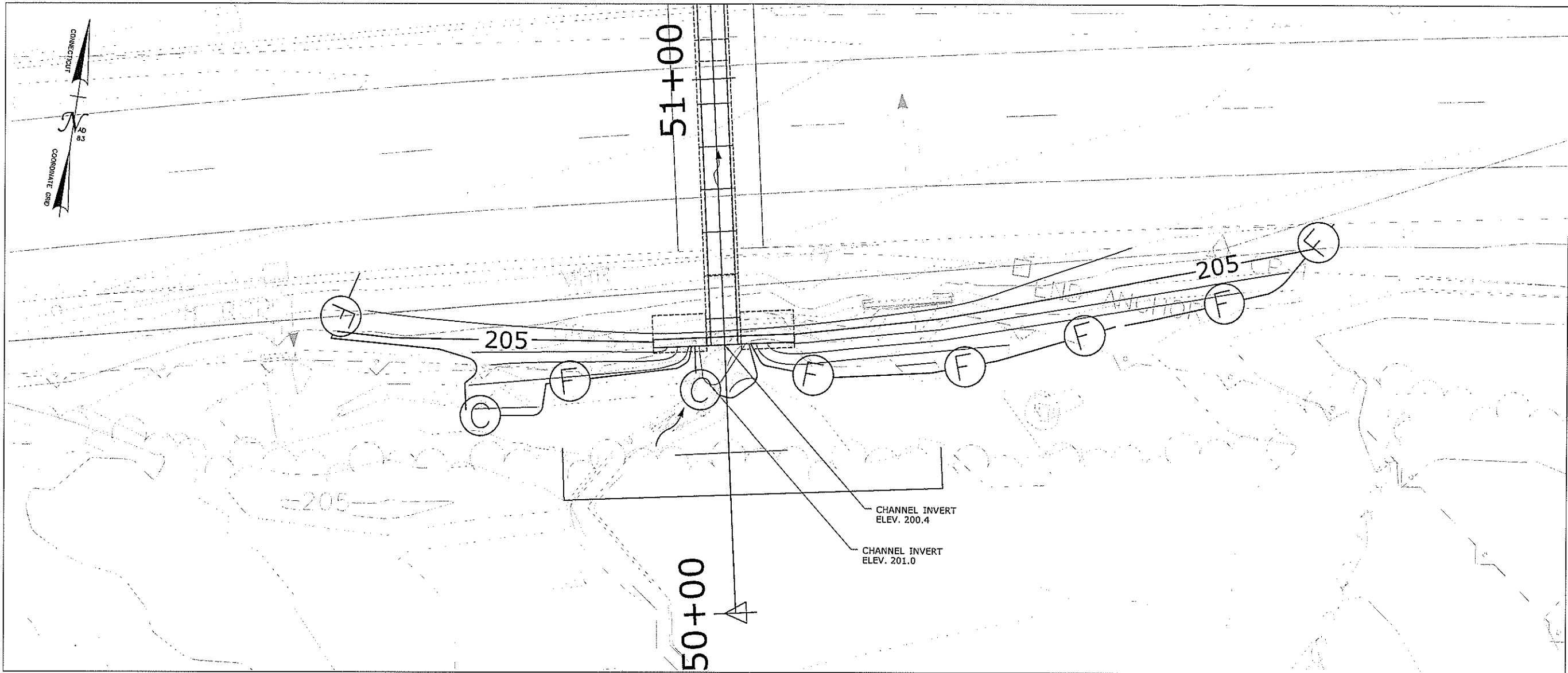
- OHW — ORDINARY HIGH WATER
- - - STATE/FEDERAL WETLANDS
- ○ ○ SEDIMENTATION CONTROL SYSTEM (SCS)

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

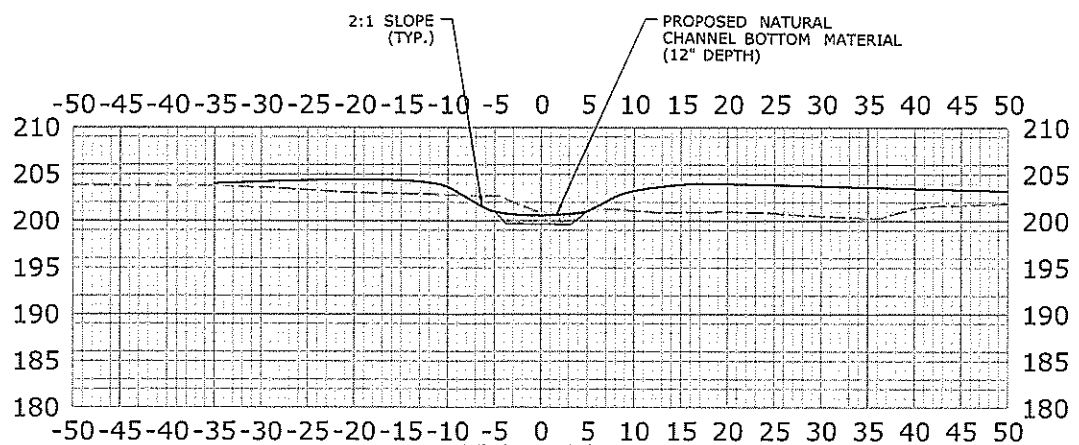
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: MAM CHECKED BY: MJM SCALE IN FEET 0 40 80 SCALE 1"=40'	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...VHW_MSH_0103-0256_Sr 06797_VHW_PLN-01.DGN.dgn	SIGNATURE/ BLOCK: LOUIS BERGER U.S., Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BR. NO. 06797 WATER HANDLING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-05 SHEET NO.
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REV.	DATE	REVISION DESCRIPTION	SHEET NO.

Plotted Date: 6/28/2019



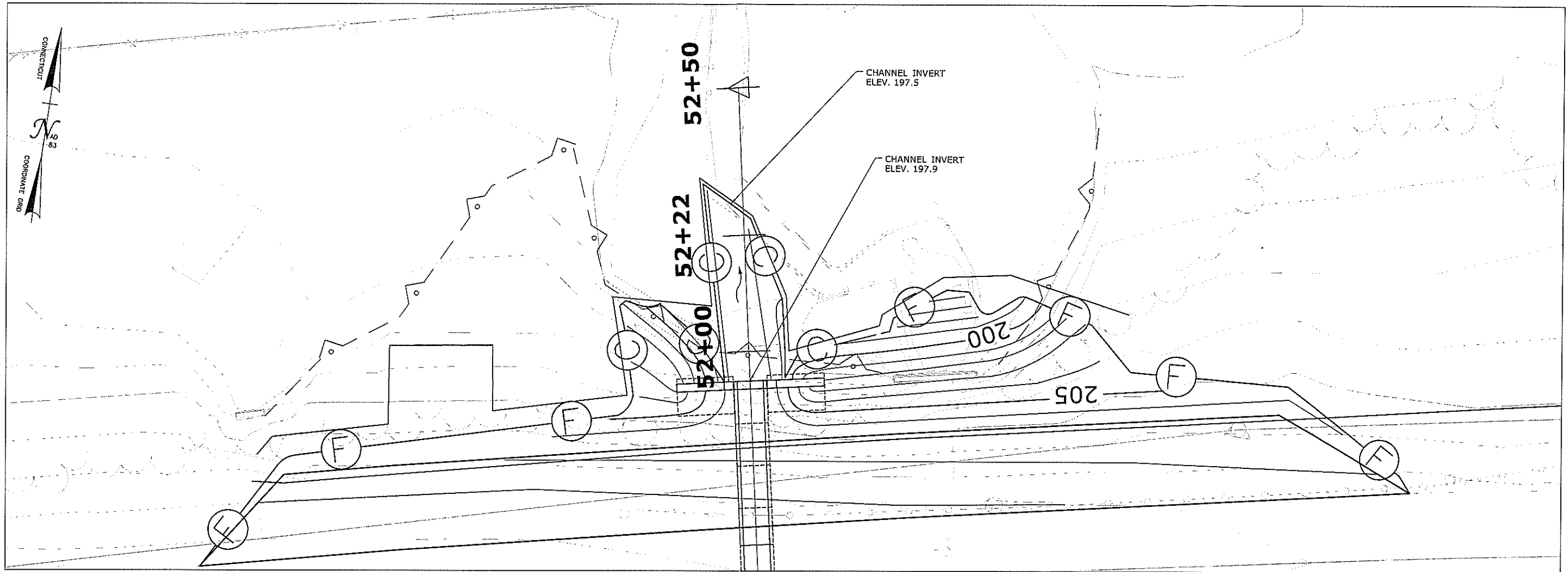
**BR. NO. 06797
UPSTREAM GRADING PLAN**



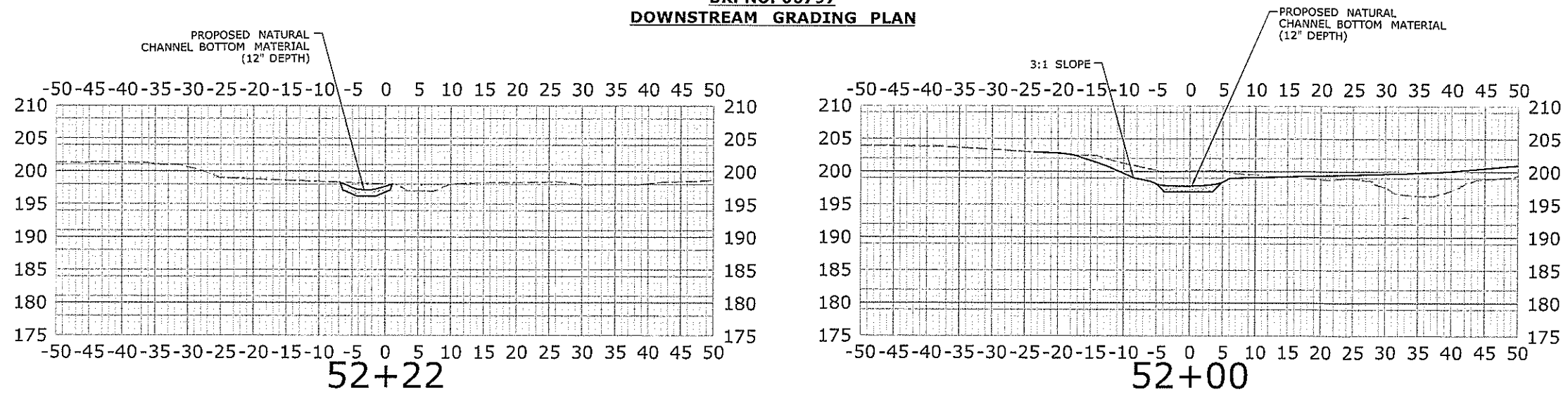
**50+50
(SECTION AT FACE OF HEADWALL)**

ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: JCT/MJM CHECKED BY: JH SCALE IN FEET 0 10 20 SCALE 1"=10'	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...IHW_MSH_0103-0256_Br 06797_GRD_FLN-01.DGN.dgn	SIGNATURE/ BLOCK: LOUIS BERGER US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 303 PURCHASE, NEW YORK	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH DRAWING TITLE: BRIDGE NO. 06797 UPSTREAM GRADING PLAN	PROJECT NO. 103-266 DRAWING NO. PMT-06 SHEET NO.	
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 6/28/2019				

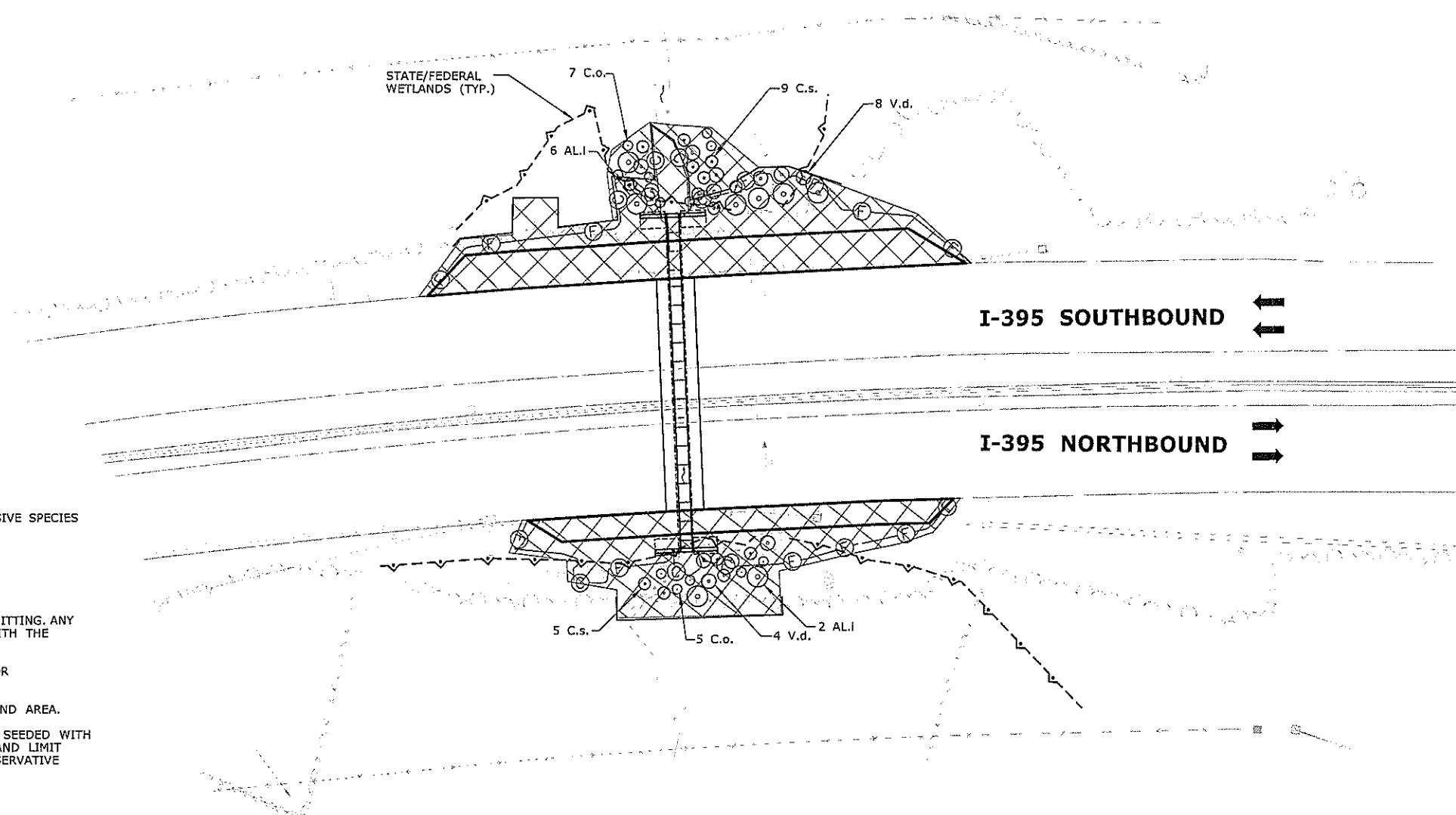


BR. NO. 06797
DOWNSTREAM GRADING PLAN



ENVIRONMENTAL PERMIT PLANS
PLAN DATE 6/28/2019

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER: JCT/MJM	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	SIGNATURE/ BLOCK:	PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)	TOWN: NORWICH	PROJECT NO. 103-266
	CHECKED BY: JH				LOUIS BERGER US, Inc. A WSP COMPANY 250 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK	DRAWING TITLE: BRIDGE 06797 CULVERT DOWNSTREAM GRADING PLAN
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 6/28/2019	SCALE IN FEET SCALE 1" = 10'	Filename: ...IHW_MSH_0103-0266_Br 06797_GRD_PLN-01.DGN				SHEET NO.



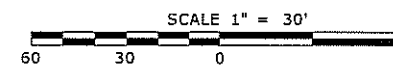
CONTROL AND REMOVAL OF INVASIVE SPECIES
(SEE NOTE 5)

NOTES:

1. PLANTINGS ON THE SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY CHANGES TO PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING.
2. ALL PLANTS SHALL BE STRAIGHT SPECIES. NO VARIETIES OR CULTIVARS WILL BE ACCEPTED.
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.
4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH A WETLAND SEED MIX. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE COVERED WITH A WOOD CHIP MULCH OR A CONSERVATIVE SEEDMIX. ALL DISTURBED AREAS SHALL BE RESTORED.
5. SEE "ITEM #0952041A - CONTROL AND REMOVAL OF INVASIVE VEGETATION" FOR FURTHER INFORMATION.

PERMIT PLANT LIST

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	WETLAND INDICATOR
AL.I.	8	Speckled Alder	<i>Alnus incana</i>	18"-24" HT. B.B.	Field Located	FACW
C.s.	14	Red-Osier Dogwood	<i>Cornus sericea</i>	18"-24" HT. B.B.	Field Located	FACW
V.d.	12	Northern Arrowwood	<i>Viburnum dentatum</i>	18"-24" HT. B.B.	Field Located	FACW
C.o.	12	Common Buttonbush	<i>Cephalanthus occidentalis</i>	18"-24" HT. B.B.	Field Located	OBL



ENVIRONMENTAL PERMIT PLANS

PLAN DATE 7/1/2019

REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 7/1/2019	
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.			DESIGNER/DRAFTER: MAM CHECKED BY: MJM	<p style="text-align: center;">STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	SIGNATURE/BLOCK: LOUIS BERGER, US, Inc. A WSP COMPANY 2500 WESTCHESTER AVENUE SUITE 305 PURCHASE, NEW YORK
PROJECT TITLE: REHABILITATION OF BRIDGE NO. 06797 I-395 OVER UNNAMED BROOK (SITE No. 3)			TOWN: NORWICH	PROJECT NO. 103-266	
DRAWING TITLE: BRIDGE 06797 PERMIT PLANTING PLAN			DRAWING NO. PMT-08	SHEET NO.	

Attachment G
State Historic Preservation Office (SHPO) Exemption



STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Determination of Effect to Historic Properties

Author: Mark McMillan Date: October 20, 2015

Project: State No.: 103-266
F.A.P. No.: TBD
Project Title: Rehabilitation of Culverts #06795, 06796, and 06797
Town: Norwich

Determination of Effect: No Historic Properties Affected

Project Description

Using federal and state funds, the Connecticut Department of Transportation (CTDOT) proposes to rehabilitate three structurally deficient culverts in Norwich. All three are single-bore asphaltic coated corrugated metal pipes installed beneath I-395. They have been listed on the Bridge Program List 28 for structures requiring major rehabilitation or replacement. The undertaking is currently in its concept level of development and a Rehabilitation Study is underway.

The range of alternatives being considered includes relining the existing pipes to replacing the structures entirely. It is possible that the rehabilitation of each culvert will be different from the other, depending on their individual conditions. No widening or other modifications to the existing configuration of I-395 is included as part of this work. Construction is anticipated to being in Spring, 2018.

Technical Review of Project

The specific conditions of each culvert vary, but each is a single cell asphalt-coated corrugated metal pipe (ACCMP) with reinforced concrete headwalls. All three culverts are categorized as Not Eligible for the National Register of Historic Places the statewide bride inventory database maintained by CTDOT. Staff from the Office of Environmental Planning concur with this assessment.

Bridge #06795

Structure #06795 conveys Hammer Brook beneath I-395 in Norwich. Its single pipe is oval in profile, measuring 7'11" wide and 5'7" tall. The pipe is 213' long and there is 10 vertical feet of overburden fill between it and the roadbed.

Recent inspections by CTDOT's Bridge Evaluation and Safety unit have determined that Bridge #06795 is in Serious condition due to the loss of its protective coating and heavy corrosion of its pipe liner. This has resulted in vertical deformations of the pipe that is measured up to five inches in some areas. At its western inlet, the bottom plate of the liner exhibits holes up to three feet long and three inches wide.

The soils surrounding the bridge are categorized as Udorthent-Urban Land Complex within the road right of way. Predictive models find this type of sediments to be of low archaeological sensitivity that would be unlikely to yield historic or cultural information. To the east and west of the right of way are Rippowam Fine Sandy Loam and Raypool Silt Loam soils, which are considered to have high archaeological potential. There are no known archaeological sites within a mile of the culvert.

Abutting the right of way of I-395 to the west is the Bean Hill Historic District.¹ This National Register District is characterized by its collection of 18th and 19th century buildings centered around the town green. Hammer Creek runs through two properties within the district. At 21 Huntington Avenue is a 1950 Cape style cottage that is categorized as 'non-contributing' in the Bean Hill NRHP Inventory form. The parcel identified as 29 Huntington Avenue is omitted from the Inventory form. According to Norwich town records, it contains a Ranch style single family residence that was constructed in 1976.

The houses on both parcels are located at the western end of their lots. They are separated from the culvert by over 400 feet of undeveloped land. Given their non-contributing status and the buffer distance they provide between the culvert and the historic district, the proposed rehabilitation of Bridge #06795 will not foreseeably impact the historic nature of the district.

Bridge #06796

Bridge #06796 conveys Byron Brook beneath I-395. It is a 6 foot diameter ACCMP that is 65 feet long and situated beneath 20 feet of overburden. It was installed in 1955 and does not appear to have undergone any significant alterations. The culvert is in Poor condition due to deterioration of its components and a backup of water within it caused by a beaver dam downstream.

Bridge #06796 is located 2.25 miles north of Bridge #06795 in an undeveloped area of Norwich. The sediments within this culvert's area of potential effect are classified as Charlton-Chatfield Complex soils, which have a moderate level of archaeological sensitivity. This is reduced by the steep (15-45%) slope of to the west of the culvert and "very rocky" condition of the soils. There are no known archaeological sites within a mile of the culvert.

¹ National Park Service, *Bean Hill Historic District (NRHP #82001006)*, listed on December 8, 1982.

Bridge #06797

Bridge #06797 is located 1200 feet northeast of Bridge #06796. It consists of an oval ACCMP pipe that is 6' wide, 3'8" tall, and 76 feet long. It conveys an unnamed brook beneath I-395, whose roadbed is 3 feet above the top of the pipe.

There are a variety of sediments surrounding this culvert, but all are characterized as being "very stony". There are no known archaeological sites within a mile of this culvert. Given the predicted low potential of the soils in the project area and the known soil disturbances caused by the construction of I-395, there is limited potential for impacting intact archaeological resources.

Determination

The work proposed under State Project #103-266 would normally be classified as a "Bridge/Culvert Related Projects" and "Interstate Related Projects". These types of Minor Transportation Projects are typically exempt from Section 106 review under Appendix B (*Screened Undertakings Not Requiring Connecticut CTSHPO Review*) of the Section 106 Programmatic Agreement². The proximity of Bridge #06795 to the Bean Hill Historic District does not allow for the application of this exemption.

It is the professional opinion of qualified staff from CTDOT's Office of Environmental Planning that the rehabilitation of this culvert will not foreseeably impact the overall historic character of the district. In accordance with the Section 106 Programmatic Agreement, CTDOT determines that the undertaking will have "No Historic Properties Affected". However, we request a further review of the plans when the project approaches final design to confirm this determination.

No further consultation with the Connecticut State Historic Preservation Officer (CTSPHO) is required. A copy of this determination will be included in the quarterly report of Minor Transportation Projects that is submitted to CTSHPO.

Because the undertaking is within the Quinebaug-Shetucket National Heritage Corridor, a copy of this letter will be sent to The Last Green Valley. As stewards of this resource, they will have thirty days to review and comment on this undertaking.



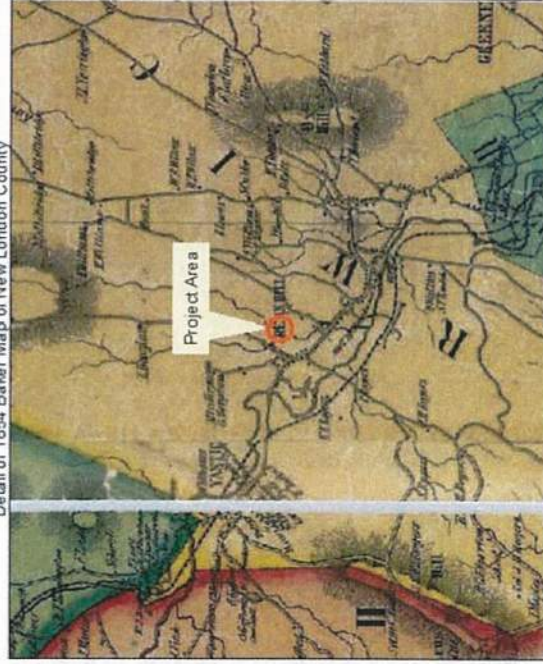
Mark McMillan
National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation

² *Programmatic Agreement among the Federal Highway Administration, the Connecticut Department of Transportation, the Connecticut State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Implementation of Minor Transportation Projects*, signed October 26, 2012. Accessible online at: www.ct.gov/culturalresources

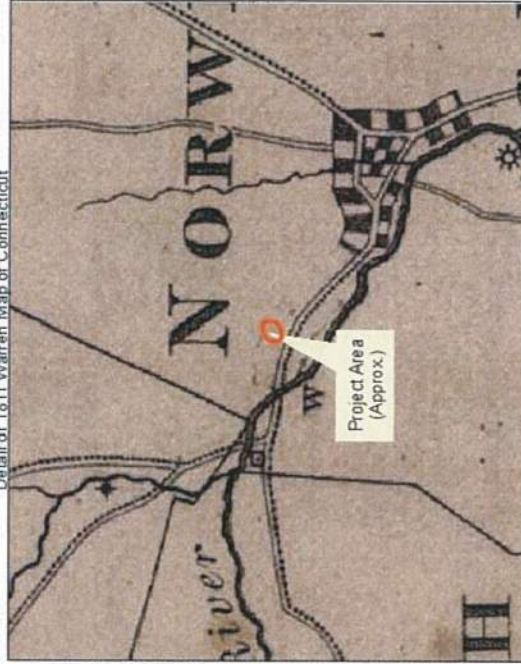
Detail of 2010 Aerial Photography



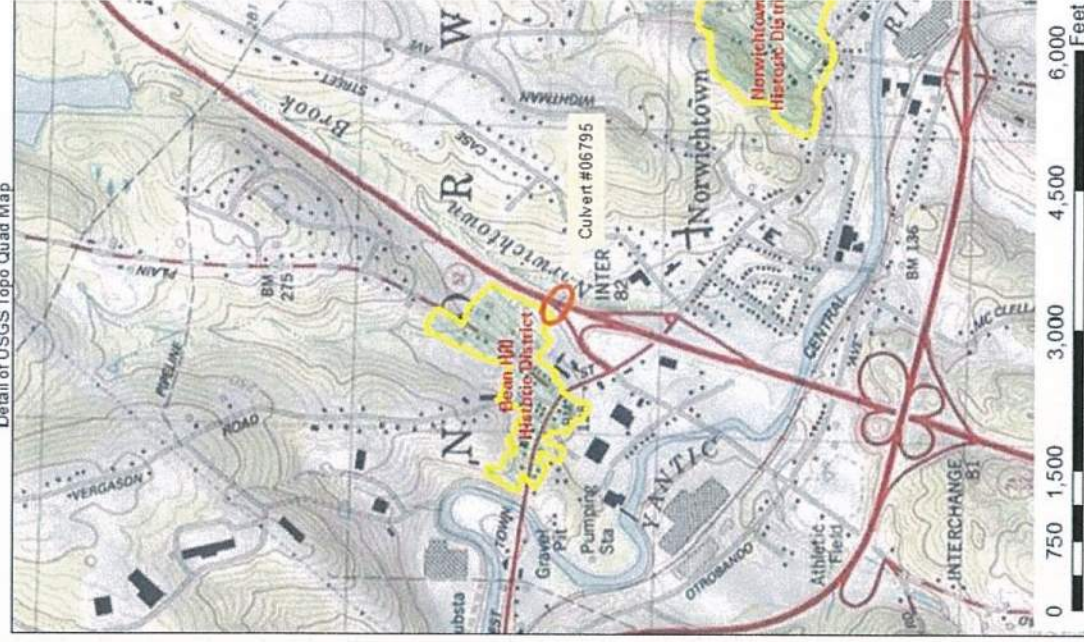
Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



Detail of USGS Topo Quad Map



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culvert #06795
Norwich



August 27, 2010

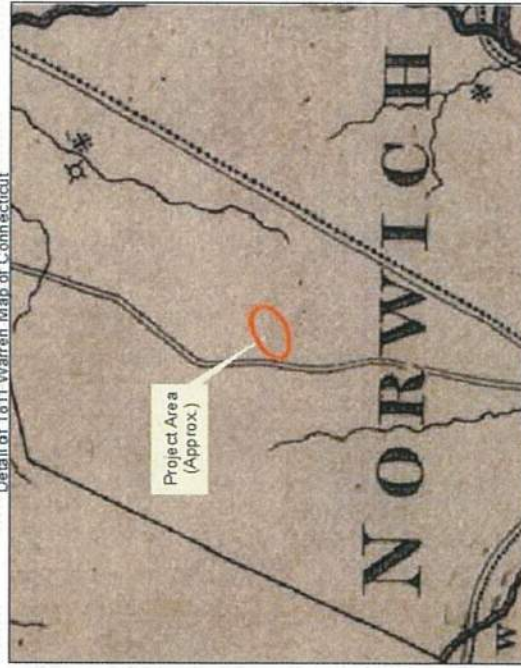
Detail of 2010 Aerial Photography



Detail of 1854 Baker Map of New London County



Detail of 1811 Warren Map of Connecticut



Detail of USGS Topo Quad Map



**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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State Project No. 103-266
F.I.D.#: TBD
Rehabilitation of Culverts
#06796 and 06797
Norwich

Predicted Archaeological
Soil Sensitivity

High	Low
Moderate	Poor
Variable	Unknown

Historic District

Cemetery/4(f) Resource

Approximate Location
of Archaeological Site

Historic
Pre-Contact
Unknown



Attachment H
Tribal Historic Preservation Office (THPO) Exemption

From: michelle.herrell@dot.gov
Sent: Tuesday, October 27, 2015 8:18 AM
To: McMillan, Mark J.
Subject: No Tribal Consultation Required FAPN TBD/SPN0103-0266, Culvert Rehab on I-395, Norwich

Hi Mark,

I have reviewed CTDOT's proposed project which involves rehabilitating culverts #06795, #06796, and #06797, which are installed beneath I-395 in Norwich, CT. The culverts are in need of major rehabilitation or replacement. As noted in your October 20, 2015 letter, the work would occur within previously disturbed existing road right-of-way. As per the THPO Section 106 Agreements with FHWA-CT Division, dated January 4, 2012 and May 14, 2013, this project would generally fall within the category of "resurfacing or repair of existing ramps or roadways within the previously disturbed right-of-way," with no historic properties affected.

With this email, and taking all these items into consideration, the FHWA-CT Division has determined that tribal consultation would not be required for this project. Should any changes be made to the scope of work for this project that would involve additional ground disturbance beyond what is currently proposed, tribal consultation would have to be reconsidered.

Michelle Herrell
Environmental Protection Specialist
Federal Highway Administration | Connecticut Division Office
628-2 Hebron Avenue, Suite 303 | Glastonbury, CT 06033
P: (860) 494-7577 | F: (860) 659-6724
michelle.herrell@dot.gov

Attachment I
Interagency Coordination Meeting Notes



DEEP / DOT

REGULATORY COORDINATION

Project Meeting Notes



Meeting Date: April 21, 2016

DOT Project Number: 103-266

Project Description: I-395 over Hammer, Byron and Unnamed Brooks

Town: NORWICH

Fisheries Correspondence Status:

NDDB Correspondence Status:

Current FDP: 10/25/2017

DOT Design Contact: Andrew Cardinali (CME designed)

Project Purpose & Need: The rehabilitation of 3 bridges: I-395 over Hammer Brook (Bridge #06795), over Byron Brook (Bridge #06796) and over Unnamed Brook (Bridge #06797)

1. Bridge No. 06795-

- Existing 93"x66" Asphalt-Coated Corrugated Metal Pipe (ACCOMP) is hydraulically deficient. Perforations at the inlet. Outlet is inundated.
- Rating of 4
- Existing 1.3% culvert slope with a length of 198'.
- Watershed area of 0.73 sq. miles.
- Lining the culvert with 4-inches of concrete at the bottom plate. (Slip lining was not an option since it is hydraulically deficient.)
- Trying to match the existing conditions as far as the FEMA floodplain.
- No hydraulic jump expected at the pipe outlet.
- No fisheries enhancements proposed.
- Brian Murphy (DEEP Fisheries) said that the 1.3 % culvert slope should be ok for fish passage.
- Brian will plan to field review the site. He mentioned that there is no fisheries data and that he may need to do a summer sampling, but to move ahead with the design and permitting so the project is not held up.
- A mitigation strategy plan needs to be developed. Rabih mentioned having a separate internal meeting to discuss a mitigation strategy. Andy added that maybe the Consultant can come up with a plan.
- Hydraulics and Drainage can sign off on the hydraulics.
- IW-Individual probably needed since may have some flooding.

DEEP / DOT
Regulatory Coordination Meetings
Project Meeting Notes

2. Bridge No. 06796-

- Existing 72" ACCMP with perforations at the inlet. Similar deficiencies as in previous culvert.
- Existing 0.8% culvert slope with a length of 211'.
- Watershed area of 0.84 sq. miles.
- Elevation is about 1' higher upstream (onto private property.)
- Inlet flooding upstream due to beaver impoundment.
- Slip lining the culvert with a 54" High Density Polyethylene (HDPE) pipe and slip lining grout.
- No fisheries enhancements proposed.
- Brian Murphy will plan to field review the site.
- Section 401 Water Quality Certification and IW- Individual permit

3. Bridge No. 06797-

- Full replacement of the 72" ACCMP with a 5'x5' precast concrete box.
- Existing 1.8% culvert slope with a length of 139'.
- Watershed area of 0.09 sq. miles. No FEMA at this location.
- Does not meet the 1' freeboard.
- The new culvert is going to be relocated parallel, approximately 20' south of the existing location.
- The ADT is high on I-395 so the Project will be done in 3 stages so the road does not need to be closed at any time during Construction.
- Proposed 1' of natural streambed material will be installed.
- Impacts to the OHW are expected.
- Bob (DEEP) mentioned the need for a CAT 2 because the channel will be relocated.
- Other permits: PGP and IW- General

All three bridges (06795, 06796 and 06797) need separate permit applications but should be delivered together.

Project Managers Meeting Notes

December 15, 2016

Room 3130

40-142 Foxtown Road over Eight Mile River, East Haddam

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 04651 is a 42 foot wooden beam span with stone masonry abutments and wingwalls. The bridge has a 17.6 foot out-to-out width. This project is located within a State Park and on a designated Wild & Scenic River. The structure will be replaced with a 34 foot long precast concrete arch with cast-in-place abutments and wingwalls that will be founded on bedrock. The proposed structure will have 9 foot travel lanes and a 5.5 foot sidewalk on the south side. A stone veneer and steel backed timber bridge rail is included in the bridge design. A drainage system will be installed on the western side of the structure.

Project Impacts: Proposed impacts to regulated areas for this project are 190 sq. ft. temporary and 590 sq. ft. permanent.

Permitting Requirements: The state permitting requirement is an IWRD Construction GP. The federal permitting requirement is an ACOE Self-Verification GP-19 with a National Park Sign-off.

Agency Comments: ACOE Staff asked if this project is located on a Wild & Scenic River. DOT staff responded yes it is. ACOE staff replied coordination with FHWA & National Park Service is necessary. DEEP Fisheries staff asked what storm can the cofferdams handle. The consultant replied a 2-year storm event. The work behind the cofferdams will take between 4-6 weeks. DEEP Fisheries staff stated causing turbidity must be avoided during the opening of trout season.

Action Items: Send design details to the National Park Service the contact info is written in the ACOE GP.

103-266 Bridge No. 06795, I-395 over Hammer Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. Bridge No. 06795 is a 6x8 foot, 230 foot long CMP. There are perforations along the invert. Downstream the watercourse follows the toe of slope along I-395 highway embankment. Upstream there is a hotel parking lot that is often inundated due to the watercourse flooding. The proposed rehabilitation is to use a 4 inch thick invert lining, shorten the pipe 16 feet and add head and wingwalls at both ends of the structure. A rock weir will be constructed downstream to maintain fish passage.

Project Impacts: 0.73 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	600	650	1250
Permanent	0	1100	1100
Total	600	1750	2350

Permit Requirements: State permitting requirements include a PGP Addendum and an IWRD Construction GP. The federal permitting requirement for this project is an ACOE Pre-Construction Notice GP-19.

Agency Comments: DEEP Fisheries staff asked why a corrugated pipe lining isn't proposed for mitigation. The consultant replied that would decrease hydraulic capacity too much. DEEP Fisheries staff stated that the current structure is passable, but the proposed rehabilitation will make it impassable. The smooth surface of the invert lining will result in skim flow. DEEP staff asked if the rock weir can be raised 0.1 feet. DOT replied that would result in increased flooding. The consultant stated that they are trying to match existing capacity due to flooding upstream and downstream. The embankment upstream can be raised 3 inches to prevent flooding and add roughness. DEEP Fisheries staff stated that it might be preferable to construct the weir using precast concrete instead of rocks. This may result in less disturbance and a more accurate top elevation.

**DEEP /ACOE/ DOT
Regulatory Coordination Meetings
Project Meeting Notes**

Action Items: Provide OEP with plan sheets to submit to DEEP.

103-266 Bridge No. 06796, I-395 over Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The current structure is a 72 inch diameter AACMP. There is a Beaver Dam backing up Byron Brook into the culvert. The proposed rehabilitation is to slip line the culvert with a 54 inch CMP.

Project Impacts: 0.84 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	2725	335	3060
Permanent	0	1070	1070
Total	2725	1405	4130

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. The state permitting requirements for this project are an IWRD Construction GP and a PGP Addendum.

Agency Comments: DEEP Fisheries staff stated that the proposed project complies with his comments in his 10/27/2016 email. DOT staff stated that the water handling for this project will consist of steel sheet cofferdams, the water will be pumped around the work site.

Action Items: The wetland limits must be extended to accommodate the access roads

103-266 Bridge 06797, I-395 over Unnamed Tributary to Byron Brook, Norwich

12/15/2016 – The consultant provided a brief overview of the project. The existing structure is a 6x4 foot CMP. The proposed replacement is a 5x5 foot precast box culvert that will be buried and have U-type wingwalls. The new culvert will be constructed to the east of the existing structure. This will move the watercourse closure to its presumed original alignment prior to the highway being constructed.

Project Impacts: 0.09 drainage area to site

Impacts sq. ft.	Wetland	Below OHW	Total
Temporary	1010	0	1010
Permanent	900	1255	2155
Total	1910	1255	3165

Permitting Requirements: The federal permitting requirement for this project is an ACOE Preconstruction Notice GP-19. State permitting requirements for this project are PGP Addendum and IWRD Construction GP.

Agency Comments: DOT staff stated some of the permanent impact may be able to be restored and become temporary impacts. DEEP staff stated that the impacts associated with the watercourse movement and fill are secondary impacts. ACOE staff asked if there will be grading in the channel. The consultant replied yes there will be. ACOE staff stated that this project will require a Preconstruction Notice due to the stream relocation.

Action Items: Revise impact numbers to show secondary impacts.



Connecticut Department of
Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106-5127
www.ct.gov/deep

KIMBERLY C. LESAY
STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
2800 BERLIN TPKE
PO BOX 317546
NEWINGTON, CT 06111-4113

6/11/2020

Dear Applicant:

This letter is to confirm the receipt of the following application package:

Applicant/Registrant: STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
Permit Type: Construction Activity 8, Activities Authorized Under a Corps General Permit-GP
DOT PROJECT #103-266, REHABILITATION OF 3 CULVERT BRIDGES# 06795,
06796 AND 06797. ROUTE 395 OVER HAMMER BROOK, BYRON BROOK
AND UNNAMED BROOK. CITY OF NORWICH.

Your application has been assigned the following number: 202007072
Please include this number on all correspondence regarding this application.

As of today, the following materials have been received:

ITEM	REQUIRED FEE	FEE RECEIVED	RECEIVED ON
Application Package			6/05/2020
Application Fee	0.00		

To complete application submission:

- Send an empty/blank email to DEEP.LWRDRRegulatorySubmittals@ct.gov
- An automated email response will contain instructions for uploading a PDF of the Transmittal Form and applicable Program Forms, management plans, or additional supporting documents of your application to the LWRD File Transfer Protocol (FTP) website.
- Follow directions contained in the email for uploading the Transmittal and Application Forms.

The fee for this application has been discounted 100%.

If there are any questions regarding this notice, please feel free to contact the Central Permit Processing Unit at (860) 424-4004 or DEEP.CentralPermits@ct.gov

If you have specific technical questions regarding your application, please contact the Land and Water Resources Division at 860-424-3019

Please remember to check your security settings to be sure you can receive e-mails from (ct.gov) addresses. Also, please notify the department if your e-mail address changes.

Thank you.






Sincerely,

Central Permit Processing Unit

Microsoft Office Home | ST Web Client - Your Files | sft.ct.gov

ST Web Client | Your Files | Welcome LWRDApplicantUP

Upload | Actions | View

Name	Last modified ↓	Size
 202007072 - Application Form & Attachments.pdf	6/11/2020, 3:31:00 PM	5.74 MB
 202007072 - Transmittal Form.pdf	6/11/2020, 3:31:00 PM	1015.21 KB
 202006936 - Application Form & Attachments.pdf	6/11/2020, 8:45:00 AM	13.88 MB
 202006936 - Transmittal Form.pdf	6/11/2020, 8:45:00 AM	711.92 KB
 202006997 Application and Attachments.PDF	6/10/2020, 11:35:00 AM	6.14 MB

Uploads monitor

**INTERDEPARTMENTAL
MESSAGE**

STATE OF CONNECTICUT

To	<small>NAME, TITLE</small> Central Permit Processing Unit, 1 st Floor	<small>DATE</small> June 3, 2020
	<small>AGENCY, ADDRESS</small> Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106	
From	<small>NAME, TITLE</small> Kimberly Lesay	<small>TELEPHONE</small> 860-594-2931
	<small>AGENCY, ADDRESS</small> Department of Transportation, 2800 Berlin Turnpike, Newington, CT 06131-7546	<small>Digitally signed by Kimberly Lesay Date: 2020.06.03 23:02:12 -04'00'</small>

Subject: State Project No. 103-266
Rehabilitation of Bridge No. 06795, 06796, and 06797
Route 395 over Hammer Brook, Byron Brook, and Unnamed Brook
City of Norwich

Attached is an original copy of the DEEP Land & Water Resources Division (LWRD) License Application associated with the above referenced project.

For planning purposes, please be aware the project's Final Design Plan (FDP) milestone date is April 8, 2020. In order for the project to meet its bid, advertise and contract award dates, final permits should be issued by the FDP date. Meeting this date will ensure that the project's funds are expended within Federal and State contracting timeframes and the appropriate species and wildlife time of year restrictions can be incorporated as planned in the project schedule. Please consider this project's FDP relative to other pending permits under review. The respective LWRD supervisor has access to schedule updates from the DOT.

Any questions pertaining to this application may be directed to Mr. Jason Coite, Transportation Supervising Engineer of my staff, at 860-594-3448.

Attachments



**Connecticut Department of
Energy & Environmental Protection**
Bureau of Water Protection & Land Reuse
Land & Water Resources Division

LWRD License Application Transmittal Form

CPPU USE ONLY	
App #s:	_____

	_____ -DIV
	_____ -FM/E
Doc #:	_____
Check #:	_____

The Land & Water Resources Division (LWRD) License Application* consists of this Transmittal Form and the program-specific form. All application forms can be found on the Department of Energy & Environmental Protection (DEEP) website at www.ct.gov/deep/lwrddpermitapps. Submit application forms per instructions provided in Part VII of this transmittal form.

Part I: License Type and Fee Information

The table below lists various License types issued by DEEP LWRD. If more than one license is necessary for a project, complete only one Transmittal Form. Complete as many Program Forms as applicable for the project. Check the boxes below that correspond with the LWRD license(s) being requested.

Type of License	Program Form	Fee	DEEP USE ONLY
<u>Licenses for Activities in Aquifer Protection Areas</u>			
<input type="checkbox"/> Aquifer Protection Area Registration Check one: <input type="checkbox"/> New <input type="checkbox"/> Modification ¹ of # _____ (no fee) <input type="checkbox"/> Renewal of # _____	A	\$625	[#996]
<input type="checkbox"/> Aquifer Protection Area Permit Check one: <input type="checkbox"/> New <input type="checkbox"/> Modification ¹ of # _____ (no fee) <input type="checkbox"/> Renewal of # _____	B	\$1,250	[#995]
¹ Note that if you are seeking a <i>modification</i> , you should consult the Aquifer Protection Program at 860-424-3019 prior to application submittal to determine whether a registration form is necessary.			
<u>Licenses for Activities in Tidal Waters</u>			
<input type="checkbox"/> Structures, Dredging & Fill²	C	\$660	[#1085]
<input type="checkbox"/> Structures, Dredging & Fill² and Tidal Wetlands (TW)	C	\$660	[#438]
<input type="checkbox"/> Structures, Dredging & Fill² and Section 401 Water Quality Certificate (WQC)³	C	\$660	[#1632]
<input type="checkbox"/> Structures, Dredging & Fill²; TW; and Section 401 WQC³	C	\$660	[#417]
<input type="checkbox"/> Certificate of Permission (if applicable, WQC will be included) ² For projects larger than 825 square feet, provide Attachment A with an additional fee. Refer to the instructions (page 4) for fee calculations. ³ For activities requiring a Sec.404 Permit from United States Army Corps of Engineers (USACE).	D	\$375	[#410]
<u>General Permit Registration for Coastal Maintenance</u>			
<input type="checkbox"/> Marina and Mooring Field Reconfiguration	E	\$700	[#992]
<input type="checkbox"/> Remedial Activities Required by Order	F	\$700	[#427]
<input type="checkbox"/> Residential Modification to FEMA Standards	G	\$100	[#423]
<input type="checkbox"/> Reconstruction of Permitted Structures	H	\$300	[#1741]
<u>General Permit Registration for Minor Coastal Structures</u>			
<input type="checkbox"/> 4/40 Docks/Access Stairs	I	\$700	[#426]
<input type="checkbox"/> Non-Harbor Moorings	J	\$250	[#422]

General Permit Registration for Dolphin Cove

Structures, Fill, Obstructions, or Encroachments in Dolphin Cove Lagoon, Stamford

K

\$100

[#420]

Part I: License Type and Fee Information (continued)

Type of License	Program Form	Fee	DEEP USE ONLY
For Federal Agency Activities Only:			
<input type="checkbox"/> Section 401 Water Quality Certificate (Tidal)	C	None	[#1186]
<u>Licenses for Activities in Non-Tidal Waters</u>			
<input type="checkbox"/> Section 401 Water Quality Certificate (Individual) ³	L	None	[#1195]
<input type="checkbox"/> Pre-Construction Notification, USACE General Permits for CT ³	L	None	[#1188]
<input type="checkbox"/> Inland Wetlands and Watercourses ⁴	L	None	[#365]
<input type="checkbox"/> Inland Wetlands and Watercourses ⁴ and WQC ³	L	None	[#2225]
³ For activities requiring a Sec.404 Permit from USACE.			
⁴ For State Agency Activities OR Activities Conducted on State Owned/Controlled Lands.			
For State Agency Activity Conducted on State Owned/Controlled Lands Only:			
<u>General Permit Registration for Water Resources Construction Activities</u>			
<input type="checkbox"/> Activities 1-4: Maintenance Plans	M	\$2,500	[#2243]
<input type="checkbox"/> Activities 5-7: Infrastructure and Public Works Projects	N	\$2,500	[#2244]
<input checked="" type="checkbox"/> Activity 8: Activities Authorized Under a Corps General Permit (Must be submitted after receiving PCN approvals and Flood Management, if applicable.)	O	\$1,250	[#2245]
<input type="checkbox"/> Activity 9: Conservation Activities	O	\$1,250	[#2246]
Additional Licenses for Activities			
<u>These licenses may be combined with Tidal or Non-Tidal Waters licenses.</u>			
<u>Water Diversion – Non-consumptive</u>			
<input type="checkbox"/> Watershed < 0.5 sq. mi.	L	\$2,050	[#457]
<input type="checkbox"/> Watershed ≥ 0.5 sq. mi and < 2.0 sq. mi.	L	\$4,000	[#456]
<input type="checkbox"/> Watershed ≥ 2.0 sq. mi.	L	\$6,250	[#455]
For State Agency Activity/Activities Receiving Funding Through a State Agency:			
<input type="checkbox"/> Flood Management Certification	P	None	[#1185]
<input type="checkbox"/> Flood Management Certification with Exemption Request	P	None	[#1185]
Fee from Attachment A, if applicable			
Total			

*For processing purposes, the terms Application and Applicant are synonymous with the terms Registration and Registrant.

<p>In addition to applicable boxes above, check here if your application is:</p> <p><input type="checkbox"/> eligible for a municipal 50% discount;</p> <p><input type="checkbox"/> for work in tidal waters and being submitted pursuant to CGS section 22a-361(a)(2)(d) to address a violation; or</p> <p><input type="checkbox"/> receiving state funding including federal funding administered by the state (to help determine need for Flood Management Certification).</p>

Part II: Project and Site Information

1a. Project: Provide a brief description of project/activity/work: **Rehabilitation of three culvert bridges (#06795, #06796, #06797) beneath I-395 in Norwalk, CT as part of project #103-266.**

1b. Site Name and Location

Name of Site: 103-266

Address of Site: I-395 City/Town: Norwich State: CT Zip Code: 06360

Parcel Location/Tax Assessor's Reference: Map N/A Block _____ Lot _____

GPS Coordinates/Latitude and Longitude: Provide the exact location of proposed activity, in degrees/minutes/seconds or in decimal degrees: Latitude: _____ Longitude: _____

#06795 Lat. N 41° 33'22.73" Long. W 72° 6'16.35" (Hammer Brook)

#06796 Lat. N 41° 34'40.09" Long. W 72° 4'33.94" (Byron Brook)

#06797 Lat. N 41° 35' 2.01" Long. W 72° 3'42.76" (Unnamed Brook)

Parcel/Easement size: If the project is located on a parcel, indicate parcel acreage: N/A acres

If the project is located on a utility/transportation right-of-way or easement, indicate dimensions or acres: See permit plans

Part III: Applicant Information

- If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, they must be registered with the Secretary of State. If applicable, the applicant's name shall be stated **exactly** as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of State's database (CONCORD) at portal.ct.gov/SOTS.
- If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).
- Once an authorization has been received, if there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the [Request to Change Company/Individual Information](#) to the address indicated on the form.

1. Applicant/Registrant* Information

Name: Connecticut Department of Transportation

Mailing Address: 2800 Berlin Turnpike

City/Town: Newington State: CT Zip Code: 06111

Business Phone: _____ Ext.: _____

Contact Person: Transportation Assistant Planning Director

Phone: 860-594-2931 Ext: _____

E-mail Address†: Kimberly.Lesay@ct.gov

†Email is Required. By providing this e-mail address you are agreeing to receive official correspondence from DEEP, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify DEEP if your e-mail address changes.

If co-applicant(s), check this box and attach co-applicant information as Attachment B following this form.

a) Applicant Type (check one):

individual federal agency state agency municipality tribal

business entity (if a business entity, complete i through iii below):

i) business type: corporation limited liability company limited partnership
 limited liability partnership statutory trust Other: _____

ii) provide Secretary of the State business ID #: _____

This information can be accessed at database (CONCORD): portal.ct.gov/SOTS

iii) check here if your business is **NOT** registered with the Secretary of State's Office.

*For processing purposes, the terms Application and Applicant are synonymous with the terms Registration and Registrant.

Part III: Applicant Information (continued)

b) Applicant's interest in property at which the proposed activity is located:

- site owner option holder lessee facility owner
 easement holder operator other (specify): _____

2. List billing contact, if different than the applicant:

Name: _____
Mailing Address: _____
City/Town: _____ State: _____ Zip Code: _____
Business Phone: _____ Ext.: _____
Contact Person: _____ Title: _____
E-mail: _____

3. Primary contact for departmental correspondence and inquiries if different than applicant:

Name: _____
Mailing Address: _____
City/Town: _____ State: _____ Zip Code: _____
Business Phone: _____ Ext.: _____
Contact Person: _____ Title: _____
E-mail: _____

4. Site/Property Owner*, if different than applicant:

Name: _____
Mailing Address: _____
City/Town: _____ State: _____ Zip Code: _____
Business Phone: _____ Ext.: _____
Contact Person: _____ Title: _____
E-mail: _____

***If the applicant is not the owner, submit written permission from the owner as Attachment C**

5. Facility Owner, if different than applicant:

Name: _____
Mailing Address: _____
City/Town: _____ State: _____ Zip Code: _____
Business Phone: _____ Ext.: _____
Contact Person: _____ Title: _____
E-mail: _____

6. Facility Operator, if different than applicant:

Name: _____
Mailing Address: _____
City/Town: _____ State: _____ Zip Code: _____
Business Phone: _____ Ext.: _____
Contact Person: _____ Title: _____
E-mail: _____

Part III: Applicant Information (continued)

7. Attorney or other representative, if applicable.

Firm Name: _____

Mailing Address: _____

City/Town: _____

State: _____ Zip Code: _____

Business Phone: _____

Ext.: _____

Attorney: _____

Title: _____

E-mail: _____

8. Engineer(s), surveyor(s) and/or other consultant(s) employed or retained to assist in preparing the application and designing or constructing the activity.

Name: CME Associates, Inc.

Mailing Address: 101 East River River Drive

City/Town: East Hartford

State: CT Zip Code: 06108

Business Phone: 860-290-4100

Ext.: 1148

Contact Person: Naomi Hodges

Title: Environmental Scientist

E-mail: nhodges@cmeengineering.com

Service Provided: Liaison Engineering Services, Environmental Services

Part IV: Pre-Application Coordination

If pre-application coordination occurred, provide DEEP LWRD staff contact information:

Staff Name: Interagency Coordination Meeting____ Date: April 21, 2016

Part V: Supporting Documents

As applicable, check the box by the attachments listed to indicate that they have been submitted. When submitting any supporting documents, please label the documents as indicated in this part (e.g., Attachment A, etc.) and be sure to include the applicant's name as indicated on this application form. Attach the materials below following this transmittal form.

- Attachment A Structures, Dredging and Fill fee calculation worksheet (if applicable)
- Attachment B Co-applicant information sheet (if applicable)
- Attachment C Written permission from land owner (if applicant is not the owner)
- Attachment D Additional signature sheet (if applicable)

8. Engineer(s), surveyor(s) and/or other consultant(s) employed or retained to assist in preparing the application and designing or constructing the activity.

Name: Louis Berger

Mailing Address: 2500 Westchester Avenue

City/Town: Purchase **State:** NY **Zip Code:** 10577

Business Phone: (914) 967 – 5800 **Ext.:**




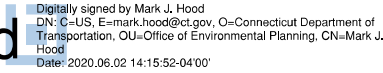
Contact Person: Robert Lin **Title:** Project Manager

E-mail: rlin@louisberger.com

Service Provided: Design Permit Plans

Part VI: Applicant Certification

The applicant(s) *and* any individual(s) responsible for actually preparing the application must sign this section. An application will be considered insufficient unless *all* required signatures are provided.

<p>"I have personally examined and am familiar with the information submitted in the LWRD application and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief.</p> <p>I understand that a false statement in the submitted information may be punishable as a criminal offense, in accordance with section 22a-6 of the General Statutes, pursuant to section 53a-157b of the General Statutes, and in accordance with any other applicable statute.</p> <p>I certify that the LWRD application is on complete and accurate forms as prescribed by the commissioner without alteration of the text.</p> <p>I certify that I have complied with all notice requirements, if applicable, as listed in Section 22a-6g of the General Statutes."</p>	
	 <p>Digitally signed by Garrett Eucalitto Date: 2020.06.04 12:52:05 -04'00'</p>
Signature of Applicant	Date
Garrett T. Eucalitto	Deputy Commissioner
Name of Applicant (print or type)	Title (if applicable)
	 <p>Digitally signed by Mark J. Hood DN: C=US, E=mark.hood@ct.gov, O=Connecticut Department of Transportation, OU=Office of Environmental Planning, CN=Mark J. Hood Date: 2020.06.02 14:15:52-04'00'</p>
Signature of Preparer (if different than above)	Date
Mark J. Hood	CCT/Transportation Planner
Name of Preparer (print or type)	Title (if applicable)
<input type="checkbox"/> Check here if additional signatures are required. If so, please reproduce this sheet and attach signed copies to this sheet as Attachment D. You must include signatures of any person preparing any report or parts thereof required in this application (i.e., professional engineers, surveyors, soil scientists, consultants, etc.).	

Part VII: Application Submission

Instructions for submitting an application to DEEP LWRD:

1. Please submit a hardcopy of **only** this completed License Application Transmittal Form and fee, to:

**CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127**

Applications will not be processed without the fee. Fee shall be non-refundable and shall be paid by check or money order to the Connecticut Department of Energy & Environmental Protection.

2. Upon receipt of the Transmittal Form and fee, the Central Permit Processing Unit (CPPU) will e-mail a confirmation receipt letter to you containing the DEEP assigned application number.
3. Upon receipt of the email from CPPU, electronically submit the full application package with the remaining required forms:
 - a. Send an empty/blank email to DEEP.LWRDRegulatorySubmittals@ct.gov
 - b. An automated email response will contain instructions for uploading this Transmittal Form and applicable Program Forms, management plans, or additional supporting documents of your application to the LWRD File Transfer Protocol (FTP) website.
 - c. Follow directions contained in the email for uploading the application sections.

If you are not capable of submitting the application electronically or if you have other questions or concerns regarding application submittals, please contact LWRD staff at 860-424-3019.



Connecticut Department of
Energy & Environmental Protection
Bureau of Water Protection & Land Reuse
Land & Water Resources Division

LWRD License Application Form O

General Permit Request for Authorization, Water Resources Construction Activities (Activities 8 & 9)

- **Activities Authorized Under a USACE General Permit**
- **Conservation Activities**

All sections of the LWRD License Application, when applicable, must be posted to the DEEP LWRD FTP site as instructed on Part VII of the [LWRD Transmittal Form](#).

Application Number (as assigned in CPPU e-mail): 202007072

Applicant Name (same name used on Part III of the LWRD Transmittal Form): Connecticut Department of Transportation

Supporting Documents

Check the box by the attachments listed to indicate that they have been submitted. When submitting any supporting documents, please label the documents as indicated in this part (e.g., Attachment 31, etc.) and be sure to include the same applicant name used above. NOTE: Attachment numbering is NOT consecutive as the attachments relate to multiple LWRD program applications.

- Attachment 29 Attach a copy of USACE PCN authorization, if applicable. USACE PCN # NAE-2019-01746
- Attachment 31 Attach a copy of either the DEEP Section 401 Pre-Construction Notification (PCN) License or the USACE Self-Verification (SV) submittal, including form and plans. DEEP PCN # 201908105-PCN, 201908101-PCN, 201908906-PGP
- Attachment 32 Flood Management Certification (FMC) must be issued prior to submittal of this form, if required. Attach a copy of the FMC License. FMC # FM General Permit

Attachment 29: Copy of USACE PCN authorization (USACE PCN # NAE-2019-01746)



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

May 29, 2020

Regulatory Division
File Number: NAE-2019-01746
CT DEEP File Number: 201908105-PCN

Kimberly Lesay
Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, Connecticut 06131
Kimberly.Lesay@ct.gov

Dear Kimberly Lesay:

We have reviewed your application to conduct culvert maintenance work. This project is located in three separate waterways along I-395 in Norwich, Connecticut, and further described as follows:

Repair of culvert 06795 carrying Hammer Brook beneath I-395. The project requires impacts to the surrounding wetlands for the rehabilitation of Bridge No. 06795. The project consists of installing a 4-inch thick reinforced concrete lining along the full length of the culvert invert. Concrete cut-off and return walls will be constructed at both ends of the culvert to prevent scour. At the inlet of the culvert opening, rounded corners will be constructed to facilitate flow through the culvert in order to maintain the existing headwater elevation. At the inlet, salvaged natural streambed material will be regraded to raise the streambed to the new invert elevation. A preformed riprap scour hole will be placed at the outlet to prevent additional scour. The construction of permanent access roads is required to access the culvert. These access roads will have minor impacts to the adjacent wetlands. All temporary disturbed areas will be revegetated after the completion of construction. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06795 I-395 Over Hammer Brook, (Site No. 1)," on 8 sheets, and dated "6/25/2019."

Repair of culvert 06796 carrying Byron Brook beneath I-395. The project requires impact to the channel and surrounding wetlands for the repair of the existing culvert. The project involves repairs to the wingwalls and headwalls at both ends of the culvert. The culvert will also be slip-lined with a 54-inch interior diameter high-density polyethylene (HDPE) pipe along the full length of the structure. Salvaged natural streambed material will be used to grade the streambed to the new invert elevation. The construction of permanent access roads is required to access the culvert. These access roads will have some temporary and permanent impacts to the adjacent wetlands. All temporary disturbed areas will be revegetated after the completion of construction. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06796 I-395 Over Byron Brook, (Site No. 2)," on 7 sheets, and dated "6/24/2019."

Repair of culvert 06797 carrying UNT beneath I-395. The project requires impacts to the channel for the replacement of the existing culvert. Work within the UNT will include installation of new culvert and its cut-off walls, flared wingwalls, and beveled opening at the inlet. Salvaged natural streambed material will be placed at the culvert inlet and outlet. The new proposed box culvert will contain 1 foot of natural streambed material. The brook will be regraded and realigned to its original course before the construction of I-395. The existing culvert will be discontinued and filled with low strength material. This work is shown on the enclosed plans titled "Rehabilitation of Bridge No. 06797 I-395 Over Unnamed Brook, (Site No. 3)," on 8 sheets, and dated "6/27/2019."

Based on the information you have provided, we verify that the activity is authorized under General Permit No. 19 of the enclosed August 19, 2016 Federal permit known as the Connecticut General Permits (GPs).

Please review the enclosed GPs and general conditions carefully to be sure that you and whoever does the work understand its requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with any special condition provided above and all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on August 19, 2021. You must commence or have under contract to commence the work authorized herein by August 19, 2021, and complete the work by August 19, 2022. If not, you must contact this office to determine the need for further authorization *before* beginning or continuing the activity. We recommend that you contact us *before* this authorization expires to discuss reissuance. Please contact us immediately to discuss modification of this authorization if you change the plans or construction methods for work within our jurisdiction. We must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

The Connecticut Department of Energy & Environmental Protection (DEEP) has issued a Water Quality Certification (WQC) for this project, as required under Section 401 of the Clean Water Act, based on their review of the project.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Please contact Alex Kostra, of my staff, at (978) 318-8651 if you have any questions.

Sincerely,

Kevin R Kotelly

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosure:

cc:

CT DEEP, Chief, Land & Water Resources Division, john.natale@ct.gov

Nate Margason, U.S. EPA, Region 1, Boston, Massachusetts, margason.nathan@epa.gov

Attachment 31: Copy of the DEEP Section 401 Pre-Construction Notification (PCN) Licenses
(DEEP PCN # 201908105-PCN, 201908101-PCN, 201908906-PGP)



Date September 20, 2019

Diane M. Ray, Chief
Regulatory and Enforcement Branch B
U.S. Army Corps of Engineers
New England District
CENAE-RDB
696 Virginia Road
Concord, MA 01742-2751

Thomas Maziarz
Bureau Chief of Policy Planning
State of Connecticut Department of Transportation
2800 Berlin Turnpike, P.O. Box 317546
Newington, CT 06131-7546

SUBJECT: DEEP License #: 201908105-PCN
Rehabilitation of Culvert #06795, I-395 over Hammer Brook, Norwich

Dear Mr. Maziarz:

Please find attached a copy of your subject license and relevant enclosures which are being issued pursuant to your application of July 2, 2019. Your attention is directed to the conditions of the license. All work must conform to that which is specifically authorized.

Any work in regulated areas of the State which has not been authorized by a valid license is a violation of state law and subject to enforcement action by the Department of Energy & Environmental Protection and the Office of the Attorney General.

Your initiation of authorized activities will be relied upon as your agreement to comply with the terms and conditions of the license.

If you have not already done so, you should contact your local Planning and Zoning Office and the U. S. Army Corps of Engineers to determine local and federal permit requirements on your project, if any. Write the Corps' New England District, Regulatory Branch, 696 Virginia Road, Concord, MA 01742-2751; <http://www.nae.usace.army.mil/> or call 1-800-343-4789.

If you should have any questions or concerns, please contact me at (860) 424-3233, or john.natale@ct.gov.

Sincerely,

John Natale, Analyst
Land & Water Resources Division
Bureau of Water Protection & Land Reuse

201908105-PCN

Encl(s): License # 201908105-PCN

cc: File 201908105-PCN

cc (via email): Peter A. Nystrom, Mayor, City of Norwich: pnystrom@cityofnorwich.org
Steve Gephard, CT DEEP Fisheries Division: steve.gephard@ct.gov



Connecticut Department of Energy and Environmental Protection License*

USACE CT GP - Pre-Construction Notification Approval

Licensee(s): Connecticut Department of
Transportation

Licensee Address(s): 2800 Berlin Turnpike
Newington, CT 06131-7546

License Number(s): 201908105-PCN

Municipality: Norwich

Project Description: Replacement of Bridge #06795

Project Address/Location: I-395 over Hammer Brook

Waters: Hammer Brook

**Authorizing CT Statute(s)
and/or Federal Law:** Section 401 CWA (33 USC 1341)

**Applicable Regulations of
CT State Agencies:** 22a-426-1 to 9

Agency Contact: Land & Water Resources Division,
Bureau of Water Protection & Land Reuse, 860-424-3019

License Expiration: Upon expiration of the U.S. Army Corps of Engineers Section 404
permit for the same activity.

Project Site Plan Set: *Connecticut Department of Transportation, Environmental Permit
Plans for State Project No. 103-266, I-395 Over Hammer Brook
(Site No. 1) in the City of Norwich, 8 sheets, prepared by Louis
Berger US, Inc., updated through June 26, 2019.*

License Enclosures: WQC CT GP Conditions

*Connecticut's Uniform Administrative Procedure Act defines License to include, "the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . ."

Authorized Activities:

The Licensee is hereby authorized to conduct the following work as described in application # 201908105-PCN and as depicted on any site plan sheets / sets cited herein:

1. Rehabilitate culvert #06795 by installing a 4-inch thick concrete invert lining within the culvert, applying an asphaltic coating to the remaining interior portions of the culvert; and by installing headwalls, wingwalls and cutoff walls at the inlet and outlet;
2. Install a 15-foot X 15-foot pre-formed rip-rap scour hole at the outlet to improve fisheries habitat.
3. The following wetland and waterway impacts are authorized: wetland impacts of 1,600 square feet (temporary) and 1,900 square feet (permanent); and waterway impacts of 400 square feet (temporary) and 1,400 square feet (permanent).


Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.
2. Fisheries mitigation for this project shall be conducted at the Meshomasic State Forest in East Hampton, Connecticut, and shall consist of the replacement of an existing culvert conveying Mott Hill Brook under Del Reeves Road with an open-bottom structure, with the goal of restoring upstream fish habitat and instream habitats for the wild brook trout population, and providing stream connectivity to over 1.68 miles of upstream habitats. The Connecticut Department of Energy and Environmental Protection (DEEP) shall obtain the required State and federal permits for the project, and the Connecticut Department of Transportation (DOT) shall provide project funding, per the Memorandum of Agreement (MOA) between the DEEP and DOT, which was signed by both parties in May of 2018.

Issued under the authority of the Commissioner of Energy and Environmental Protection on:

September 20, 2019
Date



Brian P. Thompson
Division Director
Land & Water Resources Division

**Section 401 Water Quality Certification Conditions for Department of the Army (Corps of Engineers)
General Permits for the State of Connecticut**

1. **Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.
2. **Expiration of Certificate.** The Section 401 Water Quality Certifications contained herein shall be valid until such time as the Department of the Army General Permits for the State of Connecticut expires or is modified, suspended, revoked or reissued.
3. **Compliance with Certificate.** All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Any regulated activities carried out at the site, including but not limited to, construction of any structure, excavation, fill, obstruction, or encroachment, that are not specifically identified and authorized herein shall constitute a violation of this certificate and may result in its modification, suspension, or revocation. In carrying out the certified discharge(s) authorized herein, the permittee shall not store equipment or construction material, or discharge any material including without limitation, fill, construction materials or debris in any wetland or watercourse on or off site unless specifically authorized by this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this certificate.
4. **Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner.
5. **Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, incomplete or inaccurate, this certificate may be modified, suspended or revoked.
6. **Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:
 - a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;
 - b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24 hours) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;
 - c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;
 - d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;

- e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;
- f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.
- g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.
- h. Immediately informing the Commissioner's Inland Water Resources Division at (860) 424-3019 and the U.S. Army Corps of Engineers at (978) 318-8879, of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the following information:
 - (i) the provision(s) of this certificate that has been violated;
 - (ii) the date and time the violation(s) was first observed and by whom;
 - (iii) the cause of the violation(s), if known
 - (iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
 - (v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
 - (vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
 - (vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with condition 7 of this certificate.

For information and technical assistance, contact the DEEP Land and Water Resources Division at (860) 424-3019.

7. Unconfined Instream Work; Installation and Removal of Confining Structures.

- Unconfined instream work is limited to the period June 1 through September 30.
- Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.

- The removal of such confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.
- The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.
- Once a work area has been confined, in-water work within the confined area is allowed any time of the year.

8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

9. **Submission of Documents.** The date of submission to the Commissioner of any document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

Director, Land and Water Resources Division
Bureau of Water Protection and Land Reuse
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127



Connecticut Department of

**ENERGY &
ENVIRONMENTAL
PROTECTION**

**Bureau of Water Protection and Land Reuse
Land & Water Resources Division**

79 Elm Street • Hartford, CT 06106-5127

www.ct.gov/deep

Affirmative Action/Equal Opportunity Employer

Connecticut Department of Energy and Environmental Protection License*

USACE CT GP - Pre-Construction Notification Approval

Licensee(s): Connecticut Department of
Transportation

Licensee Address(s): 2800 Berlin Turnpike
Newington, CT 06131-7546

License Number(s): 201908101-PCN

Municipality: Norwich

Project Description: Replacement of Bridge #06796

Project Address/Location: I-395 over Byron Brook

Waters: Byron Brook

**Authorizing CT Statute(s)
and/or Federal Law:** Section 401 CWA (33 USC 1341)

**Applicable Regulations of
CT State Agencies:** 22a-426-1 to 9

Agency Contact: Land & Water Resources Division,
Bureau of Water Protection & Land Reuse, 860-424-3019

License Expiration: Upon expiration of the U.S. Army Corps of Engineers Section 404
permit for the same activity.

Project Site Plan Set: *Connecticut Department of Transportation, Environmental Permit
Plans for State Project No. 103-266, I-395 Over Byron Brook
(Site No. 2) in the City of Norwich, 7 sheets, prepared by Louis
Berger US, Inc., June 24, 2019.*

License Enclosures: WQC CT GP Conditions;

*Connecticut's Uniform Administrative Procedure Act defines License to include, "the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . ."

Authorized Activities:

The Licensee is hereby authorized to conduct the following work as described in application # 201908101-PCN and as depicted on any site plan sheets / sets cited herein:

1. Rehabilitate culvert #06796 by installing a 54-inch interior diameter corrugated high density polyethylene pipe within the 72-inch diameter existing asphalt-coated corrugated metal pipe, and filling the annular space with low-pressure grout.
2. The following wetland and waterway impacts are authorized: wetland impacts of 2,200 square feet (temporary) and 1,550 square feet (permanent); and waterway impacts of 1,250 square feet (temporary) and 1,050 square feet (permanent).

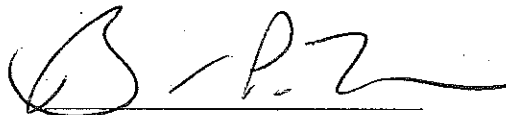
Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.

Issued under the authority of the Commissioner of Energy and Environmental Protection on:

October 7, 2019
Date



Brian P. Thompson
Division Director
Land & Water Resources Division

**Section 401 Water Quality Certification Conditions for Department of the Army (Corps of Engineers)
General Permits for the State of Connecticut**

1. **Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.
2. **Expiration of Certificate.** The Section 401 Water Quality Certifications contained herein shall be valid until such time as the Department of the Army General Permits for the State of Connecticut expires or is modified, suspended, revoked or reissued.
3. **Compliance with Certificate.** All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Any regulated activities carried out at the site, including but not limited to, construction of any structure, excavation, fill, obstruction, or encroachment, that are not specifically identified and authorized herein shall constitute a violation of this certificate and may result in its modification, suspension, or revocation. In carrying out the certified discharge(s) authorized herein, the permittee shall not store equipment or construction material, or discharge any material including without limitation, fill, construction materials or debris in any wetland or watercourse on or off site unless specifically authorized by this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this certificate.
4. **Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner.
5. **Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, incomplete or inaccurate, this certificate may be modified, suspended or revoked.
6. **Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:
 - a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;
 - b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24 hours) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;
 - c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;
 - d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;

- e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;
- f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.
- g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.
- h. Immediately informing the Commissioner's Inland Water Resources Division at (860) 424-3019 and the U.S. Army Corps of Engineers at (978) 318-8879, of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the following information:
 - (i) the provision(s) of this certificate that has been violated;
 - (ii) the date and time the violation(s) was first observed and by whom;
 - (iii) the cause of the violation(s), if known
 - (iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
 - (v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
 - (vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
 - (vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with condition 7 of this certificate.

For information and technical assistance, contact the DEEP Land and Water Resources Division at (860) 424-3019.

7. Unconfined Instream Work; Installation and Removal of Confining Structures.

- Unconfined instream work is limited to the period June 1 through September 30.
- Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.

- The removal of such confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.
 - The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.
 - Once a work area has been confined, in-water work within the confined area is allowed any time of the year.
8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

9. **Submission of Documents.** The date of submission to the Commissioner of any document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

Director, Land and Water Resources Division
Bureau of Water Protection and Land Reuse
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127



Date December 19, 2019

Kevin R. Kotelly, Chief
Regulatory and Enforcement Branch B
U.S. Army Corps of Engineers
New England District
CENAE-RDB
696 Virginia Road
Concord, MA 01742-2751

Kimberly Lesay
2800 Berlin Turnpike
P.O Box 317546
Newington, CT 06111

SUBJECT: DEEP License #: 201908906-PGP
Bridge No. 06797 on I-395, Norwich

Dear Mrs. Lesay:

Please find attached a copy of your subject license and relevant enclosures which are being issued pursuant to your application of August 2, 2019. Your attention is directed to the conditions of the license. All work must conform to that which is specifically authorized.

Any work in regulated areas of the State which has not been authorized by a valid license is a violation of state law and subject to enforcement action by the Department of Energy & Environmental Protection and the Office of the Attorney General.

Your initiation of authorized activities will be relied upon as your agreement to comply with the terms and conditions of the license.

If you have not already done so, you should contact your local Planning and Zoning Office and the U. S. Army Corps of Engineers to determine local and federal permit requirements on your project, if any. Write the Corps' New England District, Regulatory Branch, 696 Virginia Road, Concord, MA 01742-2751; <http://www.nae.usace.army.mil/> or call 1-800-343-4789.

If you should have any questions or concerns, please contact me at 860-424-3867, or brian.golembiewski@ct.gov.

Sincerely,

Brian Golembiewski, Supervisor
Land & Water Resources Division
Bureau of Water Protection & Land Reuse

Encl(s): License # 201908906-PGP ; WQC CT GP Conditions

cc: File 201908906-PGP

cc (via email): Kimberly Lesay , Kimberly.lesay@ct.gov
Mayor Peter A. Nystrom, pnystrom@cityofnorwich.org
DEEP Fisheries, Brian.Murphy@ct.gov

Connecticut Department of Energy and Environmental Protection License*

USACE CT GP - Pre-Construction Notification Approval

Licensee(s):	Connecticut Department of Transportation
Licensee Address(s):	2800 Berlin Turnpike Newington, CT 06111
License Number(s):	201908906-PGP
Municipality:	Norwich
Project Description:	The replacement of Bridge No. 06797 on I-395 over Unnamed Tributary Watercourse to the Shetucket River.
Project Address/Location:	I-395 at Bridge No. 06797
Waters:	Un-named Tributary Watercourse to the Shetucket River.
Authorizing CT Statute(s) and/or Federal Law:	Section 401 CWA (33 USC 1341)
Applicable Regulations of CT State Agencies:	22a-426-1 to 9
Agency Contact:	Land & Water Resources Division, Bureau of Water Protection & Land Reuse, 860-424-3019
License Expiration:	Upon expiration of the Department of Army CT General Permit, August 19, 2021
Project Site Plan Set:	“Replacement of Bridge No. 06797 I-395 Over Unnamed Brook (Site No. 3) in the City of Norwich”, 8 Sheets of Plans, Drawing No., PMT-01 through PMT-08, dated July 1, 2019, prepared by the Office of Engineering at the Department of Transportation.
License Enclosures:	WQC CT GP Conditions

*Connecticut’s Uniform Administrative Procedure Act defines License to include, “*the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . .*”

Authorized Activities:

The Licensee is hereby authorized to conduct the following work as described in application # 201801179-PGP:

1. Replace an existing 139' long, 72" diameter culvert with a 144' long, 5' x 5' 4-sided concrete box culvert sunken at least 1' in natural existing streambed material;
2. Place temporary fill, consisting of a fully enclosed cofferdam, within 0.051 acres (2,200 square feet) of the unnamed watercourse and adjacent inland wetlands;
3. Grade and place approximately 195 cubic yards of permanent fill, consisting of roadway embankment fill, natural streambed material, granular subbase fill, concrete associated with the culvert and wingwalls, organic soil materials in the former outlet channel, and controlled low strength material in the abandoned culvert, all within 0.068 acres (2,950 square feet) of unnamed watercourse and associated riparian forested wetlands.

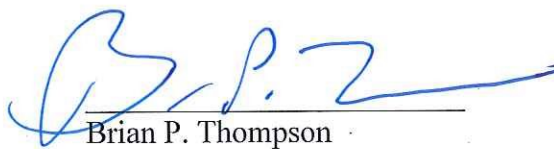
Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.
2. The Licensee shall place 1' of natural streambed material throughout the culvert and at the inlet/outlet areas.
3. The Licensee is prohibited from conducting any unconfined in-stream construction activities between October 1st and May 31st, inclusive, of any year.
4. The Licensee shall implement the Wetland Planting Plan as shown on Drawing No. PMT-08.

Issued under the authority of the Commissioner of Energy and Environmental Protection on:

December 19, 2019
Date



Brian P. Thompson
Division Director
Land & Water Resources Division

**Section 401 Water Quality Certification Conditions for Department of the Army (Corps of Engineers)
General Permits for the State of Connecticut**

1. **Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.
2. **Expiration of Certificate.** The Section 401 Water Quality Certifications contained herein shall be valid until such time as the Department of the Army General Permits for the State of Connecticut expires or is modified, suspended, revoked or reissued.
3. **Compliance with Certificate.** All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Any regulated activities carried out at the site, including but not limited to, construction of any structure, excavation, fill, obstruction, or encroachment, that are not specifically identified and authorized herein shall constitute a violation of this certificate and may result in its modification, suspension, or revocation. In carrying out the certified discharge(s) authorized herein, the permittee shall not store equipment or construction material, or discharge any material including without limitation, fill, construction materials or debris in any wetland or watercourse on or off site unless specifically authorized by this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this certificate.
4. **Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner.
5. **Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, incomplete or inaccurate, this certificate may be modified, suspended or revoked.
6. **Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:
 - a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;
 - b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24 hours) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;
 - c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;
 - d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;

- e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;
- f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.
- g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.
- h. Immediately informing the Commissioner's Inland Water Resources Division at (860) 424-3019 and the U.S. Army Corps of Engineers at (978) 318-8879, of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the following information:
 - (i) the provision(s) of this certificate that has been violated;
 - (ii) the date and time the violation(s) was first observed and by whom;
 - (iii) the cause of the violation(s), if known
 - (iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
 - (v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
 - (vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
 - (vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with condition 7 of this certificate.

For information and technical assistance, contact the DEEP Land and Water Resources Division at (860) 424-3019.

7. Unconfined Instream Work; Installation and Removal of Confining Structures.

- Unconfined instream work is limited to the period June 1 through September 30.
- Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.

- The removal of such confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.
 - The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.
 - Once a work area has been confined, in-water work within the confined area is allowed any time of the year.
8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

9. **Submission of Documents.** The date of submission to the Commissioner of any document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

Director, Land and Water Resources Division
Bureau of Water Protection and Land Reuse
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127

Attachment 32: Copy of the Flood Management Certification License (FM General Permit)

Project No.: 103-266

Description: The Rehabilitation of Bridge No. 06795
Interstate 395 over Hammer Brook

Town: Norwich

Date: January 25, 2019

memorandum

Andrew J. Cardinali,
P.E.
2019.01.28
13:05:48-05'00'

to: Mr. Michael E. Masayda
Trans. Principal Engineer
Hydraulics and Drainage
Bureau of Engineering and Highway Operations

from: Andrew J. Cardinali
Transportation Supervising Engineer
Bridge CLE Design
Bureau of Engineering and Highway Oper.

Please review this request for Flood Management General Certification and indicate your concurrence below.

Certification (to be completed by designer)

I have read the Flood Management General Certification and the descriptions for the approved DOT minor activities. This project qualifies for the Flood Management General Certification under:

- Minor Safety Improvements and Streetscape Projects
- Roadway Repaving, Maintenance & Underground Utilities
- Minor Stormwater Drainage Improvements
- Removal of Sediment or Debris from a Floodplain
- Wetland Restoration Creation or Enhancement
- Scour Repairs at Structures; *(Must acquire DEEP Fisheries Concurrence to be eligible)*
- Guide Rail Installation
- Deck and Superstructure Replacements
- Minor Bridge Repairs and Access
- Fisheries Enhancements
- Surveying and Testing
- Bicycle / Pedestrian, Multi Use Trails and Enhancement Projects

The following required documentation is attached in support of this certification:

- Project description
- Location plan
- Description of Floodplain involvement and how project qualifies for general certification
- 8-1/2" by 11" excerpt copy of the FEMA Flood Insurance Rate Map (FIRM) and Floodway Boundary Map (if applicable)
- Design plans, (dated 1/10/2019) with FEMA floodplain boundaries plotted, cross sections and profiles, as necessary, that clearly depict the floodplain involvement
- FEMA 100-year flood elevation plotted on elevation view (for structures)

Print Name: Aaron J. Foster, P.E.

Title: Project Manager

Signature 

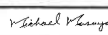
Date: 1/28/19

Concurrence (to be completed by Hydraulics and Drainage)

Based on the documentation submitted, I hereby concur that the project qualifies for Flood Management General Certification.

If there are any changes to the proposed activities within the floodplain or floodway, the project must be re-submitted for review and approval.

Signature

 Michael Masayda, P.E.
2019.02.26
16:53:52-05'00'

Date 2-26-19

Construction Contracts - Required Contract Provisions (FHWA Funded Contracts)

Index

1. Federal Highway Administration (FHWA) Form 1273 (Revised May 1, 2012)
2. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements
3. Contractor Work Force Utilization (Federal Executive Order 11246) / Specific Equal Employment Opportunity
4. Requirements of Title 49, CFR, Part 26, Participation by DBEs
5. Contract Wage Rates
6. Americans with Disabilities Act of 1990, as Amended
7. Connecticut Statutory Labor Requirements
 - a. Construction, Alteration or Repair of Public Works Projects; Wage Rates
 - b. Debarment List - Limitation on Awarding Contracts
 - c. Construction Safety and Health Course
 - d. Awarding of Contracts to Occupational Safety and Health Law Violators Prohibited
 - e. Residents Preference in Work on Other Public Facilities (Not Applicable to Federal Aid Contracts)
8. Tax Liability - Contractor's Exempt Purchase Certificate (CERT – 141)
9. Executive Orders (State of CT)
10. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised)
11. Whistleblower Provision
12. Connecticut Freedom of Information Act
 - a. Disclosure of Records
 - b. Confidential Information
13. Service of Process
14. Substitution of Securities for Retainages on State Contracts and Subcontracts
15. Health Insurance Portability and Accountability Act of 1996 (HIPAA)
16. Forum and Choice of Law

17. Summary of State Ethics Laws
18. Audit and Inspection of Plants, Places of Business and Records
19. Campaign Contribution Restriction
20. Tangible Personal Property
21. Bid Rigging and/or Fraud – Notice to Contractor
22. Consulting Agreement Affidavit
23. Federal Cargo Preference Act Requirements (46 CFR 381.7(a)-(b))

Index of Exhibits

- EXHIBIT A – FHWA Form 1273 (Begins on page 14)
- EXHIBIT B – Title VI Contractor Assurances (page 34)
- EXHIBIT C – Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity (page 36)
- EXHIBIT D – Health Insurance Portability and Accountability Act of 1996 (HIPAA) (page 43)
- EXHIBIT E – Campaign Contribution Restriction (page 51)
- EXHIBIT F – Federal Wage Rates (Attached at the end)
- EXHIBIT G – State Wage Rates and Other Related Information (Attached at the end)

1. Federal Highway Administration (FHWA) Form 1273

The Contractor shall comply with the Federal Highway Administration (FHWA), Form 1273 attached at Exhibit A, as revised, which is hereby made part of this contract. The Contractor shall also require its subcontractors to comply with the FHWA – Form 1273 and include the FHWA – Form 1273 as an attachment to all subcontracts and purchase orders.

2. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements

The Contractor shall comply with Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000 et seq.), all requirements imposed by the regulations of the United States Department of Transportation (49 CFR Part 21) issued in implementation thereof, and the Title VI Contractor Assurances attached hereto at Exhibit B, all of which are hereby made a part of this Contract.

3. Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity

- (a) The Contractor shall comply with the Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity requirements attached at Exhibit C and hereby made part of this Contract, whenever a contractor or subcontractor at any tier performs construction work in excess of \$10,000. These goals shall be included in each contract and subcontract. Goal achievement is calculated for each trade using the hours worked under each trade.
- (b) Companies with contracts, agreements or purchase orders valued at \$10,000 or more will develop and implement an Affirmative Action Plan utilizing the ConnDOT Affirmative Action Plan Guideline. This Plan shall be designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex or national origin, and to promote the full realization of equal employment opportunity through a positive continuation program. Plans shall be updated as required by ConnDOT.

4. Requirements of Title 49, Code of Federal Regulations (CFR), Part 26, Participation by DBEs, as may be revised.

Pursuant to 49 CFR 26.13, the following paragraph is part of this Contract and shall be included in each subcontract the Contractor enters into with a subcontractor:

“The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26, Participation by DBEs, in the award and administration of U.S. DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this contract or such other remedy as ConnDOT (recipient) deems appropriate, which may include, but is not limited to: (1) Withholding monthly progress payments, (2) Assessing sanctions, (3) Liquidated damages; and/or, (4) Disqualifying the contractor from future bidding as non-responsible.”

5. Contract Wage Rates

The Contractor shall comply with:

The Federal and State wage rate requirements indicated in Exhibits F and G hereof, as revised, are hereby made part of this Contract. The Federal wage rates (Davis-Bacon Act) applicable to this Contract shall be the Federal wage rates that are current on the US Department of Labor website (<http://www.wdol.gov/dba.aspx>) as may be revised 10 days prior to bid opening. These applicable Federal wage rates will be physically incorporated in the final contract document executed by both parties. The Department will no longer physically include revised Federal wage rates in the bid documents or as part of addenda documents, prior to the bid opening date. During the bid advertisement period, bidders are responsible for obtaining the appropriate Federal wage rates from the US Department of Labor website.

To obtain the latest Federal wage rates go to the US Department of Labor website (link above). Under Davis-Bacon Act, choose “Selecting DBA WDs” and follow the instruction to search the latest wage rates for the State, County and Construction Type. Refer to the Notice to Contractor (NTC) - Federal Wage Determinations (Davis Bacon Act).

If a conflict exists between the Federal and State wage rates, the higher rate shall govern.

Prevailing Wages for Work on State Highways; Annual Adjustments. With respect to contracts for work on state highways and bridges on state highways, the Contractor shall comply with the provisions of Section 31-54 and 31-55a of the Connecticut General Statutes, as revised.

As required by Section 1.05.12 (Payrolls) of the State of Connecticut, Department of Transportation’s Standard Specification for Roads, Bridges and Incidental Construction (FORM 817), as may be revised, every Contractor or subcontractor performing project work on a Federal aid project is required to post the relevant prevailing wage rates as determined by the United States Secretary of Labor. The wage rate determinations shall be posted in prominent and easily accessible places at the work site.

6. Americans with Disabilities Act of 1990, as Amended

This provision applies to those Contractors who are or will be responsible for compliance with the terms of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. 12101 et seq.), (Act), during the term of the Contract. The Contractor represents that it is familiar with the terms of this Act and that it is in compliance with the Act. Failure of the Contractor to satisfy this standard as the same applies to performance under this Contract, either now or during the term of the Contract as it may be amended, will render the Contract voidable at the option of the State upon notice to the contractor. The Contractor warrants that it will hold the State harmless and indemnify the State from any liability which may be imposed upon the State as a result of any failure of the Contractor to be in compliance with this Act, as the same applies to performance under this Contract.

7. Connecticut Statutory Labor Requirements

(a) Construction, Alteration or Repair of Public Works Projects; Wage Rates. The Contractor shall comply with Section 31-53 of the Connecticut General Statutes, as revised. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or

worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (i) of section 31-53 of the Connecticut General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

(b) Debarment List. Limitation on Awarding Contracts. The Contractor shall comply with Section 31-53a of the Connecticut General Statutes, as revised.

(c) Construction Safety and Health Course. The Contractor shall comply with section 31-53b of the Connecticut General Statutes, as revised. The contractor shall furnish proof to the Labor Commissioner with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 of the Connecticut General Statutes, as revised, on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

Any employee required to complete a construction safety and health course as required that has not completed the course, shall have a maximum of fourteen (14) days to complete the course. If the employee has not been brought into compliance, they shall be removed from the project until such time as they have completed the required training.

Any costs associated with this notice shall be included in the general cost of the contract. In addition, there shall be no time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall not be grounds for claims as outlined in Section 1.11 – "Claims".

(d) Awarding of Contracts to Occupational Safety and Health Law Violators Prohibited. The Contract is subject to Section 31-57b of the Connecticut General Statutes, as revised.

(e) Residents Preference in Work on Other Public Facilities. NOT APPLICABLE TO FEDERAL AID CONTRACTS. Pursuant to Section 31-52a of the Connecticut General Statutes, as revised, in the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the state who are, and continuously for at least six months prior to the date hereof have been, residents of this state, and if no such person is available, then to residents of other states

8. Tax Liability - Contractor's Exempt Purchase Certificate (CERT – 141)

The Contractor shall comply with Chapter 219 of the Connecticut General Statutes pertaining to tangible personal property or services rendered that is/are subject to sales tax. The Contractor is

responsible for determining its tax liability. If the Contractor purchases materials or supplies pursuant to the Connecticut Department of Revenue Services' "Contractor's Exempt Purchase Certificate (CERT-141)," as may be revised, the Contractor acknowledges and agrees that title to such materials and supplies installed or placed in the project will vest in the State simultaneously with passage of title from the retailers or vendors thereof, and the Contractor will have no property rights in the materials and supplies purchased.

Forms and instructions are available anytime by:

Internet: Visit the DRS website at www.ct.gov/DRS to download and print Connecticut tax forms; or
Telephone: Call 1-800-382-9463 (Connecticut calls outside the Greater Hartford calling area only) and select Option 2 or call 860-297-4753 (from anywhere).

9. Executive Orders

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the contract as if they had been fully set forth in it. The contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order No. 14 and/or Executive Order No. 49 are applicable, they are deemed to be incorporated into and are made a part of the contract as if they had been fully set forth in it. At the Contractor's request, the Department shall provide a copy of these orders to the Contractor.

10. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised): References to "minority business enterprises" in this Section are not applicable to Federal-aid projects/contracts. Federal-aid projects/contracts are instead subject to the Federal Disadvantaged Business Enterprise Program.

(a) For purposes of this Section, the following terms are defined as follows:

- (1) "Commission" means the Commission on Human Rights and Opportunities;
- (2) "Contract" and "contract" include any extension or modification of the Contract or contract;
- (3) "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
- (4) "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose.
- (5) "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;
- (6) "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted

efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;

- (7) "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced;
- (8) "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;
- (9) "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and
- (10) "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the State of Connecticut, including, but not limited to municipalities, unless the contract is a municipal public works contract or quasi-public agency project contract, (2) any other state of the United States, including but not limited to, the District of Columbia, Puerto Rico, U.S. territories and possessions, and federally recognized Indian tribal governments, as defined in Connecticut General Statutes § 1-267, (3) the federal government, (4) a foreign government, or (5) an agency of a subdivision, state or government described in subdivision (1), (2), (3), or (4) of this subsection.

- (b) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, status as a veteran, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut; and the Contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, status as a veteran, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by the Contractor that such disability prevents performance of the work involved; (2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor

agrees to comply with each provision of this Section and Connecticut General Statutes §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes §§ 46a-56, 46a-68e and 46a-68f; and (5) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor as relate to the provisions of this Section and Connecticut General Statutes § 46a-56. If the contract is a public works contract, the Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

- (c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.
- (d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.
- (e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.
- (f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.
- (g) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Contractor agrees to provide each labor union or representative of workers with which such Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such Contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes § 46a-56; and (4) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor which relate to the provisions of this Section and Connecticut General Statutes § 46a-56.
- (h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by

regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

Please be aware the Nondiscrimination Certifications can be found at the Office of Policy and Management website:

<https://portal.ct.gov/OPM/Fin-PSA/Forms/Nondiscrimination-Certification>

11. Whistleblower Provision

The following clause is applicable if the Contract has a value of Five Million Dollars (\$5,000,000) or more.

Whistleblowing. This Contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the Contractor takes or threatens to take any personnel action against any employee of the Contractor in retaliation for such employee's disclosure of information to any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, the Contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation, each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the Contractor.

12. Connecticut Freedom of Information Act

- (a) **Disclosure of Records.** This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.
- (b) **Confidential Information.** The State will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the State receives from the Contractor. However, all materials associated with the Contract are subject to the terms of the FOIA and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular

sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract conflicts or is in any way inconsistent with this section, this section controls and shall apply and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking the documentation as “CONFIDENTIAL,” DOT will first review the Contractor’s claim for consistency with the FOIA (that is, review that the documentation is actually a trade secret or commercial or financial information and not required by statute), and if determined to be consistent, will endeavor to keep such information confidential to the extent permitted by law. See, *e.g.*, Conn. Gen. Stat. §1-210(b)(5)(A-B). The State, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. Should the State withhold such documentation from a Freedom of Information requester and a complaint be brought to the Freedom of Information Commission, the Contractor shall have the burden of cooperating with DOT in defense of that action and in terms of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the State have any liability for the disclosure of any documents or information in its possession which the State believes are required to be disclosed pursuant to the FOIA or other law.

13. Service of Process

The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoints the Secretary of State of the State of Connecticut, and his successors in office, as agent for service of process for any action arising out of or as a result of this Contract; such appointment to be in effect throughout the life of this Contract and six (6) years thereafter.

14. Substitution of Securities for Retainages on State Contracts and Subcontracts

This Contract is subject to the provisions of Section 3-112a of the General Statutes of the State of Connecticut, as revised.

15. Health Insurance Portability and Accountability Act of 1996 (HIPAA)

The Contractor shall comply, if applicable, with the Health Insurance Portability and Accountability Act of 1996 and, pursuant thereto, the provisions attached at Exhibit D, and hereby made part of this Contract.

16. Forum and Choice of Law

Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of

Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

17. Summary of State Ethics Laws

Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.

18. Audit and Inspection of Plants, Places of Business and Records

- (a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract. For the purposes of this Section, "Contractor Parties" means the Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.
- (b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.
- (c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.
- (d) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
- (e) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
- (f) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

19. Campaign Contribution Restriction

For all State contracts, defined in Conn. Gen. Stat. §9-612(f)(1) as having a value in a calendar year of \$50,000 or more, or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this contract expressly acknowledges receipt of the State

Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," a copy of which is attached hereto and hereby made a part of this contract, attached as Exhibit E.

20. Tangible Personal Property

- (a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:
- (1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;
 - (2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;
 - (3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
 - (4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
 - (5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.
- (b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.
- (c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.

21. Bid Rigging and/or Fraud – Notice to Contractor

The Connecticut Department of Transportation is cooperating with the U.S. Department of Transportation and the Justice Department in their investigation into highway construction contract bid rigging and/or fraud.

A toll-free "HOT LINE" telephone number 800-424-9071 has been established to receive information from contractors, subcontractors, manufacturers, suppliers or anyone with knowledge of bid rigging and/or fraud, either past or current. The "HOT LINE" telephone number will be available during

normal working hours (8:00 am – 5:00 pm EST). Information will be treated confidentially and anonymity respected.

22. Consulting Agreement Affidavit

The Contractor shall comply with Connecticut General Statutes Section 4a-81(a) and 4a-81(b), as revised. Pursuant to Public Act 11-229, after the initial submission of the form, if there is a change in the information contained in the form, a contractor shall submit the updated form, as applicable, either (i) not later than thirty (30) days after the effective date of such change or (ii) prior to execution of any new contract, whichever is earlier.

The Affidavit/Form may be submitted in written format or electronic format through the Department of Administrative Services (DAS) website.

23. Cargo Preference Act Requirements (46 CFR 381.7(a)-(b)) – Use of United States Flag Vessels

The Contractor agrees to comply with the following:

(a) Agreement Clauses.

- (1) Pursuant to Pub. L. 664 ([43 U.S.C. 1241\(b\)](#)) at least 50 percent of any equipment, materials or commodities procured, contracted for or otherwise obtained with funds granted, guaranteed, loaned, or advanced by the U.S. Government under this agreement, and which may be transported by ocean vessel, shall be transported on privately owned United States-flag commercial vessels, if available.
- (2) Within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (a)(1) of this section shall be furnished to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(b) Contractor and Subcontractor Clauses. The contractor agrees—

- (1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
- (2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
- (3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

EXHIBIT A

FHWA-1273 -- Revised May 1, 2012

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26, and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26, in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for

employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same

prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise

employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be

performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;
- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and

1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

EXHIBIT B**TITLE VI CONTRACTOR ASSURANCES
APPENDIX A**

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Regulations relative to Nondiscrimination in Federally-assisted programs of the United States Department of Transportation Federal Highway Administration and Federal Transit Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Nondiscrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin, sex, age, disability, income or Limited English Proficiency in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration or Federal Transit Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor will so certify to the Recipient or the Federal Highway Administration or the Federal Transit Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Non-compliance:** In the event of the contractor's non-compliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration or the Federal Transit Administration may determine to be appropriate, including, but not limited to:

- a. withholding contract payments to the contractor under the contract until the contractor complies; and/or
- b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration or the Federal Transit Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with, litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

TITLE VI CONTRACTOR ASSURANCES APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following nondiscrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. § 2000d et seq.), (prohibits discrimination on the basis of race, color, national origin), as implemented by 49 C.F.R. § 21.1 et seq. and 49 C.F.R. part 303;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973 (23 U.S.C. § 324 et seq.) (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794 et seq.) (prohibits discrimination on the basis of disability); and 49 C.F.R. part 27;
- The Age Discrimination Act of 1975, as amended (42 U.S.C. § 6101 et seq.) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (Pub. L. 97-248 (1982)), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (102 Stat. 28) ("*... which restore[d] the broad scope of coverage and to clarify the application of Title IX of the Education Amendments of 1972, section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and Title VI of the Civil Rights Act of 1964.*");
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 --12189), as implemented by Department of Justice regulations at 28 C.F.R. parts 35 and 36, and Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. § 1681 et seq).

EXHIBIT C

CONTRACTOR WORKFORCE UTILIZATION (FEDERAL EXECUTIVE ORDER 11246) / EQUAL EMPLOYMENT OPPORTUNITY (Federal - FHWA)

1. Project Workforce Utilization Goals:

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted or funded) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where the work is actually performed.

Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications which contain the applicable goals for minority and female participation.

The goals for minority and female utilization are expressed in percentage terms for the contractor's aggregate work-force in each trade on all construction work in the covered area, are referenced in the attached Appendix A.

2. Executive Order 11246

The Contractor's compliance with Executive Order 11246 and 41-CFR Part 60-4 shall be based on its implementation of the specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(A) and its efforts to meet the goals established for the geographical area where the contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hour performed.

If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan.

Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved Pan does not excuse any covered Contractor's of subcontractor's failure to take good faith efforts to achieve the plan goals and timetables.

The Contractor shall implement the specific affirmative action standards provided in a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs (OFCCP) Office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractors obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant hereto.

In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites; and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community

organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off the street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason thereafter; along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the Union or Unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or women sent by the Contractor, or when the Contractor has other information that the Union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO Policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company EEO Policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment, decisions including specific Foreman, etc. prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO Policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor

shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.

- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work-force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review at least annually of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (a through p). The efforts of a contractor association, joint contractor union, contractor community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work-force participation, makes a good faith effort to meet with individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of Executive Order 11246 if a particular group is employed in a substantially disparate manner, (for example, even though the

Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is under utilized).

The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status, (e.g. mechanic, apprentice, trainee, helper, or laborer) dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

Nothing herein provided shall be construed as a limitation upon the application of their laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

The Director of the Office of Federal Contract Compliance Programs, from time to time, shall issue goals and timetables for minority and female utilization which shall be based on appropriate work-force, demographic or other relevant data and which shall cover construction projects or construction contracts performed in specific geographical areas. The goals, which shall be applicable to each construction trade in a covered contractor's or timetables, shall be published as notices in the Federal Register, and shall be inserted by the Contracting officers and applicants, as applicable, in the Notice required by 41 CFR 60-4.2.

FEDERALLY FUNDED OR ASSISTED PROJECTS
APPENDIX A
(Labor Market Goals)

Standard Metropolitan Statistical Area (SMSA)

Female

Minority

Bridgeport – Stamford – Norwalk – Danbury	10.2%
6.9%	

Bethel	Bridgeport	Brookfield	Danbury
Darien	Derby	Easton	Fairfield
Greenwich	Milford	Monroe	New Canaan
New Fairfield	Newton	Norwalk	Redding
Shelton	Stamford	Stratford	Trumbull
Weston	Westport	Wilton	

Hartford – Bristol – New Britain	6.9%
6.9%	

Andover	Avon	Berlin	Bloomfield
Bolton	Bristol	Burlington	Canton
Colchester	Columbia	Coventry	Cromwell
East Granby	East Hampton	East Hartford	East Windsor
Ellington	Enfield	Farmington	Glastonbury
Granby	Hartford	Hebron	Manchester
Marlborough	New Britain	New Hartford	Newington
Plainville	Plymouth	Portland	Rocky Hill
Simsbury	South Windsor	Southington	Stafford
Suffield	Tolland	Vernon	West Hartford
Wethersfield	Willington	Windsor	Windsor Locks

New Haven – Waterbury – Meriden	9.0%
6.9%	

Beacon Falls	Bethany	Branford	Cheshire
Clinton	East Haven	Guilford	Hamden
Madison	Meriden	Middlebury	Naugatuck
New Haven	North Branford	North Haven	Orange
Prospect	Southbury	Thomaston	Wallingford
Waterbury	Watertown	West Haven	Wolcott
Woodbridge	Woodbury		

New London – Norwich	4.5%
6.9%	

Bozrah	East Lyme	Griswold	Groton
Ledyard	Lisbon	Montville	New London

Norwich
Sprague

Old Lyme
Stonington

Old Saybrook
Waterford

Preston

Non SMSA

Female

Minority

Litchfield – Windham

5.9%

6.9%

Abington	Ashford	Ballouville	Bantam
Barkhamsted	Bethlehem	Bridgewater	Brooklyn
Canaan	Canterbury	Central Village	Cahplin
Colebrook	Cornwall	Cornwall Bridge	Danielson
Dayville	East Canaan	East Killingly	East Woodstock
Eastford	Falls Village	Gaylordsville	Goshen
Grosvenor Dale	Hampton	Harwinton	Kent
Killigly	Lakeside	Litchfield	Moosup
Morris	New Milford	New Preston	New Preston Marble Dale
Norfolk	North Canaan	No. Grosvenordale	North Windham
Oneco	Pequabuck	Pine Meadow	Plainfield
Pleasant Valley	Pomfret	Pomfret Center	Putnam
Quinebaug	Riverton	Rogers	Roxbury
Salisbury	Scotland	Sharon	South Kent
South Woodstock	Sterling	Taconic	Terryville
Thompson	Torrington	Warren	Warrenville
Washington	Washington Depot	Wauregan	West Cornwall
Willimantic	Winchester	Winchester Center	Windham
Winsted	Woodstock	Woodstock Valley	

EXHIBIT D

Health Insurance Portability and Accountability Act of 1996 (“HIPAA”).

- (a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.
- (b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and
- (c) The State of Connecticut Agency named on page 1 of this Contract (hereinafter the “Department”) is a “covered entity” as that term is defined in 45 C.F.R. § 160.103; and
- (d) The Contractor, on behalf of the Department, performs functions that involve the use or disclosure of “individually identifiable health information,” as that term is defined in 45 C.F.R. § 160.103; and
- (e) The Contractor is a “business associate” of the Department, as that term is defined in 45 C.F.R. § 160.103; and
- (f) The Contractor and the Department agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (hereinafter the HITECH Act), (Pub. L. 111-5, sections 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.
- (g) Definitions
 - (1) “Breach shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1))
 - (2) “Business Associate” shall mean the Contractor.
 - (3) “Covered Entity” shall mean the Department of the State of Connecticut named on page 1 of this Contract.
 - (4) “Designated Record Set” shall have the same meaning as the term “designated record set” in 45 C.F.R. § 164.501.
 - (5) “Electronic Health Record” shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5))

- (6) "Individual" shall have the same meaning as the term "individual" in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).
 - (7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and parts 164, subparts A and E.
 - (8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.
 - (9) "Required by Law" shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.
 - (10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.
 - (11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.
 - (12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.
 - (13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R. § 164.304.
 - (14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and parts 164, subpart A and C.
 - (15) "Unsecured protected health information" shall have the same meaning as the term as defined in section 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. §17932(h)(1)(A)).
- (h) Obligations and Activities of Business Associates.
- (1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.
 - (2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.
 - (3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.

- (4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.
- (5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.
- (6) Business Associate agrees to insure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.
- (7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524.
- (8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.
- (9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.
- (10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (12) Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.

- (13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.
- (14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.
- (15) Business Associate agrees that it shall not, directly or indirectly, receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act,(42 U.S.C. § 17935(d)(2)) and in any accompanying regulations
- (16) Obligations in the Event of a Breach
- A. The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. 17932(b) and the provisions of this Section of the Contract.
- B. Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. 17932(g)) . A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.
- C. The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.
 2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).
 3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.

4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.
 5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and; if so, include contact information for said official.
- D. Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor.
- E. Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.
- (i) Permitted Uses and Disclosure by Business Associate.
- (1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.
 - (2) Specific Use and Disclosure Provisions
 - (A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.
 - (B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or

for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.

(C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).

(j) Obligations of Covered Entity.

(1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.

(2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.

(3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.

(k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.

(l) Term and Termination.

(1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.

(2) Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:

(A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or

(B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or

(C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.

(3) Effect of Termination

(A) Except as provided in (1)(2) of this Section of the Contract, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.

(B) In the event that Business Associate determines that returning or destroying the PHI is infeasible, Business Associate shall provide to Covered Entity notification of the conditions that make return or destruction infeasible. Upon documentation by Business Associate that return or destruction of PHI is infeasible, Business Associate shall extend the protections of this Section of the Contract to such PHI and limit further uses and disclosures of PHI to those purposes that make return or destruction infeasible, for as long as Business Associate maintains such PHI. Infeasibility of the return or destruction of PHI includes, but is not limited to, requirements under state or federal law that the Business Associate maintains or preserves the PHI or copies thereof.

(m) Miscellaneous Provisions.

(1) Regulatory References. A reference in this Section of the Contract to a section in the Privacy Rule means the section as in effect or as amended.

(2) Amendment. The Parties agree to take such action as is necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.

(3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.

(4) Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.

(5) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.

(6) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.

(7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

**Notice to Executive Branch State Contractors and Prospective State
Contractors of Campaign Contribution and Solicitation Limitations**

This notice is provided under the authority of Connecticut General Statutes §9-612 (f) (2) and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a *state contract* or *state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder, of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor* or *principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties—Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/sec. Click on the link to "Lobbyist/Contractor Limitations."

DEFINITIONS

“State contractor” means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. “State contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Prospective state contractor” means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. “Prospective state contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Principal of a state contractor or prospective state contractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

“State contract” means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. “State contract” does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

“State contract solicitation” means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

“Managerial or discretionary responsibilities with respect to a state contract” means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

“Dependent child” means a child residing in an individual’s household who may legally be claimed as a dependent on the federal income tax of such individual.

“Solicit” means (A) requesting that a contribution be made, (B) participating in any fundraising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee, serving on the committee that is hosting a fundraising event, introducing the candidate or making other public remarks at a fundraising event, being honored or otherwise recognized at a fundraising event, or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

“Subcontractor” means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor’s state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. “Subcontractor” does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Principal of a subcontractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age

or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

EXHIBIT F

(Federal wage rate package will be inserted at the end after State wages for the final executed contract only. Refer to NTC – Federal Wage Determinations)

EXHIBIT G

State Wages and Other Related Information

Please refer to the Department of Labor website for the latest updates, annual adjusted wage rate increases, certified payroll forms and applicable statutes.

<http://www.ctdol.state.ct.us/wgwkstnd/prevailwage.htm>

Prevailing Wage Law Poster Language

**THIS IS A PUBLIC WORKS PROJECT Covered by the
PREVAILING WAGE LAW CT General Statutes Section 31-53**

If you have QUESTIONS regarding your wages CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE (applicable to public building contracts entered into on or after July 1, 2007, where the total cost of all work to be performed is at least \$100,000)

- (1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);
- (2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;
- (3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least \$100,000;
- (4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;
- (5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;
- (6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a bona fide student course completion card issued by the federal OSHA Training Institute; or (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of <http://www.ctdol.state.ct.us/wgwkstnd/wgmenu.htm>; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTIMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute. Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute. The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.
- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

**CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION**

**CONTRACTORS WAGE CERTIFICATION FORM
Construction Manager at Risk/General Contractor/Prime Contractor**

I, _____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

Street

City

and all of its subcontractors will pay all workers on the

Project Name and Number

Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

Signed

Subscribed and sworn to before me this _____ day of _____, _____.

Notary Public

Return to: Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

Information Bulletin ***Occupational Classifications***

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

□ **ASBESTOS WORKERS**

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

□ **ASBESTOS INSULATOR**

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

□ **BOILERMAKERS**

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

□ **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

□ **CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular

furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

□ **LABORER, CLEANING**

- The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

□ **DELIVERY PERSONNEL**

- If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

- An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

□ **ELECTRICIANS**

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. *License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.

□ **ELEVATOR CONSTRUCTORS**

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. *License required by Connecticut General Statutes: R-1, 2, 5, 6.

□ **FORK LIFT OPERATOR**

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

□ **GLAZIERS**

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and

curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

□ **IRONWORKERS**

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

□ **INSULATOR**

- Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

□ **LABORERS**

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

□ **PAINTERS**

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

□ **LEAD PAINT REMOVAL**

- Painter's Rate 1. Removal of lead paint from bridges. 2. Removal of lead paint as preparation of any surface to be repainted. 3. Where removal is on a Demolition project prior to reconstruction. • Laborer's Rate 1. Removal of lead paint from any surface NOT to be repainted. 2. Where removal is on a TOTAL Demolition project only.

□ **PLUMBERS AND PIPEFITTERS**

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. *License required per Connecticut General Statutes: P-1,2,6,7,8,9 J1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.

□ **POWER EQUIPMENT OPERATORS**

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ***License required, crane operators only, per Connecticut General Statutes.**

□ **ROOFERS**

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

□ **SHEETMETAL WORKERS**

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

□ **SPRINKLER FITTERS**

Installation, alteration, maintenance and repair of fire protection sprinkler systems. ***License required per Connecticut General Statutes: F-1, 2, 3, 4.**

□ **TILE MARBLE AND TERRAZZO FINISHERS**

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

□ **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance

of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ***License required, drivers only, per Connecticut General Statutes.**

For example:

- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

Any questions regarding the proper classification should be directed to:

**Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6543.**

**Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES**

□ Please Note: If the “Benefits” listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the “Benefits” section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and (Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Veterans’ Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year’s Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he

fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

Rev. 7/1/19

SEE BELOW FOR STATE WAGE RATES

INSERT STATE WAGES HERE

**Minimum Rates and Classifications for
Heavy/Highway Construction**

ID# 20-15421

**Connecticut Department of Labor
Wage and Workplace Standards**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay

Project Number: #0103-0266

Project Town: Norwich

State#: #0103-0266

FAP#: Norwich

Project: CT DOT Bridge Rehabilitation #06795, #06796, & #06797 (Norwich)

CLASSIFICATION	Hourly	Benefits
1) Boilermaker	33.79	34% + 8.96
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	35.72	33.16
2) Carpenters, Piledrivermen	34.53	25.64
2a) Diver Tenders	34.53	25.64
3) Divers	42.99	25.64
03a) Millwrights	34.94	26.19
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	52.25	22.55
4a) Painters: Brush and Roller	35.62	22.55
4b) Painters: Spray Only	38.62	22.55
4c) Painters: Steel Only	37.62	22.55
4d) Painters: Blast and Spray	38.62	22.55
4e) Painters: Tanks, Tower and Swing	37.62	22.55

Project: CT DOT Bridge Rehabilitation #06795, #06796, & #06797 (Norwich)

5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	40.25	29.17+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	36.67	37.62 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	44.63	32.95
----LABORERS-----		
8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	31.0	22.15
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	31.25	22.15
10) Group 3: Pipelayers	31.5	22.15
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	31.5	22.15
12) Group 5: Toxic waste removal (non-mechanical systems)	33.0	22.15
13) Group 6: Blasters	32.75	22.15
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	32.0	22.15
Group 8: Traffic control signalmen	18.0	22.15
Group 9: Hydraulic Drills	29.3	18.90
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	33.23	22.15 + a
13b) Brakemen, Trackmen	32.26	22.15 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		

As of: September 9, 2020

14) Concrete Workers, Form Movers, and Strippers	32.26	22.15 + a
15) Form Erectors	32.59	22.15 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	32.26	22.15 + a
17) Laborers Topside, Cage Tenders, Bellman	32.15	22.15 + a
18) Miners	33.23	22.15 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	39.72	22.15 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	39.52	22.15 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	37.54	22.15 + a
21) Mucking Machine Operator	40.31	22.15 + a
----TRUCK DRIVERS----(*see note below)		
Two axle trucks	29.86	25.79 + a
Three axle trucks; two axle ready mix	29.97	25.79 + a
Three axle ready mix	30.03	25.79 + a
Four axle trucks, heavy duty trailer (up to 40 tons)	30.08	25.79 + a
Four axle ready-mix	30.13	25.79 + a
Heavy duty trailer (40 tons and over)	30.35	25.79 + a

Project: CT DOT Bridge Rehabilitation #06795, #06796, & #06797 (Norwich)

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	30.13	25.79 + a
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----POWER EQUIPMENT OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over, Tunnel Boring Machines. (Trade License Required)	42.45	25.30 + a
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Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	42.11	25.30 + a
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Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	41.32	25.30 + a
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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	40.91	25.30 + a
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Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24	40.28	25.30 + a
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Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	40.28	25.30 + a
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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	39.95	25.30 + a
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Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24	39.59	25.30 + a
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Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	39.17	25.30 + a
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Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	38.71	25.30 + a
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Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	36.54	25.30 + a
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Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	36.54	25.30 + a
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As of: September 9, 2020

Project: CT DOT Bridge Rehabilitation #06795, #06796, & #06797 (Norwich)

Group 12: Wellpoint Operator.	36.48	25.30 + a
Group 13: Compressor Battery Operator.	35.86	25.30 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	34.66	25.30 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	34.23	25.30 + a
Group 16: Maintenance Engineer/Oiler	33.54	25.30 + a
Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	38.11	25.30 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	35.53	25.30 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)---

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20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
23) Driver Groundmen	26.5	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76

----LINE CONSTRUCTION----

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.1	6.5% + 10.70

As of: September 9, 2020

Project: CT DOT Bridge Rehabilitation #06795, #06796, & #06797 (Norwich)

27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
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28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45
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As of: September 9, 2020

Project: CT DOT Bridge Rehabilitation #06795, #06796, & #06797 (Norwich)

Welders: Rate for craft to which welding is incidental.

*Note: Hazardous waste removal work receives additional \$1.25 per hour for truck drivers.

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra \$4.00 premium in addition to the hourly wage rate and benefit contributions:

- 1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)**
- 2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson**

Crane with 150 ft. boom (including jib) - \$1.50 extra

Crane with 200 ft. boom (including jib) - \$2.50 extra

Crane with 250 ft. boom (including jib) - \$5.00 extra

Crane with 300 ft. boom (including jib) - \$7.00 extra

Crane with 400 ft. boom (including jib) - \$10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work

--Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

As of: September 9, 2020

Project: CT DOT Bridge Rehabilitation #06795, #06796, & #06797 (Norwich)

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: September 9, 2020

Important Information:

For use with Building, Heavy/Highway, and Residential

Welders: Rate for craft to which welding is incidental.

*Note: Hazardous waste removal work receives additional \$1.25 per hour for truck drivers.

**Note: Hazardous waste premium \$3.00 per hour over classified rate.

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra \$4.00 premium in addition to the hourly wage rate and benefit contributions:

- 1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)
- 2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson
- 3) Cranes (under 100 ton rated capacity)

Crane with boom including jib, 150 feet - \$1.50 extra.

Crane with boom including jib, 200 feet - \$2.50 extra.

Crane with boom including jib, 250 feet - \$5.00 extra.

Crane with boom including jib, 300 feet - \$7.00 extra.

Crane with boom including jib, 400 feet - \$10.00 extra.

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

- Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyman instructing and supervising the work of one apprentice in a specific trade.

Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work

- The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.
- Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.
- The annual adjustments will be posted on the Department of Labor's Web page: www.ctdol.state.ct.us.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.
- All subsequent annual adjustments will be posted on our Web Site for contractor access.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage.

- All Persons who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.
- All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)
- Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.