

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.

Table of Contents

| | |
|---|-----|
| CONTRACT TIME AND LIQUIDATED DAMAGES..... | 2 |
| NOTICE TO CONTRACTOR – ENVIRONMENTAL INVESTIGATIONS | 3 |
| NOTICE TO CONTRACTOR – WORK ON RAILROAD PROPERTY..... | 5 |
| NOTICE TO CONTRACTOR – PRE-BID QUESTIONS AND ANSWERS..... | 7 |
| NOTICE TO CONTRACTOR – ALL-INCLUSIVE DRAINAGE | 8 |
| NOTICE TO CONTRACTOR – MINIMUM CONCRETE COMPRESSIVE..... | 9 |
| STRENGTH..... | 9 |
| NOTICE TO CONTRACTOR – PROCUREMENT OF MATERIALS..... | 10 |
| NOTICE TO CONTRACTOR - Federal Rail Safety Regulations (49 C.F.R. Part 219) | 11 |
| Concerning Alcohol and Drug Testing..... | 11 |
| SECTION 1.02 – PROPOSAL REQUIREMENTS AND CONDITIONS | 13 |
| SECTION 1.03 – AWARD AND EXECUTION OF CONTRACT | 14 |
| SECTION 1.05 – CONTROL OF THE WORK | 17 |
| SECTION 1.08 - PROSECUTION AND PROGRESS..... | 20 |
| ON-THE-JOB TRAINING (OJT) WORKFORCE DEVELOPMENT PILOT: | 23 |
| SMALL CONTRACTOR AND SMALL CONTRACTOR MINORITY..... | 27 |
| BUSINESS ENTERPRISES (SET-ASIDE) | 27 |
| ITEM #0100600A – CONSTRUCTION ACCESS..... | 39 |
| ITEM #0101000A – ENVIRONMENTAL HEALTH AND SAFETY..... | 42 |
| ITEM #0101130A – ENVIRONMENTAL WORK - SOLIDIFICATION | 51 |
| ITEM #0202216A – EXCAVATION AND REUSE OF EXISTING | 53 |
| CHANNEL BOTTOM MATERIAL..... | 53 |
| ITEM #0202217A – SUPPLEMENTAL STREAMBED CHANNEL MATERIAL..... | 56 |
| ITEM #0202315A – DISPOSAL OF CONTROLLED MATERIALS | 58 |
| ITEM #0202629A – SETTLEMENT MONITORING PROGRAM..... | 63 |
| ITEM #0204151A – HANDLING WATER..... | 66 |
| ITEM #0204213A – HANDLING CONTAMINATED GROUNDWATER..... | 68 |
| ITEM #0213901A – BALLAST | 78 |
| ITEM #0216012A – CONTROLLED LOW STRENGTH MATERIAL..... | 85 |
| ITEM #0686011.48A – JACKING 48” R.C. PIPE (CLASS V) – 0’ – 20’ DEEP | 87 |
| ITEM #0686901A – SLIDE GATE AND APPURTENANCES..... | 102 |
| ITEM #0714026A – TEMPORARY SHEET PILING (RAILROAD) | 106 |
| ITEM #0715021A – SHEET PILING MATERIAL LEFT IN PLACE | 108 |
| (RAILROAD) | 108 |
| ITEM #0803015A – PRECAST CONCRETE BLOCK REVETMENT..... | 109 |
| ITEM #0913850A – HIGH VISIBILITY SAFETY FENCE | 113 |
| ITEM #0914205A – FURNISH AND INSTALL RAILING..... | 115 |
| ITEM #0950040A – CONSERVATION SEEDING FOR SLOPES | 117 |
| ITEM #0950043A – WETLAND GRASS ESTABLISHMENT | 119 |
| PERMITS AND/OR REQUIRED PROVISIONS:..... | 121 |

September 19, 2018
FEDERAL AID PROJECT NO. N/A
STATE PROJECT NO. 0301-0175

Replacement of Culvert At MP 65.60 New Haven Mainline Over Unnamed Stream

Town of Milford
Federal Aid Project No. :N/A

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 January 2018 (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 Replacement of Culvert At MP 65.60 New Haven Mainline Over Unnamed Stream in the Town of Milford.

CONTRACT TIME AND LIQUIDATED DAMAGES

Two Hundred Fifty Seven (257) calendar days will be allowed for completion of the work on this project and the liquidated damages charge to apply will be Five Thousand Dollars (\$5,000.00) per calendar day.

In addition to the above, the Contractor is allowed single track outages subject to the requirements of Article 1.08.04. If the Contractor fails to complete the approved work within the specified track or power outage period such that the Contractor is unable to clear the track or platform area of equipment, tools and personnel at the hour the track and power outage ends, he will be charged with monetary penalties as follows:

For Main Line:

- (a) For every consecutive ten (10) minute period after the scheduled track outage ends, a penalty charge of Seven Hundred and Fifty Dollars (\$750.00) per ten minute interval will be assessed against the Contractor as long as his activities continue to foul the tracks.

NOTICE TO CONTRACTOR – ENVIRONMENTAL INVESTIGATIONS

Environmental site investigations have been conducted that involved the sampling and laboratory analysis of soil and groundwater collected from various locations and depths within the project limits. The results of these investigations indicated the presence of detectable concentrations of total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), and RCRA-8 metals in the soils and RCRA-8 metals in the groundwater within proposed construction areas in exceedance of Connecticut Department of Energy and Environmental Protection (CT DEEP) numeric criteria. The CT DEEP groundwater classification beneath the site is GB. Based on these findings, one (1) AOEC and one (1) LLAOEC exist within the proposed project limits. The presence of these compounds at these concentrations will require the disposition of soils excavated from these areas to be restricted as described herein. Material excavated from within the AOEC that cannot be reused in the same AOEC, or surplus LLOAEC material that cannot be reused within the Project limits will require disposal at an approved treatment/disposal facility in accordance with Item No. 0202315A - Disposal of Controlled Materials. Additionally, all groundwater encountered within the Project limits is considered an AOEC and will require handling in accordance with Item No. 0204213A - Handling Contaminated Groundwater.

The Contractor is hereby notified that controlled materials requiring special management or disposal procedures will be encountered during various construction activities conducted within the project limits. Therefore, the Contractor will be required to implement appropriate health and safety measures for all construction activities to be performed within the AOEC(s). These measures shall include, but are not limited to, air monitoring, engineering controls, personal protective equipment and decontamination, equipment decontamination and personnel training. **WORKER HEALTH AND SAFETY PROTOCOLS WHICH ADDRESS POTENTIAL AND/OR ACTUAL RISK OF EXPOSURE TO SITE SPECIFIC HAZARDS IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.**

The Connecticut Department of Transportation will provide an authorized representative to sign all manifests and waste profile documentation required by disposal facilities for disposal of contaminated controlled materials.

All suitable material excavated within the LLAOEC shall be utilized as fill/backfill within the project limits (or AOEC-material reused with the same AOEC), in accordance with the following conditions: (1) such soil is deemed to be structurally suitable for use as fill by the Engineer; (2) such soil is not placed below the water table; 3) the DEEP groundwater classification of the area where the soil is to be reused as fill does not preclude said reuse; and (4) such soil is not placed in an area subject to erosion. Soils within the LLAOEC are to be reused on-site prior to the use of other soils and/or fill such that no excess soils requiring off-site disposal are generated from the LLAOEC.

The Sections which shall be reviewed by the Contractor include, but are not limited to, the following:

- Item No. 0101000A - Environmental Health and Safety
- Item No. 0101130A – Environmental Work - Solidification
- Item No. 0202315A - Disposal of Controlled Materials
- Item No. 0204213A – Handling Contaminated Groundwater

The Contractor is alerted to the fact that a Department environmental consultant will be on site for excavation and dewatering activities within the AOEC(s), to collect soil and groundwater samples (if necessary), and to observe site conditions for the State.

Information pertaining to the results of the environmental investigations discussed can be found in the documents listed below. The results contained in the environmental investigation reports listed below show levels of various contaminants that the Contractor may encounter during construction. Actual levels found during construction may vary and such variations will not be considered a change in condition provided the material can still be disposed as non-hazardous at one or more of the disposal facilities listed in Item No. 0202315A - Disposal of Controlled Materials. These documents shall be available for review electronically.

- Task 210 Subsurface Site Investigation, Replacement of Culvert at MP 65.80, New Haven Mainline over Unnamed Stream, Milford Connecticut, HRP Associates Inc., August 28, 2017

NOTICE TO CONTRACTOR – WORK ON RAILROAD PROPERTY

The Contractor acknowledges that work to be accomplished under this Contract is to be performed on Railroad territory, which consists of territory operated by Metro-North Commuter Railroad (Railroad). The Contractor's work must be accomplished simultaneously with ongoing daily railroad operations. Such operations include, but are not limited to, the passage of trains, storage of trains, flagging, inspection, repair, construction, reconstruction, and maintenance of the railroad right-of-way and facilities.

The Contractor is advised that the Railroad controls all activity in their respective right-of-way, and the Department expects that these conditions may cause delays and possibly a complete suspension of construction activity. If the Contractor is delayed or suspended in the completion of the work by railroad operations, the Contractor will be entitled to a time extension for every day that he can demonstrate that the delays affected the completion date of the contract. This extension of time will be considered non-compensable. The Contractor will not be entitled to any additional compensation for damages incurred for all direct and indirect costs including, but not limited to, all delay and impact costs, and inefficiencies as a result of railroad operational delays.

Additionally, the Contractor is advised, that this contract contains periods reserved exclusively for work that must be performed by the Railroad and the contractor will not be allowed on the tracks or to interfere with Railroad while that work is conducted. The Railroad shall notify the Engineer upon completion of their work and the Engineer shall notify the contractor when work may resume.

The Contractor shall be responsible for the coordination of the work of his various subcontractors. The Contractor shall coordinate his operations with those of the Railroad Company in carrying out railroad force account work.

The Contractor's employees, and the employees of all subcontractors, who will be entering the jobsite within railroad territory, must undergo the new on-line railroad safety training program. The Contractor is responsible for insuring that all employees on the jobsite have been trained. No additional compensation will be allowed to the Contractor for employees time for taking this training. Refer to the special provisions and to Article 1.05.06 entitled "Cooperation with Utilities (Including Railroads)."

The Contractor must make his own arrangements with the Railroad for the use of railroad equipment or changes in railroad facilities made solely to facilitate the Contractor's operations. The expense incurred by making such arrangements shall not be a part of this contract.

All matters requiring Railroad Company approval or coordination shall be directed to:

GENERAL

Mr. David Willard
Deputy Director - Capital Projects
Metro-North Railroad Company
525 Water Street, 3rd Floor
Bridgeport, CT 06601

GENERAL INSURANCE INFORMATION FOR THE NEW HAVEN LINE:

For the purpose of complying with Section 1.03, the following information is provided:

Normal speed of passenger trains is **75 mph** in the area of the work. Normal speed of freight is **30 mph** in the area of the work.

In the town of Milford, CT, area, there are following number of trains in a 24 hour weekday period:

(87) Scheduled Metro-North Passenger Trains
(16) Extra Trains
(38) Amtrak Trains
(4) Freight Trains

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 – 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 – 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 - Federal Rail Safety Regulations (49 C.F.R. Part 219) Concerning Alcohol and Drug Testing

On October 16, 2008, the United States Congress enacted the Rail Safety Improvement Act of 2008 (RSIA). RSIA directs the Federal Railroad Administration (FRA) to promulgate new safety regulations related to railroad safety. The purpose of this NTC is to notify you of certain requirements recently promulgated by the FRA that may be applicable to work you are currently performing, or may in the future perform, for the Connecticut Department of Transportation (Department).

On June 10, 2016, the FRA published a final rule expanding the scope of its drug and alcohol testing regulations (FRA Regulations) to provide that “[e]ach railroad must ensure that a regulated employee is subject to being selected for random testing... whenever the employee performs regulated service on the railroad’s behalf.” 49 C.F.R. § 219.601. A “regulated employee” includes a contractor to a railroad or any individual who is performing activities for a railroad and includes those contractors, consultants or individuals who are deemed “maintenance-of-way” employees under 49 CFR.Part 219 (See 49 C.F.R. §219.5).

The term maintenance-of-way (MOW) employee, as used in 49 C.F.R. Part 219, is defined in 49 C.F.R. § 214.7 as “any employee...of a contractor to a railroad, whose duties include inspection, construction, maintenance or repair of railroad track, bridges, roadway, signal and communications systems, electric traction systems, roadway facilities or roadway maintenance machinery on or near track or with the potential of fouling a track, and flagmen and watchmen/lookouts.” (collectively, MOW Activities).

The final rule, which is effective June 12, 2017, requires contractors and consultants employing MOW employees to submit a Part 219 Compliance Plan to FRA prior to the effective date. Please consult the following link to the model drug and alcohol plan prepared by the FRA for guidance.

<https://www.fra.dot.gov/eLib/details/L02814>

The final rule mandates, among other things, the establishment of a random testing pool to ensure a testing rate of 50% of MOW employees for drugs and 25% of MOW employees for alcohol on an annual basis. For more information related to the requirements, please refer to:

<http://www.ecfr.gov/cgi-bin/text-idx?rgn=div5&node=49:4.1.1.1.14>

Every contractor or consultant that is performing MOW Activities must comply with its obligations under 49 C.F.R. Part 219 to ensure that all MOW employees are being randomly tested for drugs and alcohol. Failure of a contractor or consultant to timely comply with the FRA Regulations may subject that firm to civil penalties. In addition, MetroNorth Railroad (MNR) has stated that contractors or consultants who do not comply with the FRA regulations will not be able to work on MNR property.

The Department strongly urges all contractors and consultants to consult with their attorneys and/or to conduct their own independent due diligence regarding the requirements imposed by the new FRA Regulations to determine what steps are necessary to assure compliance. The information provided herein is advisory in nature and is offered without warranty of any kind. The Department does not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information contained herein.

Any questions regarding the FRA Regulations concerning drug and alcohol testing should be directed to: Mr. Gerald Powers, Drug and Alcohol Program Manager, Office of Safety Enforcement, Federal Railroad Administration, 1200 New Jersey Avenue SE, Mail Stop 25, Washington, DC 20590 or via telephone (202) 493-6313.

GENERAL

NOTICE TO CONTRACTOR – RAILROAD SPECIFICATIONS

The contractor is hereby notified that all railroad specifications contained elsewhere herein shall be made a part of this contract, and that the contractor shall be bound to comply with all requirements of such specifications. The requirements and conditions set forth in the subject specifications shall be binding on the contractor just as any other specification would be.

SECTION 1.02 – PROPOSAL REQUIREMENTS AND CONDITIONS

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 1.03.07 – Insurance - is supplemented as follows:

Add the following paragraphs after the second paragraph:

" In addition, the Contractor is required to file certificates of insurance with Metro-North Commuter Railroad at least 30 days prior to commencing any work within the Railroad right-of-way. Certificates are to be sent to:

Ms. Sharon Sebro, Risk Analyst
Metro-North Railroad Risk and Insurance Management Department
2 Broadway, 21st floor, New York, NY, 10004
Phone: 646-252-1429 Email: ssebro@mtahq.org

Ms. Priscilla Yen may also be contacted for questions at 646-252-1437 or Pyen@mtahq.org.

The Contractor is warned that entrance to the railroad property will not be allowed by the Railroad Company if there are outstanding charges remaining against the Contractor for Railroad Services rendered on prior projects. No request for an extension of time will be considered as a result of any delay to the Contractor's operations caused by the Contractor's indebtedness to the railroad. It is agreed that providing of any conductors, flagmen, or other employees shall not relieve the Contractor from liability or payment for any damages previously caused by its operations.

If any insurance specified within this Article shall be provided on a claims-made basis, then in addition to coverage requirements, such policy shall provide that:

- 1) The policy retroactive date must coincide with or precede the Contractor's start of work (including subsequent policies purchased as renewals or replacements),
- 2) The Contractor shall maintain insurance for at least two years following Project completion,
- 3) If insurance is terminated for any reason, the Contractor agrees to purchase an extended reporting provision of at least two years to report claims arising from Work performed in connection with this Contract, and,
- 4) The policy must allow for reporting of circumstances or incidents that might give rise to future claims.

The Contractor shall assume any and all deductibles in the described insurance policies contained herein. Except as otherwise indicated in the detailed coverage paragraphs below, self-insured retentions and policy deductibles shall not exceed \$100,000, unless such increased deductible or retention is approved by the State and Metro-North Railroad/MTA.”

Revise the numbered paragraphs as follows:

1 - Worker's Compensation Insurance:

In the second paragraph, replace the first sentence "Employer's Liability...amounts not less than \$100,000 per accident...\$100,000 per employee..." with the following:

"Employer's Liability insurance shall be provided in amounts not less than \$2,000,000 which limit may be met by a combination of primary and excess insurance meeting the statutory limits of the laws of the state in which the work is performed, whichever is greater."

2 – Commercial General Liability Insurance:

Add the following to end of the first paragraph:

"Contractual Liability, Products and Completed Operations, Broad Form Property Damage and Independent Contractors coverages shall have all railroad exclusions deleted. The "named as an additional insured" shall be as noted in Subarticle 15." Any Umbrella/Excess Policy used to meet the minimum contract requirements must follow form of the underlying policy and be extended to "drop down" to become primary in the event the primary policy is exhausted."

Replace the "Limits of Coverage" chart with the following:

| Contract Amount (\$) | Minimum Single Occurrence limit (\$) | Minimum Annual Aggregate Limit (\$) |
|----------------------|--------------------------------------|-------------------------------------|
| 0-10,000,000 | 3,000,000 | 3,000,000 |
| >10,000,000 | 4,000,000 | 8,000,000 |

4 - Owner's and Contractor's Protective Liability Insurance for and in the Name of The State:

Replace the "Limits of Coverage" chart with the following:

| Contract Amount (\$) | Minimum Single Occurrence limit (\$) | Minimum Annual Aggregate Limit (\$) |
|----------------------|--------------------------------------|-------------------------------------|
| 0-50,000,000 | 3,000,000 | 3,000,000 |
| >50,000,000 | 4,000,000 | 4,000,000 |

10 – Umbrella Liability Insurance:

Following every occurrence of "...the State of Connecticut..." add "and the Railroad..."

12 - Copies of Policies:

Following every occurrence of "...the State..." add "and the Railroad..."

15 - State Named as Additional Insured:

Change the last sentence of the only paragraph as follows:

"Each policy shall waive right of recovery (waiver of subrogation) against the State of Connecticut or the Railroad and the described insurance shall be primary coverage."

After the only paragraph, add the following:

“For coverage provided under this Article, Subarticle 5 - Railroad Protective Liability Insurance, as amended herein, the names of the “Additional Insured” shall be as indicated below:

Metro-North Railroad (MNRR)
Metropolitan Transportation Authority (MTA)
State of Connecticut, Its Agents and Assigns
CSX Transportation, Inc. & New York Central Lines LLC
National Railroad Passenger Corporation (AMTRAK)
Providence and Worcester Railroad Company (P&W)
Housatonic Railway

Note: For projects with limits of construction that cross the Connecticut/New York State Line into New York, “American Premier Underwriters” shall also be shown as an additional insured.”

16 – Termination or Change of Insurance:

Following every occurrence of “...the Department...” add “and the Railroad...”

SECTION 1.05 – CONTROL OF THE WORK

Replace Article 1.05.02 with the following:

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

1. Contractor Submittals: The plans provided by the Department show the details necessary to give a comprehensive idea of the construction contemplated under the Contract. The plans will generally show the 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.

The Contractor shall prepare submittals as Portable Document Format (PDF) files. The Contractor is also required to acquire, maintain access and use the Department’s document management system for delivery of submittals. The format, digital signing requirements, delivery processes and document tracking procedures shall be performed in accordance with this specification and the [Contractor’s Digital Submission Manual](#) (CDSM).

The submittals shall be sent to the Department’s reviewer(s), sufficiently in advance of the work detailed, to allow for their review in accordance with the review periods as specified herein (including any necessary revisions, resubmittal, and final review), and acquisition of materials, without causing a delay of the Project.

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 drawings shall be delivered sufficiently in advance of the work detailed, to allow for their review in accordance with the review periods specified herein (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.

a. Working Drawings for Permanent Construction: The Contractor shall supply to the Assistant District Engineer 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 Assistant District Engineer.

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 Designer for review. Review timeframes and submission locations are as specified herein.

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.

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.

The Contractor shall submit the product data in a single submittal for each element or group of elements 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.

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.

5. Submittal Preparation and Processing – Review Timeframes: The Contractor shall allow 30 calendar days for submittal review by the Department, from the date receipt is acknowledged by the Department's reviewer. For any submittals marked 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 Designer or Engineer 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 Designer or Engineer. 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 Designer or Engineer 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 Designer or Engineer. 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 Designer's or Engineer's notations. The resubmissions require an additional review and determination by the Designer or Engineer. The Contractor shall allow an additional review period as specified in 1.05.02-5.

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.03 - Prosecution of Work:

Add the following:

The project will be constructed in various phases as described herein.

Phase 1 – Organizational Phase – From Notice to Proceed to April 1st

Following a successful Award, the Contractor will be given a Notice to Proceed. This first phase is to afford the Contractor time for the administrative/engineering/procurement activities required for the project. This shall include such items as performing construction staking, digging test pits, submitting a schedule (1.05.08), submitting catalog cuts or shop drawings and purchasing materials. Additional time should be included for working drawings, etc. to be reviewed by the Railroad. Actual construction is not permitted during this period, unless authorized by the Engineer. The Contractor is to use this time to fully prepare for Phase 2 such that construction can proceed quickly and efficiently. During this phase, after the construction staking is complete and underground utilities are marked out, if present, the Contractor, the designer and the Engineer will walk the project to determine if there are test pits necessary or if there are any apparent conflicts with private property, utilities, or other roadside appurtenances such as obstructions, rocks, large trees, etc. Those conflicts will be resolved prior to ordering equipment for the specific area where the conflict exists.

Phase 2 – Construction Phase – April 1st to Contract Completion Date

When all apparent conflicts have been identified and resolved, and written commitments have been received from suppliers that all equipment and materials will be received within 30 days, the Contractor may request that the construction phase begin. Once commencement of construction begins, as and when approved by the Engineer, the Contractor will have the balance of the consecutive calendar days not used in Phase 1 to complete the work, including cleanup and demobilization. That work, once started, must be completed within the time established for the original construction phase, and liquidated damages, as specified elsewhere in the Contract, will be assessed against the Contractor per calendar day from that day until the date on which the work is complete.

Unless authorized by the Engineer, no Phase 2 work shall start prior to the conclusion of Phase 1. If Phase 1 is completed during the winter period Phase 2 will begin on the following April 1. The Contractor may begin Phase 2 only with prior written permission from the Engineer to do so.

Article 1.08.04 - Limitation of Operations - Add the following:

Contractor Requirements for Work Affecting the Railroad

In general, unless otherwise authorized by the Railroad, the Contractor's construction activities and operations directly over and/or adjacent to the operating railroad right-of-way can be performed only during the following track outage periods shown below.

| <u>Outage</u> | <u>Time</u> |
|-------------------------------|---|
| New Haven Line Milepost 65.60 | Night Time Only 0030-0430 Two tracks must remain in service at all times. |

NOTES:

- a. The above outages are not guaranteed by Metro-North Railroad at all times.
 - b. The Contractor's plan for demolition, erection, and any operation adjacent to or within the Railroad Right of Way shall be submitted to the Engineer for Railroad approval, prior to start of work.
 - c. No full track and/or power outages will be permitted on weekends either immediately before or after major holidays, nor any weekend between Thanksgiving and New Years day.
 - d. The track outage periods shown above are the times that the track(s) may be taken out of train service. Refer to Section 1.05.06(1)(e)(3) for additional restrictions regarding power outages requiring de-energizing, grounding and re-energizing of the wires.
 - e. In accordance with FRA Rule 214.336, should the Contractor require a track outage and require the use of hi-rail equipment on that track, the adjacent track(s) must also be taken out of service.
2. All work involving rail, ties, and other track components on active tracks, unless specifically designated otherwise within the contract, will be performed by Railroad employees. The contractor may not remove abandoned (out of service) track unless given prior written approval from the Railroad and the Engineer.
 3. The Contractor shall assume that the wires and rails of the Railroad will be energized at all times.

Article 1.08.07 - Determination of Contract Time:

Delete the second, third and fourth paragraphs and replace them with the following:

When the contract time is on a calendar day basis, it shall be the number of consecutive calendar days stated in the contract, INCLUDING the time period from December 1 through March 31 of each year. The contract time will begin on the effective date of the Engineer's order to

commence work, and it will be computed on a consecutive day basis, including all Saturdays, Sundays, Holidays, and non-work days.

1.08.08 - Extension of Time:

Delete the sixth paragraph, "If an approved extension of Contract time... the following April 1".

Article 1.08.09 - Failure to Complete Work on Time:

Delete the second paragraph, "If the last day...the project is substantially completed" and replace it with "Liquidated damages as specified in the Contract shall be assessed against the Contractor per calendar day from that day until the date on which the project is substantially completed."

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.

SMALL CONTRACTOR AND SMALL CONTRACTOR MINORITY BUSINESS ENTERPRISES (SET-ASIDE)

March, 2001

NOTE: Certain of the requirements and procedures stated in this "Special Provision" are applicable prior to the execution of the Contract.

I. GENERAL

- A. The Contractor shall cooperate with the Connecticut Department of Transportation (CONNDOT) in implementing the required contract obligations concerning "Small Contractor" and "Small Contractor Minority Business Enterprise" use on this Contract in accordance with Section 4a-60g of the Connecticut General Statutes as revised. References, throughout this "Special Provision", to "Small Contractors" are also implied references to "Small Contractor Minority Business Enterprises" as both relate to Section IIA of these provisions. The Contractor shall also cooperate with CONNDOT in reviewing the Contractor's activities relating to this provision. This "Special Provision" is in addition to all other equal opportunity employment requirements of this Contract.
- B. For the purpose of this "Special Provision", the "Small Contractor(s)" and "Minority Business Enterprise(s)" named to satisfy the set-aside requirement must be certified by the Department of Administrative Services, Business Connections/ Set-Aside Unit [(860) 713-5236 www.das.state.ct.us/busopp.htm] as a "Small Contractor" and "Minority Business Enterprises" as defined by Section 4a-60g Subsections (1) and (3) of the Connecticut General Statutes as revised and is subject to approval by CONNDOT to do the work for which it is nominated pursuant to the criteria stipulated in Section IIC-3.
- C. Contractors who allow work which they have designated for "Small Contractor" participation in the pre-award submission required under Section IIC to be performed by other than the approved "Small Contractor" organization and prior to concurrence by CONNDOT, will not be paid for the value of the work performed by organizations other than the "Small Contractor" designated.
- D. If the Contractor is unable to achieve the specified contract goals for "Small Contractor" participation, the Contractor shall submit written documentation to CONNDOT's Manager of Construction Operations indicating his/her good faith efforts to satisfy goal requirements. Documentation is to include but not be limited to the following:

GENERAL

1. A detailed statement of the efforts made to select additional subcontract opportunities for work to be performed by each "Small Contractor" 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 contracts with each "Small Contractor", including the names, addresses, dates and telephone numbers of each "Small Contractor" contacted, and a description of the information provided to each "Small Contractor" regarding the scope of services and anticipated time schedule of items proposed to be subcontracted and the nature of response from firms contacted.
 3. For each "Small Contractor" that placed a subcontract quotation which the Contractor considered not to be acceptable, provide a detailed statement of the reasons for this conclusion.
 4. Documents to support contacts made with CONNDOT requesting assistance in satisfying the contract specified or adjusted "Small Contractor" dollar requirements.
 5. Document other special efforts undertaken by the Contractor to meet the defined goal.
- E. Failure of the Contractor to have at least the specified dollar amount of this contract performed by "Small Contractor" as required in Section IIA of this "Special Provision" will result in the reduction in contract payment to the Contractor by an amount equivalent to that determined by subtracting from the specific dollar amount required in Section IIA, the dollar payments for the work actually performed by each "Small Contractor". The deficiency in "Small Contractor" achievement, will therefore, be deducted from the final contract payment. However, in instances where the Contractor can adequately document or substantiate its good faith efforts made to meet the specified or adjusted dollar amount to the satisfaction of CONNDOT, no reduction in payments will be imposed.
- F. All records must be retained for a period of three (3) years following completion of the contract and shall be available at reasonable times and places for inspection by authorized representatives of CONNDOT.
- G. Nothing contained herein, is intended to relieve any contractor or subcontractor or material supplier or manufacturer from compliance with all applicable Federal and State legislation or provisions concerning equal employment opportunity, affirmative action, nondiscrimination and related subjects during the term of this Contract.

GENERAL

II. SPECIFIC REQUIREMENTS

In order to increase the participation of "Small Contractors", CONNDOT requires the following:

A. Not less than 15 (%) percent of the **final** value of this Contract shall be subcontracted to and performed by, and/or supplied by, manufactured by and paid to "Small Contractors" and/or "Small Contractors Minority Business Enterprises".

If the above percentage is zero (0%) AND an asterisk () has been entered in the adjacent brackets [], this Contract is 100% solely set-aside for participation by "Small Contractors" and/or "Small Contractors Minority Business Enterprises".*

B. The Contractor shall assure that each "Small Contractor" will have an equitable opportunity to compete under this "Special Provision", particularly by arranging solicitations, time for the preparation of Quotes, Scope of Work, and Delivery Schedules so as to facilitate the participation of each "Small Contractor".

C. The Contractor shall provide to CONNDOT's Manager of Contracts within Seven (7) days after the bid opening the following items:

1. An affidavit (Exhibit I) completed by each named "Small Contractor" subcontractor listing a description of the work and indicating the dollar amount of all contract(s) and/or subcontract(s) that have been awarded to him/her for the current State Fiscal Year (July 1 - June 30) does not exceed the Fiscal Year limit of \$10,000,000.00.
2. A certification of work to be subcontracted (Exhibit II) signed by both the Contractor and the "Small Contractor" listing the work items and the dollar value of the items that the nominated "Small Contractor" is to perform on the project to achieve the minimum percentage indicated in Section IIA above.
3. A certification of past experience (Exhibit III) indicating the scope of work the nominated "Small Contractor" has performed on all projects, public and private, for the past two (2) years.
4. In instances where a change from the originally approved named "Small Contractor" (see Section IB) is proposed, the Contractor is required to submit, in a reasonable and expeditious manner, a revised submission, comprised of the documentation required in Section IIC, Paragraphs 1, 2 and 3 and Section E together with documentation to substantiate and

GENERAL

justify the change, (i.e., documentation to provide a basis for the change) to CONNDOT's Manager of Construction Operations for its review and approval prior to the implementation of the change. The Contractor must demonstrate that the originally named "Small Contractor" is unable to perform in conformity to specifications, or unwilling to perform, or is in default of its contract, or is overextended on other jobs. The Contractor's ability to negotiate a more advantageous contract with another "Small Contractor" is not a valid basis for change. Documentation shall include a letter of release from the originally named "Small Contractor" indicating the reason(s) for the release.

- D. After the Contractor signs the Contract, the Contractor will be required to meet with CONNDOT's Manager of Construction Operations or his/her designee to review the following:
1. What is expected with respect to the "Small Contractor" set aside requirements.
 2. Failure to comply with and meet the requirement can and will result in monetary deductions from payment.
 3. Each quarter after the start of the "Small Contractor" the Contractor shall submit a report to CONNDOT's Manager of Construction Operations indicating the work done by, and the dollars paid to each "Small Contractor" to date.
 4. What is required when a request to sublet to a "Small Contractor" is submitted.
- E. The Contractor shall submit to CONNDOT's Manager of Construction Operations all requests for subcontractor approvals on standard forms provided by the Department.

If the request for approval is for a "Small Contractor" subcontractor for the purpose of meeting the contract required "Small Contractor" percentage stipulated in Section IIA, a copy of the legal contract between the Contractor and the "Small Contractor" subcontractor must also be submitted at the same time. Any subsequent amendments or modifications of the contract between the Contractor and the "Small Contractor" subcontractor must also be submitted to CONNDOT's Manager of Construction Operations with an explanation of the change(s). The contract must show items of work to be performed, unit prices and, if a partial item, the work involved by both parties.

In addition, the following documents are to be attached:

GENERAL

- (1) A statement explaining any method or arrangement for renting equipment. If rental is from a Contractor, a copy of Rental Agreement must be submitted.
- (2) A statement addressing any special arrangements for manpower.
- (3) A statement addressing who will purchase material.

F. Contractors subcontracting with a "Small Contractor" to perform work or services as required by this "Special Provision" shall not terminate such firms without advising CONNDOT, in writing, and providing adequate documentation to substantiate the reasons for termination if the designated "Small Contractor" firm has not started or completed the work or the services for which it has been contracted to perform.

G. Material Suppliers or Manufacturers

If the Contractor elects to utilize a "Small Contractor" supplier or manufacturer to satisfy a portion or all of the specified dollar requirements, the Contractor must provide the Department with:

1. An executed Affidavit Small Contractor (Set-Aside) Connecticut Department of Transportation Affidavit Supplier or Manufacturer (sample attached), and
2. Substantiation of payments made to the supplier or manufacturer for materials used on the project.

Brokers and packagers shall not be regarded as material Suppliers or manufacturer.

H. Non-Manufacturing or Non-Supplier "Small Contractor" Credit

Contractors may count towards its "Small Contractor" goals the following expenditures with "Small Contractor" firms that are not manufacturers or suppliers:

1. 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, material or supplies necessary for the performance of the contract provided that the fee or commission is determined by the Department of Transportation to be reasonable and consistent with fees customarily allowed for similar services.

GENERAL

2. The fees charged for delivery of materials and supplies required on a job site (but not the cost of the materials and supplies themselves) when the hauler, trucker, or delivery service is not also the manufacturer of or a regular dealer in the materials and supplies, provided that the fee is determined by the Department of Transportation to be reasonable and not excessive as compared with fees customarily allowed for similar services.
3. The fees or commissions charged for providing any bonds or insurance specifically required for the performance of the Contract, provided that the fee or commission is determined by the Department of Transportation to be reasonable and not excessive as compared with fees customarily allowed for similar services.

III. **BROKERING**

For the purpose of this "Special Provision", a "Broker" is one who acts as an agent for others in negotiating contracts, purchases, sales, etc., in return for a fee or commission. Brokering of work by a "Small Contractor" is not allowed and is a contract violation.

IV. **PRE-AWARD WAIVERS:**

If the Contractor's submission of the "Small Contractor" listing, as required by Section IIC indicates that it is unable, by subcontracting to obtain commitments which at least equal the amount required by Section IIA, it may request, in writing, a waiver of up to 50% of the amount required by Section IIA. To obtain such a waiver, the Contractor must submit a completed "Application for Waiver of Small Contractor Minority Business Enterprise Goals" to CONNDOT's Manager of Contracts which must also contain the following documentation:

1. Information described in Section ID.
2. For each "Small Contractor" contacted but unavailable, a statement from each "Small Contractor" confirming its unavailability.

Upon receipt of the submission requesting a waiver, the CONNDOT's Manager of Contracts shall submit the documentation to the Director of the Office of Contract Compliance who shall review it for completeness. After completion of the Director of Contract Compliance's review, she/he should write a narrative of his/her findings of the application for a waiver, which is to include his/her recommendation. The Director of Contract Compliance shall submit the written narrative to the Chairperson of the DBE Screening Committee at least five (5) working days before the scheduled meeting. The Contractor shall be invited to attend the meeting and present his/her position. The DBE Screening Committee shall render a decision on the waiver request within five (5)

GENERAL

working days after the meeting. The DBE Screening Committee's decision shall be final. Waiver applications are available from the CONNDOT Manager of Contracts.

SMALL CONTRACTOR/*MINORITY BUSINESS ENTERPRISE

(* Delete if not Applicable)
SET-ASIDE PROGRAM
(QUALIFICATION AFFIDAVIT)

PROJECT(s) _____
(INCLUDING TOWN & DESCRIPTION)

STATE OF _____ CONNECTICUT _____

COUNTY OF _____

I _____, ACTING IN BEHALF

NAME OF PARTY SIGNING AFFIDAVIT

OF _____, DO HEREBY CERTIFY

PERSON FIRM OR ORGANIZATION

AND AFFIRM THAT THE INFORMATION SET FORTH BELOW IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE. AS OF THIS DATE _____ THE LIST OF SMALL CONTRACTOR SET-ASIDE PROGRAM - CONTRACTS AND/OR SUBCONTRACTS AWARDED DURING THE CURRENT FISCAL YEAR (JULY 1 - JUNE 30) 20 _____ IS AS FOLLOWS:

| <u>Col. 1</u> TOWN AND PROJECT NUMBER | <u>Col. 2</u> STATE AGENCY WHICH AWARDED CONTRACT | <u>Col. 3</u> CONTRACT AMOUNT AWARDED UNDER THIS PROGRAM | <u>Col. 4</u> AMOUNT OF WORK SUBCONTRACTED FROM OTHER FIRMS UNDER THIS PROGRAM | <u>Col. 5</u> TOTAL AMOUNT OF ALL WORK UNDER THIS PROGRAM Col. 3 Plus Col. 4 |
|--|--|---|---|--|
| | | | | |
| | TOTALS | \$ | \$ | \$ |

NAME OF PERSON, FIRM OR ORGANIZATION

(FIRM SEAL)

SIGNATURE & TITLE OF OFFICIAL

SWORN TO AND SUBSCRIBED BEFORE ME BY _____

WHO IS PERSONALLY KNOWN TO ME, THIS _____ DAY OF _____, 20 _____

(NOTARY PUBLIC)

MY COMMISSION EXPIRES _____ SEAL

PLEASE NOTE THAT ALL THE WORK AWARDED OR SUBCONTRACTED TO YOUR FIRM UNDER THE SET-ASIDE PROGRAM IN A FISCAL YEAR (JULY 1-JUNE 30) INCLUDING THIS PROJECT, CANNOT BE MORE THAN \$10,000,000.00

EXHIBIT III Mar. 01

CERTIFICATION
PAST CONSTRUCTION EXPERIENCE

SMALL CONTRACTOR / * MINORITY BUSINESS ENTERPRISES * Delete if not applicable

PLEASE LIST ALL CONSTRUCTION PROJECTS YOUR ORGANIZATION HAS WORKED ON IN THE PAST TWO FISCAL YEARS

| PROJECT LOCATION NUMBER AND DESCRIPTION APPLICABLE | CONTRACT AMOUNT | IF WORK PERFORMED AS PRIME GIVE OWNERS NAME IF WORK PERFORMED AS SUBCONTRACTOR GIVE CONTRACTORS NAME | START DATE | ACTUAL OR ESTIMATED COMPLETION DATE | NAME AND PHONE OF OWNER OR PRIME CONTRACTOR AS |
|---|--------------------|--|---------------|--|--|
| | | | | | |

SIGNED BY: _____

SMALL BUSINESS CONTRACTOR
*MINORITY BUSINESS ENTERPRISES

D.O.T. PROJECT NO. _____

* Delete if not applicable

MARCH, 2001

**SMALL CONTRACTOR/SMALL CONTRACTOR MINORITY BUSINESS ENTERPRISE
(MBE) (SET-ASIDE) CONNECTICUT DEPARTMENT OF TRANSPORTATION
AFFIDAVIT – SUPPLIER OR MANUFACTURER**

This affidavit must be completed by the State Contractor's designated Small Contractor/ Small Contractor Minority Business Enterprise (MBE), notarized and attached to the contractor's request to utilize a Small Contractor/Small Contractor Minority Business Enterprise (MBE) supplier or manufacturer as a credit towards its Small Contractor/Small Contractor Minority Business Enterprise (MBE) contract requirement; failure to do so will result in not receiving credit towards the contract Small Contractor/Small Contractor Minority Business Enterprise (MBE) requirement.

State Project No. _____
Federal Aid Project No. _____
Description of Project _____

I, _____, acting in behalf of _____
(Name of person signing Affidavit) (Small Contractor/Small Contractor MBE contractor person,
_____ of which I am the _____ affirm that _____
firm, association or certify and corporation) (Title of Person) (Small
Contractor/Small Contractor MBE person, firm, association or corporation)
_____ is a certified Small Contractor/Small
Contractor Minority Business Enterprise, as defined by Section 4a-60g of the Connecticut General
Statutes, as revised.

I further certify and affirm that _____
(Small Contractor/Small Contractor MBE person, firm, association or corporation)
will assume the actual and contractual responsibility for the provision of the materials and/or supplies
sought by _____. If a manufacturer, I produce goods from raw
(State Contractor)
materials or substantially alter them before resale, or if a supplier, I perform a commercially useful
function in the supply process.

I understand that false statements made herein are punishable at Law (Sec. 53a-157, CGS, as revised).

(Name of Small Contractor/Small Contractor MBE person, firm, association or corporation)

(Signature and Title of Official making the Affidavit)

Subscribed and sworn to before me, the _____ day of _____ 200_____.

Notary Public (Commissioner of the Superior Court)

My Commission Expires _____

CERTIFICATE OF CORPORATION

I, _____, certify that I am the _____
(Official) 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)

(Corporate Seal)

ITEM #0100600A – CONSTRUCTION ACCESS

Description:

This item consists of all work shown on the plans or as ordered by the Engineer to provide the Contractor with temporary access and construction staging area(s) for the work site(s) for equipment, materials and personnel including any bridging mats, platforms or supports. Unless shown otherwise on the plans, access to the railroad track(s) for Contractor supplied hi-rail equipment shall be from the nearest accessible at grade crossing or as approved by the Engineer. In addition, this item includes all work shown on the plans to construct the permanent access road on the outlet side of the culvert.

This item shall also include clearing the ground of roots, debris and all objectionable material required to complete the work shown on the plans.

Materials:

Materials required for the permanent access road shall conform to the requirements of the Division III Materials Section of Form 817 including but not limited to the following.

Processed aggregate shall conform to the requirements of sub article M.05.01.

Crushed stone shall conform to the requirements of sub article M.01.01 for 2-in (No. 3) coarse aggregate.

Geotextile fabric shall conform to the requirements of sub article M.08.01-19 for the separation – high survivability category.

Materials for temporary access paths including but not limited to bridging mats, supports and fill shall conform to plan requirements and be in good condition and appropriate for its intended use. Temporary fill must be a clean, well-draining material approved by the Engineer for use.

Construction Methods:

The Contractor shall perform a visual assessment and document the condition of the existing driveway(s) and parking lot(s) within the limits of the required access and construction easements prior to and after the construction. The Contractor shall submit this documentation to the Engineer for review.

The Contractor shall construct temporary and permanent access paths and staging areas as shown on the plans. This item includes furnishing materials, constructing and maintaining the permanent access road for Contractor temporary construction access to the outlet side of the culvert; and furnishing material, constructing temporary access roads and construction staging areas at both the inlet and outlet sides, and upon completion of the construction restoring the

disturbed areas to its original condition including the removal of any temporary fill or temporary work platforms.

The work shall conform to the applicable requirements of Sections 2.01 and 2.02 as amended herein.

Temporary support may be required at the inlet and outlet sides to limit temporary impacts to wetlands associated with the Contractor's temporary access road/staging areas. Support can consist of modular blocks and timber mats, or any other system approved by the Engineer which satisfactorily supports Contractor equipment, materials and limits temporary grading for access, prevents erosion of temporary fill material, and limits temporary impacts to wetlands.

All Contractor activities involving the use of the track(s) between access points and the site(s) shall be in accordance with Section 1.05, Article 1.05.06 – Cooperation with Utilities (Including Railroads). Contractor activities and need for access at track level of the embankment shall be minimized to the extent possible. Activities requiring track level access are expected to include installation and removal of delineation fencing; stockpiling of ballast; and survey and settlement monitoring. Crossing the tracks for routine worker access between the inlet and outlet sides of the culvert will not be allowed, and the Contractor shall minimize activities on the existing ballasted slopes to reduce disturbance and associated erosion.

The Contractor shall take care not to damage the existing driveways, parking lots and public roads traversed as part of the access routes. Any damage to these public roads, driveways or parking lots as a result of the Contractor's operations shall be immediately repaired by the Contractor, at no expense to the State.

The section of the permanent access road including the turnaround areas that is constructed within the designated wetlands is expected to settle during the construction phase due to the presence of weaker underlying soils. The Contractor shall maintain this road during the construction phase including adding processed aggregate to maintain the designed grade up to a maximum depth of 18" of processed aggregate. This depth assumes 10" of settlement will occur during the construction phase. Furnishing and placement of processed aggregate to depths greater than 18" if required will be considered as Extra Work per Section 1.04.

Upon completion of the construction at a given site, the Contractor shall remove all materials installed for the temporary access and restore the area to the original condition.

Method of Measurement:

This item shall be paid for on a lump sum basis and will not be measured for payment.

Basis of Payment:

This work shall be paid for at the contract lump sum price for “Construction Access”, which price shall include all materials, tools, equipment and labor incidental to the installation, maintenance and removal of the access/construction staging areas on the inlet and outlet sides of the culvert including the restoration of the sites to its original condition upon completion of the work; all materials, tools, equipment and labor incidental to the installation and maintenance during construction of the permanent access road on the outlet side of the culvert; and all materials, tools, equipment and labor incidental to the pre and post construction condition assessments of the access routes through properties adjacent to the railroad right of way.

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 limits. Work under this Item consists of the development and implementation of a written 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 investigation 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 Project, 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 on the Project 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 Project 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 on the Project, 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 within four (4) weeks of submittal and provide written comments as to deficiencies in and/or exceptions to the plan, 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 on the Project, 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

1. 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.

2. Elements

a. 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.

b. 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.

c. 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 onsite 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:

i. Directing and implementing the HASP.

- ii. 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.
 - iii. Authorizing Stop Work Orders, which shall be executed upon the determination of an imminent health and safety concern.
 - iv. 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.
 - v. Authorizing work to resume, upon approval from the Contractor's HSM.
 - vi. Directing activities, as defined in the Contractor's written HASP, during emergency situations; and
 - vii. Providing personal monitoring where applicable, and as identified in the HASP.
- d. 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.

- e. 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.

- f. 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.

g. 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.

h. 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).

i. Communications

Written procedures for routine and emergency communications procedures shall be included in the Contractor's HASP.

j. 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.

k. 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 onsite at all times during site operations.

l. 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.

m. 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.

n. Confined Space Entry Procedures

Confined space entry procedures, both permit required and non permit required, shall be discussed in detail.

o. 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.

p. 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 onsite 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

Lump Sum

ITEM #0101130A – ENVIRONMENTAL WORK - SOLIDIFICATION

Description:

Under this item, the Contractor shall be responsible for the solidification of controlled and hazardous materials containing free draining liquids, as may be necessary during the performance of work operations prior to off-site disposal. Materials shall be dewatered prior to the addition of solidification material.

The Contractor shall submit within seven (7) days of the Notice to Proceed, for the Engineer's review, a detailed methodology and plan of operation for the solidification of materials.

Materials:

The materials used for solidification shall be a naturally occurring material such as diatomaceous earth or other material as approved by the Engineer. Said material shall be in a dry state prior to use in solidification operations. No polymers or other synthetic materials shall be allowed.

Construction Methods:

Submittals:

The Contractor shall submit for the Engineer's review, a plan showing the location of solidification material storage and proposed mixing location as well as a detailed narrative describing the equipment, materials and methodology to be used. The Contractor shall also include its planned methods to remove or drain away free water prior to the addition of any solidification materials to controlled or hazardous materials. The methodology shall completely describe the Contractor's proposed plan for removal of free liquids (as determined by ASTM) from the excavated materials. Should solidification fail to eliminate free liquids as proposed, the Contractor will be required to revise the solidification plan at no additional cost to the State.

Upon visual examination, if controlled or hazardous materials have free liquids present, the Contractor may, with concurrence of the Engineer, add dry materials to absorb free-standing liquids, utilizing a methodology accepted by the Engineer. The Contractor shall dewater controlled and hazardous materials prior to the addition of solidification materials to the satisfaction of the Engineer. All dewatering fluids shall be handled in accordance with the Contract. Solidification procedures shall be subject to monitoring by the Engineer.

The maximum quantity of solidification material that may be used by the Contractor shall be limited to twenty (20) percent, by volume, of the material being solidified. Should this procedure be demonstrated as not effective in the elimination of the presence of free-standing liquids, the Contractor shall submit methods for the removal of free-standing water. The Contractor shall also submit the additional costs of the proposed alternative to the Engineer for review. No alternative methods of solidification shall be initiated until reviewed and accepted by the Engineer.

Method of Measurement:

This work will be measured for payment as the actual weight of solidification material used by the Contractor. The Contractor shall demonstrate the amount of solidification material used by the original weight tickets from a certified scale. The weight tickets shall show the weight of the material brought to the site and subsequently used in solidification operations.

If no certified scale is available, the Engineer may allow for the calculation of the weight by a summation of sealed, pre-measured bags.

Basis of Payment:

This work will be paid for at the Contract unit price for solidification material used and accepted by the Engineer. Such price shall include all labor, materials, tools, and equipment incidental to the work including transportation of the materials to the Project and the addition of solidification material to excavated materials.

| Pay Item | Pay Unit |
|-------------------------------------|----------|
| Environmental Work - Solidification | Ton |

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 "Selective Clearing and Thinning."

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 items "Handling Water" or "Handling Contaminated Groundwater".

Excavation of material not identified by the Engineer for stockpiling and reuse in accordance with this specification will be paid in accordance with Section 2.03.

| 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 “Selective Clearing and Thinning.”

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 items "Handling Water" or “Handling Contaminated Groundwater”.

| Pay Item | Pay Unit |
|---|----------|
| Supplemental Streambed Channel Material | est. |

ITEM #0202315A – DISPOSAL OF CONTROLLED MATERIALS

Description:

Work under this item shall consist of the direct-loading, transportation and final off-site disposal/recycling/treatment of controlled materials (excluding dewatering fluids) that have been generated from various excavations within project AOECs/LLAOECs and determined to be contaminated with regulated substances at non-hazardous levels. This contamination is documented in the reports listed in the “Notice to Contractor – Environmental Investigations”. The results contained in the reports listed in the “Notice to Contractor – Environmental Investigations” show levels of various contaminants that the Contractor may encounter during construction. Actual levels found during construction may vary and such variations will not be considered a change in condition provided the material can still be disposed as non-hazardous at one or more of the disposal facilities listed herein.

The controlled materials, after proper characterization by the Engineer, shall be direct-loaded, transported to, and treated/recycled/disposed of at one or more of the following permitted treatment/recycle/disposal facilities listed (as chosen by the Contractor). The Contractor must use one or more of the following Department-approved treatment/recycle/disposal facilities for the disposal of non-hazardous materials:

| | |
|--|--|
| Advanced Disposal Services Greentree Landfill 635 Toby Road Kersey, PA 15846 (814) 265-1744; Tony LaBenne | Allied Waste Niagara Falls Landfill, LLC 5600 Niagara Falls Boulevard Niagara, NY 14304 (716) 285-3344; David Hanson |
| Clean Earth of Carteret 24 Middlesex Avenue Carteret, NJ 07008 (732) 541-8909; Cheryl Coffee | Clean Earth of Connecticut (Formerly Phoenix Soil, LLC) 58 North Washington Street Plainville, CT 06062 (860) 747-8888; Dave Green |
| Clean Earth of Southeast Pennsylvania, Inc. 7 Steel Road Morrisville, PA 19067 (215) 428-1700; Joe Siravo | Clean Earth of Philadelphia, Inc. 3201 S. 61 Street Philadelphia, PA 19153 (215) 724-5520; Mike Kelly |
| Clinton Landfill 242 Church Street Clinton, MA 01510 (978) 365-4110; Chris McGown | Colonie Landfill Waste Connections, Inc. 1319 Loudon Road Cohoes, NY 12047 (518) 786-7331; Eric Morales |

| | |
|---|---|
| Dudley Reclamation Project 123 Oxford Avenue Dudley, MA (978) 663-2623; Jarrett Everton | ESMI of New York, LLC 304 Towpath Road Fort Edward, NY 12828 (518) 747-5500; Peter Hansen 58 Industrial Road Chicopee, MA 01020 (413) 592-2081; Alan Desrosiers |
| ESMI of New Hampshire, LLC 67 International Drive Louden, NH 03307 (603) 783-0228; Stephen Raper | Hazelton Creek Properties, LLC* 280 South Church Street Hazelton, PA 18201 (570) 207-2000; Allen Swantek |
| Manchester Landfill 311 Olcott Street Manchester, CT 06040 (860) 647-3248; Brooks Parker | Ontario County Landfill 3555 Post Farm Road Stanley, NY 14561 (603) 235-3597; Scott Sampson |
| Red Technologies Soil 232 Airline Avenue Portland, CT 06980 (860) 342-1022; Christopher Wingdale | Republic Services Conestoga Landfill 420 Quarry Road Morgantown, PA 19543 (717) 246-4640; James Kuhn |
| Soil Safe, Inc. 378 Route 130 Logan Township Bridgeport, NJ 08085 (410) 872-3990 XT. 1123; Mike Kozak | The Southbridge Recycling and Disposal Park 165 Barefoot Road Southbridge, MA 01550 (508) 765-9723; Tracey Markham |
| Ted Ondrick Company, LLC 58 Industrial Road Chicopee, MA 01020 (413) 592-2565; Alan Desrosiers | Tunnel Hill Reclamation 2500 Township Road 205 Route 2 New Lexington, OH 43764 (914) 713-0203; William Gay |
| Waste Management of NH; TLR III Refuse Disposal Facility 90 Rochester Neck Road P.O. Box 7065 Rochester, NY 03839 (603) 330-2170; Ellen Bellio | Waste Management RCI Fitchburg Landfill Fitchburg Princeton Road Westminster, MA 01473 (974) 355-6821; Frank Sepiol |

* Please note that if this facility is to be used, each letter will require an additional 10 day (or more) waiting period on top of the 15 day lab period to allow for PADEP review. This is in addition to all other restrictions and wait periods defined below.

The above list contains treatment/recycle/disposal facilities which can accept the waste stream generated by the project in quantities that may be limited by their permits and their operations restrictions. It is the responsibility of the contractor to verify that a facility will be available and capable of handling the volume as well as the chemical and physical characteristics of material generated by the project.

Construction Methods:

A. Material Disposal

The Engineer will sample in-situ materials at a frequency established by the selected treatment/recycling/disposal facilities. The Contractor shall designate to the Engineer which facility it intends to use, as well as the facility acceptance criteria and sampling frequency, prior to samples being taken. The Contractor is hereby notified that laboratory turnaround time is expected to be fifteen (15) working days before Contractor receipt of the analytical results. Any change of intended treatment/recycling/disposal facility may prompt the need to resample and will therefore restart the time required for laboratory turnaround. The laboratory will furnish such results to the Engineer. Upon receipt, the Engineer will make available to the Contractor the results of the final waste characterization determinations. **No delay claim will be considered based upon the Contractor's failure to accommodate the laboratory turnaround time as identified above.**

The Contractor shall obtain and complete all paperwork necessary to arrange for material disposal (such as disposal facility waste profile sheets). It is solely the Contractor's responsibility to co-ordinate the disposal of controlled materials with its selected treatment/recycling/disposal facility(s). Upon receipt of the final approval from the facility, the Contractor shall arrange for the direct-loading, transport and treatment/recycling/disposal of the materials in accordance with all Federal and State regulations. **No claim will be considered based on the failure of the Contractor's selected disposal facility(s) to meet the Contractor's production rate or for the Contractor's failure to select sufficient facilities to meet its production rate.**

Any material processing (including but not limited to the removal of woody debris, scrap metal, pressure-treated and untreated wood timber, large stone, concrete, polyethylene sheeting or similar material) required by the Contractor's selected facility will be completed by the Contractor prior to the material leaving the site. It is solely the Contractor's responsibility to meet any such requirements of its facility. Any materials removed shall be disposed of or recycled in a manner acceptable to the Engineer at no additional cost. If creosote treated timbers are removed, they will be disposed of under the item "Disposal of Contaminated Timber Piles", "Disposal of Contaminated Railroad Ties" or in accordance with Article 1.04.05 in the absence of such items.

All manifests or bills of lading utilized to accompany the transportation of the material shall be prepared by the Contractor and signed by an authorized Department representative, as Generator, for each truck load of material that leaves the site. The Contractor shall forward the appropriate original copies of all manifests or bills of lading to the Engineer the same day the material leaves the Project.

A load-specific certificate of treatment/recycling/disposal, signed by the authorized agent representing the disposal facility, shall be obtained by the Contractor and promptly delivered to the Engineer for each load.

B. Material Transportation

In addition to all pertinent Federal, State and local laws or regulatory agency polices, the Contractor shall adhere to the following precautions during the transport of controlled materials off-site:

- Transported controlled materials are to be covered sufficiently to preclude the loss of material during transport prior to leaving the site and are to remain covered until the arrival at the selected treatment/recycling/disposal facility.
- All vehicles departing the site are to be properly logged to show the vehicle identification, driver's name, time of departure, destination, and approximate volume, and contents of materials carried.
- No materials shall leave the site unless a treatment/recycling/disposal facility willing to accept all of the material being transported has agreed to accept the type and quantity of waste.

C. Equipment Decontamination

All equipment shall be provided to the work site free of gross contamination. The Engineer may prohibit from the site any equipment that in his opinion has not been thoroughly decontaminated prior to arrival. Any decontamination of the Contractor's equipment prior to arrival at the site shall be at the expense of the Contractor. The Contractor is prohibited from decontaminating equipment on the Project that has not been thoroughly decontaminated prior to arrival.

The Contractor shall furnish labor, materials, tools and equipment for decontamination of all equipment and supplies that are used to handle Controlled Materials. Decontamination shall be conducted at an area designated by the Engineer and shall be required prior to equipment and supplies leaving the Project, between stages of the work, and between work in different AOEC's.

The Contractor shall use dry decontamination procedures. Residuals from dry decontamination activities shall be collected and managed as Controlled Materials. If the results from dry methods are unsatisfactory to the Engineer, the Contractor shall modify decontamination procedures as required.

The Contractor shall be responsible for the collection and treatment/recycling/disposal of any liquid wastes that may be generated by its decontamination activities in accordance with applicable regulations.

Method of Measurement:

The work of "DISPOSAL OF CONTROLLED MATERIALS" will be measured for payment as the actual net weight in tons of material delivered to the treatment/recycling/disposal facility(s).

Such determinations shall be made by measuring each hauling vehicle on the certified permanent scales at the treatment/recycling/disposal facility. Total weight will be the summation of weight bills issued by the facility specific to this Project. Excess excavations made by the Contractor beyond the payment limits specified in Specification Sections 2.02, 2.03, 2.06, and 2.86, or the Contract Special Provisions (as appropriate) will not be measured for payment and the Contractor assumes responsibility for all costs associated with the appropriate handling, management and disposal of this material.

The disposal of excavated materials, originally anticipated to be controlled materials, but determined by characterization sampling not to contain concentrations of regulated chemicals (non-polluted or “clean” materials) will not be measured for payment under this item but will be considered as surplus excavated materials and will be paid in accordance with Article 1.04.05.

Equipment decontamination, the collection of residuals, and the collection and disposal of liquids generated during equipment decontamination activities will not be measured separately for payment.

Any material processing required by the Contractor-selected disposal facility, including the proper disposal of all removed materials other than creosote treated wood, will not be measured for payment.

Basis of Payment:

This work will be paid for at the Contract unit price, which shall include the direct-loading and transportation of controlled materials to the treatment/recycling/disposal facility; the fees paid to the facility for treatment/recycling/disposal; the preparation of all related paperwork; and all equipment, materials, tools, and labor incidental to this work. **This unit price will be applicable to all of the listed disposal facilities and will not change for the duration of the Project.**

This price shall also include equipment decontamination; the collection and disposal of residuals generated during decontamination; and the collection and disposal of liquids generated during equipment decontamination activities.

| Pay Item | Pay Unit |
|----------------------------------|----------|
| Disposal of Controlled Materials | Ton |

ITEM #0202629A – SETTLEMENT MONITORING PROGRAM

Description: This item consists of monitoring movement of the existing rail facilities during construction at the site. The monitoring program shall be adequate to document any settlement or horizontal movement of the railroad track(s), soldier pile and lagging installations, and other miscellaneous rail facilities within 100' of excavation, installation of sheeting or jacking operations. The monitoring program shall be in conformance with the minimum requirements detailed in this specification or as noted on the plans for number of monitoring points, locations of points, interval for recording data, procedures and period of time to report the data to the Engineer, maintenance of points, and the removal of points after completion of the work.

This program establishes overall minimum requirements for construction phase monitoring and is supplemented by additional monitoring requirements specific to the pipe jacking operations and as detailed in the pipe jacking item.

Materials: Settlement monitoring points shall be constructed of materials specifically manufactured for use as survey reference points and shall be installed in accordance with the manufacturer's recommendations, unless the Contractor proposes alternate monitoring points approved by the Engineer. Settlement monitoring points for railroad tracks shall be mounted to steel rods driven into the ballast between cross ties or painted or similarly marked locations on the rail that adequately identify the monitoring point to allow for consistency in monitoring of the point using survey equipment and operators positioned without fouling a track. No markings shall be made on any part of the rail without approval of the Engineer.

Construction Methods: A Settlement Monitoring program shall be established a minimum of 2 days prior to the commencement of any construction at the site. Initial readings shall be recorded both at the time of point installation and prior to the commencement of construction activities to establish the baseline readings. The number and locations of monitoring points shall be in conformance with site specific plan details as applicable, and the following minimum criteria: track monitoring points shall be established at the north rail of active tracks at intervals not to exceed 25' for a minimum distance of 100' from all construction activities which have the potential to cause settlement; structure monitoring points shall be established at the corner of each catenary tower foundation within 100' from all construction activities which have the potential to cause settlement. Construction activities considered having the potential to cause settlement include but are not limited to the following: all excavation; installation of sheet piling or soldier pile and lagging; jacking of pipes; and installation of soil nails.

Monitoring points shall be established by the Contractor for the specific purpose of providing a reliable, reproducible reference point for the survey equipment to be used by the Contractor for the monitoring program.

The Contractor shall take location readings on the established monitoring points using survey equipment capable of reading to a precision of 0.01 ft in both the horizontal and vertical datum.

The monitoring points shall be monitored at the following minimum intervals:

- prior to the commencement of construction activities at the site
- daily at the completion of the day's construction activities for a given site with active construction
- at two hour intervals during pipe jacking operations unless a greater interval is approved by the Engineer
- weekly for a given site without any active construction; this interval may be increased to an interval approved by the Engineer for a site that exhibits no evidence of settlement
- after the completion of all construction activities at a given site
- the next working day after rainfall in excess of 1-inch in a 24 hour period
- as ordered by the Engineer

The Contractor shall notify the Engineer if any movement has been measured at a settlement monitoring point. Any points that have measured movement exceeding 1/4" shall be immediately brought to the attention of the Engineer, and construction activities in the immediate vicinity of the movement shall be halted until any necessary corrective action has been taken. The Contractor shall modify the means and methods associated with any construction activities that result in movement exceeding 1/4".

Survey monitoring information shall be reduced and tabulated by the Contractor and shall be submitted to the Engineer in hard copy format weekly, at a minimum. For sites with measured movement exceeding 0.01', the reduced data shall be submitted to the Engineer daily.

The Contractor shall maintain the monitoring points during the construction phase and shall be responsible to re-establish or replace monitoring points for all locations damaged during the time periods when monitoring is required at a given site. New baseline monitoring point elevations shall be established for replacement points prior to resuming construction activities at a given site.

Upon completion of the construction at a site, the Contractor shall remove any monitoring point(s) installed and restore the original condition of the affected structure(s) unless the Engineer approves the abandonment of the monitoring point in place.

In addition to the settlement monitoring requirements, the Contractor shall perform a visual assessment and document the condition of the existing tracks and rail facilities within 100' of planned construction activities prior to and after the construction. The Contractor shall submit this documentation to the Engineer for review.

Method of Measurement: This item, being paid for 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 "Settlement Monitoring Program", which price shall include the furnishing and installation of monitoring points, survey monitoring of the points at the required intervals, maintenance and protection of

08/07/2018

the points, replacement of damaged monitoring points, removal or abandonment of monitoring points, the recording of the data, the transfer of data to the Engineer, the visual assessment and documentation of track and rail facility condition, and all materials, equipment, tools, and labor incidental thereto.

ITEM #0204151A – HANDLING WATER

Description:

Work under this item shall include the required handling of surface water at the project site to allow for all required construction within the limits of the waterway or wetlands. For the purposes of this specification, handling water shall be understood to mean any temporary type of protective facility (temporary diversion barrier, bypass piping or work platform) which the Contractor elects to build or use to satisfy, and which does satisfy, the condition that the construction activities within the waterway or wetlands are protected from the direct riverine flow, and such facility shall not reduce the waterway opening except as specifically allowed and identified in the plan documents. The handling of flood flows and the protection of existing structures, and any or all of the finished construction during high water, are also included in the scope of work under this item.

Materials:

The Contractor may use timber, steel, concrete, sand bags or any other material or combination of materials that are clean, in sound condition, and capable of supporting the construction loads for any temporary work platform or diversion barriers.

The Contractor shall have on site a sufficient length of pipe of the minimum size identified on the plans to convey water from the diversion barrier on the inlet side to the diversion barrier on the outlet side. The pipe and all connecting materials shall be of a material suitable for the intended use.

Construction Methods:

The Contractor shall investigate and verify existing conditions, and evaluate the need for, and the type of protection and facilities required. Before commencing construction, the Contractor shall furnish the Engineer with details of the plan and methods proposed for handling water and accomplishing the work at the site. The furnishing of such plans and methods shall not relieve the Contractor of their responsibility for the safety of the work and for the successful completion of the project. Only upon acceptance of the pre-construction water handling plan by the Engineer shall the Contractor begin work.

Work shall consist of the design and construction of such flow diversions, pumping systems, temporary work platforms if required, and methods necessary for the diversion of water from the work area within the waterway or wetlands in accordance with the stage construction as shown in the contract documents. Work shall include the relocation of a portion of such facilities during construction staging when required, and removal of all such temporary structures and facilities upon the completion of the permanent work or as required.

The handling of water shall be performed in accordance with the requirements of Section 1.10.

Temporary diversions and temporary work platforms shall be designed for temporary water surface elevations as noted in the temporary hydraulic data on the staging plans and shall not reduce the waterway opening less than identified on the plans. Pumping systems including but not limited to the pump(s), inlet sump(s), piping, and outlet protection measures shall be designed for the flow associated with the temporary storm event.

All such temporary structures or facilities shall be safely designed, extended to sufficient depth and be of such dimensions and water-tightness so as to assure construction of the permanent work without the affect of flowing water. They shall not interfere with proper performance of the work and their construction shall be such as to permit excavation for permanent work to the limits shown on the plans. Interior dimensions shall give sufficient clearance for construction. Movement or failures of the temporary protection facilities, or any portions thereof, which prevents proper completion of the permanent work, shall be corrected at the sole expense of the Contractor.

The Contractor shall submit working drawings to the Engineer for review in accordance with Article 1.05.02. They shall be stamped by a Professional Engineer licensed in the State of Connecticut, and they shall be submitted a minimum of thirty (30) days prior to the beginning of the work.

The Contractor shall be responsible for the scheduling of work under this item so as not to interfere with any sequence of operations developed for this project. Delays as a result of work required under this item shall not constitute a claim for an extension of contract time.

Method of Measurement:

This item, being paid for on a lump sum basis, will not be measured for payment.

Basis of Payment:

Payment for this item will be made at the lump sum price for "Handling Water", complete and accepted, which price shall include all tools, material, equipment, labor and work incidental to the construction; reconstruction, if required; relocation; handling of river fluctuations, stream flow during construction; the removal and disposal of all protective works or facilities; damages incurred by the Contractor; and any damages to existing facilities and to the work in progress, materials or equipment from flows or high stages of the waterways at the project site.

Pay Item:
Handling Water

Pay Unit:
L.S.

ITEM #0204213A – HANDLING CONTAMINATED GROUNDWATER

Description:

Under this Item, the Contractor shall collect, manage, treat, and dispose of contaminated groundwater generated during dewatering operations within the Project limits.

Contaminated groundwater is defined as “groundwater which has been generated from excavations within the Project limits containing substances at concentrations that exceed the effluent limits for the CT DEEP General Permit for the Discharge of Groundwater Remediation Wastewater Directly to Surface Water”. The presence of contaminants removable through control of settleable solids does not constitute contaminated groundwater. Groundwater contamination caused by the Contractor’s activities or work practices is also not considered contaminated groundwater. Note that treatment of surface water encountered during construction activities is not required under this Item.

The contamination and groundwater depth at the time of the investigation is documented in the reports listed in the “Notice to Contractor – Environmental Investigations”. Contaminants and depth to groundwater is provided for the Contractor’s information and may be influenced by factors such as seasonal groundwater table changes, tidal changes, drought or flooding conditions, local withdrawals from the aquifer, local construction, etc. Additional information with regard to soil descriptions and groundwater observations may also be available if geotechnical investigations were conducted for the project. The Contractor shall contain contaminated groundwater and 1) treat it on-site prior to discharge to sanitary sewer; 2) treat it on-site prior to discharge to surface water; or 3) transport water to an off-site treatment/disposal facility.

This Item does not apply to the possible diversion of existing storm water flow around the construction site during Project activities. Diversion of existing storm water or surface flows shall be completed in accordance with the Contract and all applicable permits. This item also does not include process water or wastewater generated by the Contractor’s work activities.

Construction Methods:

A. General

It is the Contractor’s responsibility to determine the expected groundwater generation rate from construction activities, select the appropriate groundwater management method, and size its system capacity to meet those dewatering needs.

All equipment required as a part of this Item shall be installed in a location and manner acceptable to the Engineer and in accordance with the manufacturer’s recommendations. Equipment shall be decontaminated prior to arrival at the Project, decontaminated prior to

being moved to another area of the project, and then decontaminated before it leaves the Project, at no additional cost to the State. Solids (soil or sediment) generated by on-site dewatering activities shall be brought to the Waste Stockpile Area (WSA) for testing and characterization by the Engineer.

The Contractor is responsible for operating and maintaining the equipment at all times when dewatering occurs. This includes providing appropriate supervision during evenings, weekends, and holidays. If the system is intended to operate unattended, a remote alarm system acceptable to the Engineer shall be installed to monitor critical system operating parameters and the Contractor shall be responsible for providing rapid emergency response during non-working hours in the event a system malfunction occurs. A list of names and phone numbers shall be displayed in the immediate vicinity of the system for emergency contacts.

The Contractor shall report releases from the groundwater treatment system due to overfilling or equipment/piping failure to the CT DEEP Spill Response Unit in accordance with RCSA 22a-450 and provide the Engineer with all information, including the CT DEEP case number. All costs related to spill response associated with the Contractor's on-site containment or treatment system will be the responsibility of the Contractor.

The Contractor shall collect all samples related to permit compliance in the presence of the Engineer. The Contractor shall provide informational copies of all groundwater analytical results and discharge monitoring reports to the Engineer as they are generated.

The Contractor shall operate the dewatering equipment at a rate that removes the groundwater that naturally infiltrates the excavation. The Contractor shall not cause a hydraulic gradient that draws groundwater into the excavation at an excessive rate. Additional treatment required due to the mobilization of off-site contaminants caused by the Contractor dewatering at an excessive rate will be the responsibility of the Contractor.

Additional treatment related to the Contractor's work activities (i.e. treatment or increased charges due to changes in pH or introduction of different contaminants into the groundwater) and management and disposal of excess water related to the Contractor's process water or waste water will not be included under this item but will be considered a part of the Contractor's cost for the item under which the work is being performed.

B. Groundwater Management Methods

The Contractor shall use one or more of the following methods for the management and disposal of contaminated groundwater. Based on project specifics and site constraints, the Contractor may choose to use more than one of the following methods on a single project. All methods may not be possible at the site due to sanitary sewer or permitting restrictions.

1. On-Site Treatment System with Discharge to Sanitary Sewer

a. Contractor Submittals

At least 14 days prior to any submittal to the Publicly Owned Treatment Works (POTW) or CT DEEP, the Contractor shall submit the treatment system design, which has been sealed by a Professional Engineer licensed in the State of Connecticut to the Engineer for review and comment. Equipment shall prevent sediments and solids, as well as contaminants in excess of the permit allowable effluent concentrations, from entering the sanitary sewer. This submittal shall include a schematic or diagram that shows all treatment system equipment, well point locations, pump set-ups in excavations, sedimentation control methods, system location, method of conveyance, flow rates, pipe sizes, valve locations, sampling ports, discharge locations, electrical power connection, etc.

The Contractor shall submit the manufacturer's data sheets, assembly details and performance data on all treatment equipment. If dewatering equipment is to remain on site between October 15 and April 15, the Contractor shall include its method to prevent the treatment system equipment from freezing (heat tape, immersion heaters, etc.).

The Contractor shall detail its method to collect and contain water in its excavations. The Contractor shall also describe in detail its methods for limiting the quantity of water entering the excavation, including shoring, location of well points, limiting excavation size, preventing entry of surface water into the excavation, etc. The Contractor shall also include its assumptions and flow rate calculations related to the sizing of the system.

It is the Contractor's responsibility to design and properly size the system to accommodate the anticipated contaminants and dewatering rates based on its construction activities, POTW limitations, and permit requirements. The Contractor is alerted that construction activities may be limited based on permit restrictions or POTW limitations.

No claim for delay or request for additional time will be considered based upon the Contractor's failure to accommodate the review process.

b. Permits

Groundwater generated by construction activities within the project limits shall be appropriately treated and discharged to the sanitary sewer system within Project limits. Management and discharge of contaminated groundwater shall be accomplished in accordance with a CT DEEP General Permit and POTW requirements. The Contractor shall be responsible for registering under the General Permit, any other necessary State or local permits, and all associated fees.

The CT DEEP General Permit for the Discharge of Groundwater Remediation Wastewater to Sanitary Sewer is available at www.ct.gov/deep. The Contractor shall

submit the most current permit registration form to the CT DEEP. A minimum lead-time of six (6) weeks can be expected to process and submit the registration, in addition to coordination time with the POTW. **No claim for delay or request for additional time will be considered based upon the Contractor's failure to accommodate the permitting process.** The Contractor shall not submit the permit registration to the CT DEEP prior to the Engineer's review of and comment on the treatment system.

The Contractor shall submit a copy of the CT DEEP permit certificate of registration to the Engineer prior to initiating any discharge.

All testing required by the general permit shall be conducted by a laboratory certified by the Connecticut Department of Public Health (DPH) for the method specified in the permit. The Contractor shall submit copies of the analytical results to the all parties specified in the permit terms and conditions and to the Engineer.

No claim for delay or request for additional time will be considered based upon the Contractor's failure to design a system to meet this performance specification. It is the Contractor's responsibility to properly size the treatment system and temporary containment tanks based on its anticipated flow rates from construction activities and to determine the level of treatment required to meet permit discharge limits.

c. Treatment System Operation

The Contractor shall ensure that all personnel involved in the groundwater treatment operations understand the terms of the General Permit. In the event of a conflict between the requirements of the Contract and the permit, the more stringent will apply.

The Contractor shall not commence work activities below the groundwater table within the project limits until such time as:

- i. the temporary groundwater treatment system design is reviewed by the Engineer and comments are adequately addressed,
- ii. the system is installed in accordance with the accepted design and is completely operational, and
- iii. a copy of the Contractor's permit certificate of registration has been submitted to the Engineer.

The Contractor shall make any sanitary sewer tie-in modifications necessary to accommodate the treatment unit only after obtaining approval from the Engineer and the POTW.

The Contractor shall take all meter readings required by the permit and forward them to the appropriate parties.

The Contractor shall collect all samples related to permit compliance in the presence of the Engineer and shall submit copies of the analytical results and discharge monitoring reports to the appropriate agency(ies) as required by the General Permit terms and conditions. The Contractor shall provide informational copies of all analytical results and discharge monitoring reports to the Engineer as they are generated. In the event of an exceedance, the Contractor shall immediately comply with the “*Duty to Correct, Record, and Report Violations*” section of the General Permit. The Contractor shall provide the Engineer a copy of the required CT DEEP reporting and then document its review of the treatment system and all actions taken to correct the exceedance in writing to the Engineer within 48 hours of receiving laboratory data documenting the exceedance.

If the discharge must be suspended due to an effluent violation, the Contractor shall only restart the discharge after obtaining all necessary approvals from the CT DEEP/POTW and in full compliance with the General Permit and any amendments imposed thereto.

No claim for delay, request for additional time, or request for additional design/redesign costs for the system will be considered based upon the Contractor’s failure to design/redesign a system to meet this performance specification.

2. On-Site Treatment System with Discharge to Surface Water

a. Contractor Submittals

At least 14 days prior to any submittal to the CT DEEP, the Contractor shall submit the treatment system design, which has been sealed by a Professional Engineer licensed in the State of Connecticut, to the Engineer for review and comment. Equipment shall prevent sediments and solids, as well as contaminants in excess of the permit allowable effluent concentrations, from discharging. This submittal shall include a schematic or diagram that shows all treatment system equipment, well point locations, pump set-ups in excavations, sedimentation control methods, system location, method of conveyance, flow rates, pipe sizes, valve locations, sampling ports, discharge locations, electrical power connection, etc.

The Contractor shall submit the manufacturer’s data sheets, assembly details and performance data on all treatment equipment. If dewatering equipment is to remain on site between October 15 and April 15, the Contractor shall include its method to prevent the treatment system equipment from freezing (heat tape, immersion heaters, etc.).

The Contractor shall detail its method to collect and contain water in its excavations. The Contractor shall also describe in detail its methods for limiting the quantity of water entering the excavation, including shoring, location of well points, limiting excavation size, preventing entry of surface water into the excavation, etc. The Contractor shall also include its assumptions and flow rate calculations related to the sizing of the system.

It is the Contractor's responsibility to design and properly size the system to accommodate the anticipated contaminants and dewatering rates based on its construction activities and permit requirements. The Contractor is alerted that construction activities may be limited based on permit restrictions.

No claim for delay or request for additional time will be considered based upon the Contractor's failure to accommodate the review process.

b. Permits

Groundwater generated by construction activities within the project limits shall be appropriately treated and discharged to surface water within Project limits. Management and discharge of contaminated groundwater shall be accomplished in accordance with a CT DEEP General Permit. The Contractor shall be responsible for registering under the General Permit and all associated fees.

The CT DEEP General Permit for the Discharge of Groundwater Remediation Wastewater Directly to Surface Water is available at www.ct.gov/deep. The Contractor shall submit the most current permit registration form to the CT DEEP. A minimum lead-time of six (6) weeks can be expected to process and submit the registration. **No claim for delay or request for additional time will be considered based upon the Contractor's failure to accommodate the permitting process.** The Contractor shall not submit the permit registration to the CT DEEP prior to review of and comment on the treatment system by the Engineer.

The Contractor shall submit a copy of the CT DEEP permit certificate of registration to the Engineer prior to initiating any discharge.

All testing required by the General Permit shall be conducted by a laboratory certified by the Connecticut Department of Public Health (DPH) for the method specified in the permit. The Contractor shall submit copies of the analytical results to the all parties specified in the permit terms and conditions and to the Engineer.

No claim for delay or request for additional time will be considered based upon the Contractor's failure to design a system to meet this performance specification. It is the Contractor's responsibility to properly size the treatment system and temporary containment tanks based on its anticipated flow rates from construction activities and to determine the level of treatment required to meet permit discharge limits.

For sites where the receiving water body does not qualify the site for registration under the CT DEEP General Permit for the Discharge of Groundwater Remediation Wastewater Directly to Surface Water and the discharge is anticipated to continue for 30 days or less, the Contractor may qualify for a CT DEEP Temporary Authorization (TA) to discharge to surface water. The Contractor will be bound to the terms and conditions of the TA the same as if it were a permit. If the Contractor applies for, and receives, a TA from the CT

DEEP, all other requirements of this specification will apply, except that where the specification refers to a permit, the TA will be substituted.

c. Treatment System Operation

The Contractor shall ensure that all personnel involved in the groundwater treatment operations understand the terms of the General Permit. In the event of a conflict between the requirements of this Item and the permit, the more stringent will apply.

The Contractor shall not commence work activities below the groundwater table within the Project limits until such time as:

- i. the temporary groundwater treatment system design is reviewed by the Engineer and comments are adequately addressed,
- ii. the system is installed in accordance with the accepted design and is completely operational, and
- iii. a copy of the Contractor's permit certificate of registration has been submitted to the Engineer.

The Contractor shall take all meter readings required by the permit and forward them to the appropriate parties.

The Contractor shall submit copies of the analytical results and discharge monitoring reports to the appropriate agency(ies) as required by the General Permit terms and conditions. The Contractor shall provide informational copies of all analytical results and discharge monitoring reports to the Engineer as they are generated. In the event of an exceedance, the Contractor shall immediately comply with the "***Duty to Correct, Record, and Report Violations***" section of the General Permit. The Contractor shall provide the Engineer a copy of the required CT DEEP reporting and then document its review of the treatment system and all actions taken to correct the exceedance in writing to the Engineer within 48 hours of receiving laboratory data documenting the exceedance.

If the discharge must be suspended due to an effluent violation, the Contractor shall only restart the discharge after obtaining all necessary approvals from the CT DEEP and in full compliance with the General Permit and any amendments imposed thereto.

No claim for delay, request for additional time, or request for additional design/redesign costs for the system will be considered based upon the Contractor's failure to design/redesign a system to meet this performance specification.

3. Off-Site Treatment and Disposal

At least 14 days prior to any work involving the dewatering of contaminated groundwater, the Contractor shall submit for the Engineer's review and comment its proposed system to collect and contain the contaminated groundwater. This submittal shall include schematics of proposed pump set-ups in excavations; sedimentation control measures; probable location of temporary containment tanks; schematics of proposed method to transfer liquids from temporary containment tanks to transport vehicles; schematic of proposed method to off-load liquids at the off-site permitted treatment/disposal facility; documentation that transport vehicles hold a "Waste Transportation Permit" for contaminated liquids per CGS 22a-454; and the name of the disposal facility from the following list of Department-approved and CT DEEP-permitted treatment facilities for State-regulated liquid disposal:

Clean Harbors of CT
51 Broderick Rd.
Bristol, CT 06010
(860)224-7600

Tradebe Environmental Services, LLC
50 Cross St.
Bridgeport, CT 06610
(203)238-6754

Tradebe Environmental Services, LLC
Gracey Avenue
Meriden, CT 06450
(203)238-6754

All testing required to meet facility acceptance parameters shall be conducted by the Contractor in the presence of the Engineer. The Contractor is hereby notified that laboratory turnaround time is expected to be fifteen (15) working days. The Contractor shall provide informational copies of the laboratory results to the Engineer. **No delay claim will be considered based upon the Contractor's failure to accommodate the laboratory turnaround time as identified above or to design its system with sufficient holding capacity to accommodate this requirement.**

The Contractor shall obtain and complete all paperwork necessary to arrange for disposal of the contaminated groundwater (such as disposal facility waste profile sheets). It is solely the Contractor's responsibility to coordinate the disposal with its selected facility. Upon receipt of the final approval from the facility, the Contractor shall arrange for the loading, transport and disposal in accordance with all Federal and State regulations. **No claim will be considered based on the failure of the Contractor's selected disposal facility(s) to meet the Contractor's production rate or for the Contractor's failure to select sufficient facilities to meet its production rate.**

The Contractor will be responsible for the cleaning of the water treatment system and the disposal of the entire shipment as the Hazardous Waste Generator for water that undergoes a change in waste classification due to the Contractor's work activities or processes (i.e. contaminated groundwater being classified characteristically hazardous for pH due to grouting operations).

Method of Measurement:

Within fourteen (14) calendar days after addressing the Engineer's comments on the proposed system(s) for Handling Contaminated Groundwater, the Contractor shall submit to the Engineer for approval a cost breakdown of its lump sum bid price. The submission must include substantiation showing that the cost breakdown submitted is reasonable based on the Contractor's lump sum bid. The cost breakdown shall be in accordance with the following payment schedule:

- a. The cost to prepare the design for proposed system(s) for Handling Contaminated Groundwater, including preparation and submittal of all permit registration applications, in accordance with these specifications. Design costs shall not exceed 10% of the total cost of the item.
- b. The procurement and installation cost for the proposed system(s) for Handling Contaminated Groundwater in accordance with these specifications. Procurement and installation costs shall not exceed 20% of the total cost of the item.
- c. Equipment decontamination and demobilization and restoration of site. Decontamination and demobilization costs shall not exceed 10% of the total cost of the item.
- d. The remaining costs for operation, monitoring, permit compliance, sampling and analysis, disposal costs, and maintenance of the proposed system(s), including cleaning of the temporary containment tanks of settled solids, replacement of carbon filters, transporting of solids to the WSA, and transportation of the contaminated dewatering wastewater to an off-site permitted treatment/disposal facility in accordance with these specifications shall be divided evenly throughout the duration of the project work involving contaminated groundwater at the discretion of the Engineer.

Increased costs directly related to the Contractor's operation (i.e. treatment or increased charges due to changes in pH or additional contaminants, treatment and disposal of excess water related to process or waste water, etc.) will not be paid under this item but will be considered a part of the Contractor's cost for the item under which the work is being performed.

Basis of Payment:

This work will be paid for at the Contract lump sum price for "Handling Contaminated Groundwater" which price shall include: all work and materials involved with handling contaminated groundwater from within the project limits and shall include all equipment,

materials, tools and labor incidental to removal of the contaminated groundwater from the excavation; conveying contaminated groundwater from the dewatering point to the temporary containment tanks and groundwater treatment facility; treatment; conveying discharge of contaminated wastewater to a sanitary sewer, surface water or off-site disposal at a permitted treatment/disposal facility (including transportation); disposal or recycling of used treatment media (i.e. bag filters and spent carbon); permit applications; disposal and permit fees; POTW fees; electrical costs; sampling and documentation costs; laboratory costs; design and monitoring; mobilization, operation, and maintenance of the system; site work; all required equipment decontamination; transportation of solids to the WSA; and equipment demobilization.

Sedimentation control associated with work under this Item will be paid under the appropriate items of the Contract.

| Pay Item | Pay Unit |
|-----------------------------------|----------|
| Handling Contaminated Groundwater | Lump Sum |

ITEM #0213901A – BALLAST

Description: This item shall consist of furnishing and placing of ballast material necessary for the construction of the track beds or finishing the embankment slopes. The work shall be in conformance with the details shown on the plans or as ordered and in accordance with these provisions.

The Contractor shall perform work in accordance with the applicable recommended practices set forth in the latest version of the AREMA Manual for Railway Engineering and as specified herein.

Materials: Ballast shall be crushed trap rock or granite. It shall be: a) composed of angular fragments which are clear and free from deleterious substances; b) of proper gradation; and c) meet all requirements of this specification. Additionally, ballast shall be in conformance with AREMA Chapter 1 Part 2 (latest edition) except as specified herein.

Gradation: Ballast shall conform to the following scale when tested with laboratory sieves having square openings. (Sieves must conform to current ASTM Specifications for Woven Wire Test Sieve Cloth and Test Sieves, Designation E 11):

| <u>Size No.</u> | <u>Ballast Type</u> | <u>Amounts Finer Than Each Sieve</u> (Sq. Opening Laboratory Sieve-Pct. By Wgt.) | | | | | | |
|-----------------|---------------------|---|----------------|--------------|--------------|--------------|--------------|-----------|
| | | <u>2 in.</u> | <u>1 ½ in.</u> | <u>1 in.</u> | <u>¾ in.</u> | <u>½ in.</u> | <u>⅜ in.</u> | <u>#4</u> |
| 4 | A | 100 | 90-100 | 20-55 | 0-15 | - | 0-5 | - |
| 5 | A | - | 100 | 90-100 | 40-75 | 15-35 | 0-15 | 0-5 |

Note: Size No. 4 ballast to be supplied for track and No. 5 ballast for yards.

Ballast Quality Requirements:

- Deleterious substances in ballast shall not be present in excess of the following amounts:

| <u>Description</u> | <u>Percent by Weight</u> | <u>Method of Test</u> |
|-----------------------------------|--------------------------|-----------------------|
| Material finer than no. 200 Sieve | 1.0 percent | ASTM C117 |
| Clay lumps and friable pieces | 0.5 percent | ASTM C142 |

- Hardness:

Hardness shall be between 5.5 and 7.0 on Moh Hardness scale.

3. Absorption:

Water absorption shall not exceed 1.0% of total weight when tested in accordance with ASTM C127.

4. Bulk Specific Gravity:

Bulk specific gravity tested in accordance with ASTM C127 shall be a minimum of 2.60.

5. Shape:

The percentage by weight of flat and/or elongated particles permitted in the ballast shall not exceed 5% when visually inspected. Flat or elongated particles are defined as particles whose ratio of longest dimension to least dimension exceeds 5.

6. Chemical Analysis:

Type A ballast chemical analysis shall reveal quantitatively that at least 70% of test sample is composed of silicon dioxide, aluminum oxide, and iron oxide, but that not more than 25% of test sample is comprised of magnesium oxide, magnesium carbonate and calcium carbonate.

7. Los Angeles Abrasion:

The percent of wear as tested in accordance with ASTM C535, grading No. 2 shall not exceed 18%.

8. Cementing Value:

When LA abrasion is in excess of 13.0% wear, cementing value in pounds per square inch shall not exceed 375.

9. Sodium Sulphate Soundness:

Soundness of the prepared ballast shall be such that when tested in the sodium sulphate soundness test in accordance with ASTM C88, the loss shall not exceed 5 percent after 5 cycles.

10. Impedance:

Impedance must be in excess of 2.6K ohms.

11. Testing:

The quality of stone for ballast from any quarry or new strata opened up, including its soundness, resistance to abrasion, chemical composition, absorption, impedance, hardness and weight per cubic foot, shall be determined, prior to its acceptance, at an independent testing laboratory selected by the purchaser. Each stratum or portion of quarry containing a variation of quality of stone shall be tested separately and not averaged. Quality tests and gradation tests shall subsequently be made from time to time as deemed necessary by the purchaser to control the quality and size of ballast furnished by the producer.

Sufficient visual observations, determinations of deleterious substances and analyses of gradation shall be made by the producer prior to shipment to assure compliance with these specifications.

The Contractor shall provide certified results of tests required by specifications. The Engineer reserves the right to witness the performance of tests. If the Contractor desires to use its own testing facilities to make the aforementioned tests, the Engineer's concurrence must be received.

12. Method of Testing:

- a. Field samples shall be secured in accordance with ASTM Method of Sampling, designation D75. Test samples shall be reduced from field samples by means of ASTM 702.
- b. The Sieve Analysis shall be made in accordance with the Method of Tests for Sieve Analysis of Fine and Course Aggregates (ASTM Designation C136).
- c. Los Angeles Abrasion Loss shall be treated in accordance with Method of Test for Resistance to Large Size Aggregate by use of the Los Angeles Machine (ASTM Designation C535); grading No. 2.
- d. Soundness shall be treated in accordance with the current Method of Test for Soundness of Aggregate by use of Sodium Sulphate (ASTM Designation C 88).
- e. Cementing Values shall be tested in accordance with the Logan Walter Page Method (U.S. Dept. of Agriculture, Bulletin No. 347, 1916, Page 15) except as modified as follows:
 1. 500 grams (1.1 pounds) of fines developed from the Los Angeles Abrasion Test (ASTM C-535) that has been screened through a 100 mesh sieve, mixed with sufficient water, kneaded for five minutes and allowed to stand in an air-tight container for two hours, thereby forming a stiff dough that is

to be molded into cylindrical briquettes 2.54 cm (1 in.) diameter by 2.54 cm. (1in.) in height under pressure of 132 kgs. per sq. cm (1877.5 pounds per square inch), after which they are dried for 20 hours in air at room temperature, 4 hours in a hot air bath at a temperature of 100°C (212°F), then cooled for 20 minutes in a desiccator, and immediately tested in a compression testing machine for static crushing strength, the bearing heads being suspended by pivots to secure uniform distribution of load which is applied at 2.7kN (600 pounds) per minute, approximately.

2. The average crushing strength in pounds per square inch of 5 specimens measures the cementing value of this stone.

13. Contractor Certification:

The Contractor shall certify that ballast delivered to the site is typical of that upon which specified tests have been made.

Construction Methods:

Existing ballast shall be cleaned and reused wherever possible, provided that reused ballast shall conform to this specification in all respects.

1. Submittals: Submit name and location of proposed ballast supplier. Submit the type and specifications of equipment to be used in placing and compacting ballast. All submittals will be reviewed for general conformance with the intent of the contract documents. This review will not relieve the Contractor of final responsibility for the means, methods, procedures, and sequences to be utilized.
2. Cleaning: The Contractor shall be responsible for assuring ballast cleanliness. A suitable washing facility shall be provided at the quarry for this purpose. This facility shall consist of a high pressure spray over the ballast as it passes on the belt. A quality control plan along with washing procedures must be submitted with the Contractor's quotation. These will be subject to approval by the Engineer.
3. Handling: Prepared ballast shall be handled in such a manner that it is kept clean and free from segregation. It shall be loaded only into rail cars or trucks which are in good order, tight enough to prevent leakage and waste of material, and clean and free from rubbish or any substance which would foul the ballast.
4. Quality Control: Ballast Production Site Testing: Notify the Engineer, no less than 30 days prior to shipment of any ballast to work site, of the proposed source and location of crushed stone ballast. The Engineer shall obtain samples of proposed material and test them for conformance to classification, quality and grading requirements specified.

5. Samples: The selection of samples is as important as the laboratory testing, and care must be taken that the samples obtained show the true nature and conditions of the material to be examined.

Samples of all ballast and samples of stone at quarries for testing to determine the acceptability of the source, as well as samples for quality control, shall be selected by a representative of the purchaser. The owner of the quarry or producer may submit samples for inspection of preliminary testing if such action is approved by the Engineer.

Samples of the finished product for gradation and other required tests shall be taken from each 1,000 tons of prepared ballast unless otherwise ordered by the Engineer. Samples shall be representative (full belt) and shall weigh not less than 100 pounds. Where the acceptability of stone from a quarry is to be determined, a 150 pound sample consisting of pieces approximately 6 x 6 x 4 inches should also be furnished. Methods of sampling shall be furnished to the Engineer for approval.

The Engineer will notify the Contractor of test results. If ballast fails to meet these specifications, ballast quarry will be rejected.

Ballast material shall be approved in writing by the Engineer prior to commencing work site delivery.

If, during ballast installation, the source of ballast changes, the Engineer will perform tests at the new production site in accordance with these Specifications. Ballast shall have the same or higher classification, quality and grading as the former ballast used. Work site delivery shall not commence until the Engineer has approved the new ballast source in writing.

6. Ballast Job-Site Testing: Periodically during progress of track construction, the Engineer will test samples of ballast obtained from in-place locations designated by the Engineer to insure a uniform quality of ballast.

If material prior to, during, or after being loaded, does not conform to specifications, the Engineer shall notify Contractor to stop operations until all faults have been corrected. Disposal and/or removal of defective material shall be done at no additional cost.

As it is impractical to inspect all ballast at the quarry, the Engineer reserves the right to reject any car or truck of ballast (whether previously inspected or not) that does not conform to specifications upon arrival at unloading site.

No ballast shall be unloaded unless it has been approved by the Engineer.

Should ballast that does not meet specifications be unloaded prior to the Engineer's approval, then payment will not be made to Contractor. Contractor must remove all defective material from site at no additional cost.

Defective material arriving at site for unloading shall be rejected by the Engineer and disposed of at expense (including all freight, trucking and switching costs) of Contractor.

7. Ballast Placement:

- a. Clean the trackway or embankment slope area of all debris and standing water prior to placing of ballast. Do not place ballast on frozen sub-grade or sub-ballast.
- b. Check grade lines and cross section of sub-ballast or finished sub-grade prior to placing ballast. Bring sub-grade to proper elevation as shown on Contract Drawings.
- c. Deliver ballast at a rate no faster than can be satisfactorily incorporated into the work, and at such times as to permit proper inspection by the Engineer.
- d. To the extent practicable, unload ballast in position for use with a minimum of redistribution.
- e. Place ballast in multiple layers not exceeding 4 inches in thickness each.
- f. Self-spreading vehicles may be used as approved by the Engineer. When stone is initially spread by self-spreading vehicle, a power grader may be used to assist spreading operations.
- g. Thoroughly compact ballast until stones are firmly interlocked and the surface is true and unyielding. For restoration of eroded areas on existing embankment slopes, place ballast using an excavator bucket or similar and compact the ballast using the equipment bucket to achieve firm interlock of the material. For trackway placement compact each lift with not less than four passes of a roller or a vibratory compactor subject to the following requirements:
 1. Compact by rolling using either a self-propelled three-wheel, two-axle roller of such weight that will provide compression under the rear wheels of not less than 350 pounds per linear inch of tread; or using a two- or three-wheel tandem roller having a weight per meter of drive roll of not less than 350 pounds, and every part of the surface receiving compression from the drive wheels.
 2. Compact by vibrating using vibration compactors of either the roller or pad type. Dynamic force for either type shall not be less than 20,000 pounds and the frequency range shall be 1100 to 1500 vpm. Use machines equipped with a governor which can be set and locked to control rate of impulse. Provide a tachometer or other suitable device for accurately checking the frequency of vibration during the compacting operation.

- h. Top surface of initial layers of ballast shall be smooth, flat and uniformly compacted.

8. Temporary Ballast Stockpiles

The Contractor shall provide a 5 cubic yard stockpile of ballast at each bridge/culvert construction site or as directed by the Engineer. The location of the stockpile shall be proposed by the Contractor and is subject to approval of the Engineer. The Contractor shall use ballast from the stockpile to replace ballast in areas of subsidence as directed by the Engineer. Areas of potential subsidence include but are not limited to the following: areas adjacent to cross ties; and areas adjacent to excavation activities.

Method of Measurement:

This work will be measured for payment by the number of cubic yards of ballast furnished, placed, compacted, and accepted in place. Ballast for the temporary stockpiles at the structure sites shall be measured for payment at the time the material is furnished. Excess stockpile material remaining at the completion of site construction shall be removed from the site by the Contractor or placed at a location acceptable to the Engineer.

Basis of Payment:

Payment for this work will be made at the contract unit price per cubic yard for “Ballast” complete in place, which price shall include all testing, material, equipment, tools, labor and work incidental thereto.

Pay Item

Ballast

Pay Unit

C.Y.

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-General Composition of Concrete Mixes, 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.01.01.

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.

ITEM #0686011.48A – JACKING 48” R.C. PIPE (CLASS V) – 0’ – 20’ DEEP

Description: Work under this item will consist of furnishing and installing twin 48-inch Reinforced Concrete Pipes - Class V, by jacking, as shown on the plans and in conformity with these Special Provisions. Work under this item also includes the design, construction and removal of the jacking pit, reaction wall, and the receiving pit. Work under this item also consists of contact grouting of the pipe, and any soil stabilization ahead of the pipe jacking. All submittals that are required under this Special Provision are part of the work.

All work shall be performed in accordance with all local, state and federal regulations. In addition, work shall be performed in accordance with the current American Railway Engineering and Maintenance-of-Way Association’s (AREMA) Manual for Railway Engineering, Chapter 1, Section 4.15, “Earth Boring and Jacking Culvert Pipe Through Fills”. The Contractor shall be solely responsible for all damages resulting from ground movement associated with pipe jacking or the associated construction.

Monitoring for settlement of the tracks and movement of adjacent structures shall be performed in accordance with the Item “Settlement Monitoring Program” as supplemented herein.

Materials:

Pipe: The pipe shall conform to the requirements of Article M.08.01-7 of the Standard Specifications, amended as follows. The pipe shall conform to the current requirements of ASTM C76 (AASHTO M 170), Class V, Wall C with joints sealed with continuous rubber ring gaskets. Outside pipe walls shall be straight. The pipe sections shall have grout holes, tapped for no smaller than 1.5-inch pipe, cast into the pipe during manufacture. Maximum spacing of contact grout holes shall not exceed ten (10) feet from center to center, with a minimum of one set of grout holes per pipe segment. Grout holes shall be installed in sets of three at the 12 o'clock, 4 o'clock, and 8 o'clock positions. Grout fittings and plugs shall meet the requirements of ASTM A53, Type E or S, Grade B. Plugs shall be recessed to maintain a smooth interior pipe surface.

Concrete pipe joints shall be sealed with rubber gaskets. The design of the joints and the physical requirements for rubber gaskets shall meet the requirements of ASTM C443. Joints shall be capable of being sealed so as to remain tight under all conditions of service. Details of joint formation shall follow the recommendations of the manufacturers of the joint material and of the pipe.

Concrete pipe shall be manufactured with tongue and groove joints which provide a smooth outside surface. The joint shall be detailed to be compatible with the Contractor’s jacking procedure to resist the axial forces imposed by jacking without damaging the pipe.

No pipe shall be ordered until written approval of the pipe submittal is received from the Engineer.

Contact Grout: The Contractor shall submit the grout mix proposed to completely fill the voids outside the pipe. All grout mix proportions shall be subject to review and acceptance by the Engineer.

Construction Methods:

Submittals: Prior to the start of this work, the Contractor shall submit his Work Plan, Working Drawings, Calculations, and Contingency Plan in accordance with Article 1.05.02 of the Standard Specifications, Form 817. All work plans, working drawings, and calculations shall be signed and stamped by an Engineer licensed in the State of Connecticut.

1. Qualifications

The Contractor shall submit written documentation as supporting evidence of the qualifications of the Subcontractor, hereinafter referred to as the Contractor, responsible for the pipe jacking, of the superintendent, and of the site safety representative. The documentation shall include descriptions of at least three similar pipe jacking installations performed by the Contractor within the last five years, along with project owner contact information. The documentation shall also include a list of all similar projects performed by the Contractor within the last five years for Connecticut municipalities or the Connecticut Department of Transportation. The jacking superintendent shall have at least five years' experience involving jacking construction. The Contractor's operator(s) shall have technical training in the operation of the proposed equipment and shall have completed at least two pipe jacking projects.

The jacking and receiving pits excavation support shall be designed by a Professional Engineer registered in the state of Connecticut.

Name and qualifications of personnel to be used for instrument installation. The qualifications shall show that the personnel have a minimum two years' experience in the installation of geotechnical instrumentation similar to that specified herein. The surveyor for monitoring surface control points shall be a land surveyor licensed in the state of Connecticut with previous experience surveying for the detection of surface deformations.

2. Work Plan and Working Drawings:

A) Pipe Jacking: A detailed, description of the pipe-jacking equipment and procedures to be employed, including:

- 1) Methods for steering and for monitoring line and grade.
- 2) Manufacturer's literature describing details of the proposed jacking system.
- 3) Description of method and capabilities for controlling ground conditions at the tunnel heading and for controlling ground loss.

- 4) Estimation of the maximum jacking force required to complete the pipe installation.
- 5) Dimensions, strength, joint details and manufacturer's details of the pipe to be used.
- 6) Details for cushioning the pipe joints during jacking.
- 7) Drawings, and details for the pipe jacking shield or tunnel machine, including details of cutterhead, jacking propulsion system, safety systems, face support capabilities, and steering jack provisions for making line and grade corrections.
- 8) Details for supporting the face during tunneling and while tunneling operations are interrupted.
- 9) Manufacturer's product information, cutterhead design details, working arrangement drawings, specifications, and operating procedures.
- 10) Drawings and details showing excavation and mucking systems.
- 11) The machine manufacturer shall provide a written guarantee that the machine is capable of withstanding the anticipated loads and ground conditions. If the Contractor provides a shield that they have designed and built, then a Professional Engineer registered in the State of Connecticut shall review the design and certify that it is capable of withstanding the anticipated loads and ground conditions.
- 12) Arrangement and position of main jacks, thrust ring, jacking controls, and pressure gages.
- 13) Thrust block and jacking frame design and details, including reaction transfer calculations.
- 14) Details of pipe lubrication system and description of pipe lubricants to be used during pipe jacking, including manufacturer's literature.
- 15) Details of water control plan including temporary dewatering provisions, details for the control, treatment, and disposal of groundwater and construction water in compliance with local, state, and federal requirements.
- 16) Shop drawings of pipe material, joints, contact grout fittings and plugs, cushion materials, and fabrication tolerances.
- 17) Details of any Soil Stabilization work required in association with the jacking procedure.

B) Jacking and Receiving Pits

- 1) Design and geometry of jacking pit excavation and support system, including details such as launching seals. The Contractor shall have sole responsibility for sizing the pit excavations, except where maximum sizing limits based on environmental constraints are noted on the Drawings. The size of the pits shall be adequate to construct all structures indicated and allow room for jacking pipe, equipment, and operations. The jacking pit and receiving pit walls shall be located as shown on the Drawings. The excavation support walls located closest to the railroad tracks shall be designed such that they do not move laterally more than one (1) inch during construction. The Contractor shall locate the jacking and receiving pits at the locations required to construct the pipeline between the stations indicated on the Drawings.
- 2) The portion of jacking and receiving pit walls located beneath the restricted excavation line, defined as 1V:2H lines sloped outward and downward from the track shoulder

as shown on the drawings, shall be cut off and left in place. The exception to this requirement is when finished grade is less than 2' above the restricted excavation line, in which case the portion of walls more than 2' below finished grade shall be cut off and left in place.

3) Drawings indicating arrangement of supports and construction sequence for proposed support system(s). Show the elevation of struts, braces, or other supports as related to the depth of the excavation. Indicate sizes, shapes, and material specifications for all support elements, including lagging, if used.

4) Design of jacking and receiving pit walls for the pipe culvert shall be designed for all loads including railroad surcharge loads (including Cooper E80 train loading).

C) Contact Grouting

1) Work Plan indicating contact grouting details, specifications of equipment, grouting procedures, sequences and injection pressures, monitoring and recording equipment, pressure gauge calibration data, methods of controlling grout pressure, method of transporting grouting equipment and materials within the pipe.

2) Details of grout mixes including proportions, admixtures, manufacturer's literature, and laboratory test data verifying the strength of the proposed contact grout.

3) Grouting Spoil Disposal Plan describing contact grouting spoil handling and disposal procedures. No grouting spoils of any kind shall be allowed to enter the drainage system. Removal and disposal is the responsibility of the Contractor and shall be performed using Best Management Practices and in accordance with applicable local, state, and federal regulations.

3. Calculations:

A) Pipe Jacking

1) Design calculations demonstrating that the pipe is capable of sustaining the maximum stresses to be imposed during jacking. The calculations shall consider maximum ground loads, live loads, jacking forces, eccentric forces due to steering and other loads that may be reasonably anticipated. Loads shall be shown and described. A minimum factor of safety of 3.0 shall be used.

2) Calculations demonstrating that the materials behind the thrust block will sustain the maximum planned forces developed by the main jacks.

3) When computer calculations are included with design calculations, the following documentations shall be furnished as a minimum:

--A synopsis of the computer program(s) stating briefly required input, method of solution, approximations used, second order analysis incorporated, specifications or codes used, cases considered, output generated, extent of previous usage or certification of program(s) and program(s) author.

--Identification by number, indexing and cross referencing of all calculation sheets, including supplemental "long-hand" calculation sheets.

--Fully identified, dimensioned, and annotated diagram of each member of structure being considered.

--Clear identification and printing of all input and output values, including intermediate values if such values are necessary for orderly review.

--Identification of the processing unit, input/output devices, storage requirements, etc., if such supplemental information is significant and necessary for evaluation of the submittal.

B) Jacking and Receiving Pits

1) Design calculations demonstrating that the pit excavation support systems and working slabs are able to withstand earth pressures, hydrostatic pressures, bottom heave, equipment load, live loads, and other surcharge loads. Acceptable excavation support methods include the use of steel plates with steel rib supports, sheet piling and bracing, soldier piles and lagging, or other methods approved by the Engineer. Predrilled holes may be required to provide sufficient toe embedment for the lateral support system.

2) Design calculations demonstrating that each member or support element can support the maximum loads that can occur during construction with appropriate safety factors.

3) Design calculations demonstrating that the support system minimizes horizontal and vertical movements to protect adjacent structures/utilities from damage. Design support system to maintain the stability of the excavation against sliding or bottom heave. Employ wales, struts, and beams for bracing and lateral support as required for the excavation faces supported by soldier piles and lagging, liner plate, or sheeting systems. Provide struts with intermediate vertical and horizontal supports as required to prevent buckling. Provide timber lagging, precast concrete lagging, liner plates, or steel plates as required to retain soil between supports.

4) Design of a suitable groundwater control system for each pit excavation that extends below the groundwater level. System shall control groundwater inflows, drain the excavation, prevent piping or loss of ground, and maintain stability of excavations.

5) Design of a working slab for each pit bottom to provide stable support for construction operations and to resist hydrostatic uplift.

6) Design of break out framing and suitable launching seals, ground improvement and/or ground treatment provisions (if required as dictated by actual field conditions encountered), to maintain excavation support and to prevent groundwater inflow or loss of ground when breaking out or into pit excavations. Breakout plans shall indicate support installed and ground stabilization or treatment measures implemented to maintain excavation support and stability when breaking out of jacking pit and when holing through into receiving pit. Provide details of launching seals and ground improvement provisions to control groundwater inflows and minimize loss of ground when breaking into or out of pit excavations.

4. Schedule:

A schedule for pipe jacking identifying all major construction activities as independent items shall be provided by the Contractor. The schedule shall include as a minimum the following activities: mobilization, groundwater control at jacking and receiving pits; pit excavation and sequence of installation for temporary excavation support; jacking equipment setup; pipe

installation for each drive; contact grouting of pipe; site restoration and cleanup; and demobilization. The schedule shall also include the working hours for each activity, and a written description of the construction methods and equipment to be employed in completing each of the work activities shown on the schedule.

Reports and Records: Reports and records shall include:

- 1) Survey notes, records, and shift reports indicating thrust force, rate of advance, and line and grade deviation.
- 2) Monitoring data of horizontal deflections and vertical settlement of excavation supports.
- 3) Daily logs of grouting operations, including time of pumping, hole locations, pressures, volumes, and grout mix pumped.
- 4) The Contractor shall submit field notes and daily logs upon completion of the shift. Other reports and records shall be submitted no later than 8 hours after the shift to which they apply unless a longer time period is approved in writing by the Engineer.

5. Contingency Plan:

The Contractor shall submit a plan indicating what the Contractor will do if settlement or heave greater than the allowable movement is measured or observed as addressed in the item "Settlement Monitoring Program". The plan shall include methods and procedures for ground improvement (if required), leveling the track bed below the railroad tracks if excessive settlement occurs, and procedures for contacting the Engineer, and other items. If required, ground improvement methods would require evaluation of subsurface conditions encountered during construction and approval by the Engineer. The Contractor shall also submit a work stoppage plan that outlines all requirements for stabilizing the work site during active jacking in the event that the Contractor is not able to continue advancing the pipe for any reason. This plan shall include details for securing the lead end of the pipe and any standby equipment required for the work stoppage.

Equipment:

Pipe Jacking Shield: The machine or shield used for pipe jacking shall be designed to sustain any ground loads which may be imposed upon it as well as any loads imposed by the thrust jacks, and steering mechanisms. The machine shall be capable of being controlled to the desired line and grade within the specified tolerances. The machine shall have a cutterhead or employ other excavation methods capable of excavating both natural soil and boulders, and improved ground material (if required to be in-place). Use of a roadhead or an electric excavator mounted inside of an open face shield is also acceptable. The machine shall also satisfy the following requirements:

- 1) The machine shall be capable of advancing through the geologic conditions described in the subsurface data provided. The machine shall also be capable of excavating,

handling, and removing improved ground (if required prior to pipe jacking) of whatever strength and consistency.

2) The shield or tunneling machine shall be designed to minimize the loss of ground ahead of, and around the shield.

3) The machine shall be steerable in both vertical and horizontal directions to maintain line and grade within the specified tolerances. Provide steering jacks as required to correct line and grade deviations during jacking. If a rotary-type cutterhead is used, the cutterhead shall have a reversible drive system so that it can rotate in either direction to minimize rotation or roll of the pipe during installation.

4) The machine shall be equipped with suitable safety systems in accordance with applicable OSHA requirements for underground construction equipment.

5) The tail of the machine shall have gaskets to prevent material from moving into the tunnel through the joint between the tail skin and the pipe.

6) The jacking system shall be capable of continuously monitoring the jacking pressure, the rate of advancement, and the distance jacked. The jacking system shall develop a uniform distribution of jacking forces on the end of the pipe.

Contact Grouting: Equipment for mixing and injecting grout shall be adequate to satisfactorily mix and agitate the grout and force it into the grout holes, in a continuous flow at the desired pressure, Grout injection shall be performed with a progressing helical cavity type pump capable of continuously developing a uniform pressure of 14.5 psi at the grout hole connection with minimum pulsation.

Two pressure gauges shall be provided, one at the grout pump and one at the collar of each hole being grouted. The accuracy of the gauges shall be checked at least weekly with an accurately calibrated "test gauge". The "test gauge" shall not be used for actual grouting. The "test gage" shall "be stored on site in the Contractor's office. An adequate supply of spare pressure gauges shall be available on site at all times.

Suitable stop valves shall be provided at the collar of each hole for use in maintaining pressure as required until the grout has set.

The grouting equipment shall be provided with a flow meter to determine the volume of grout injected. The meter shall be calibrated in gallons to the nearest one-tenth of a gallon. The grouting equipment shall be maintained in satisfactory operating condition through the course of the work to ensure continuous and efficient performance during grouting operations.

Grout hoses shall have an inside diameter not less than 1.5-inch nor greater than 2.5-inch and shall be capable of withstanding the maximum water and grout pressures to be used.

Instrumentation: Instrumentation equipment not installed in the ground shall remain the property of the Contractor following completion of the work.

1) Surface Control Points

Surface control points shall be established as shown on the Drawings and described herein.

In paved areas, use inscribed marking or approved surveyor's nail (PK) driven flush with the surface of paved areas.

In non-paved areas, surface control points shall be established by driving a 3" by 3" by 2' (approximate dimensions) long timber stake flush with the ground. Each control point shall have a tag or marking indicating the pipeline station and offset from proposed pipe centerline.

Surface control points (settlement monitoring points) shall be established for each track at the intersection with the pipe culvert centerline (four points), and three additional locations on each side of the culvert at approximately 10' intervals (twenty four more points), as shown on the drawings. Settlement monitoring points for railroad tracks shall be mounted to steel rods driven into the ballast between cross ties or painted or similarly marked locations on the rail that adequately identify the monitoring point to allow for consistency in monitoring of the point using survey equipment and operators positioned without fouling a track. No markings shall be made on any part of the rail without approval of the Engineer.

Surface control points shall be established with a paint mark along the top of the jacking and receiving pit walls located closest to the Railroad (three control points per closest jacking and receiving pit wall). The purpose of these points is to measure horizontal movement of the wall.

2) Intermediate Control Points

Intermediate control points shall be established at the junction of each track centerline and the centerline of the proposed pipes as shown in the Drawings for a total of eight points.

The intermediate control points shall be established as shown on the Drawings by drilling a 3-inch diameter hole to within 5 feet of the proposed crown and installing a #8 rebar. The rebar shall be driven 1 foot below the bottom of casing into undisturbed soil. The remainder of the hole shall be cased with PVC pipe up to the ground surface. At least one centralizer shall be placed in the pipe.

Installation

Pipe Jacking The pipes to be installed under the railway embankment shall be placed to the line and grade shown on the Drawings, using a jacking method. Jacking shall not begin until the following conditions have been met:

- 1) Required submittals have been made and the Engineer has completed review of all submittals.
- 2) Jacking pit excavation has been completed and supported in accordance with submitted Contractor design.
- 3) Pre-job safety conference has been conducted in accordance with OSHA requirements. Arrange this conference and inform the Engineer of the time and place of the conference not less than three working days in advance.
- 4) The Contractor's site safety representative shall prepare a code of safe practices and an emergency plan in accordance with OSHA requirements. Provide the Engineer with a copy of each prior to starting pipe jacking.

5) All Railroad requirements have been satisfied and copies provided to the Engineer.

Pipe installation shall be completed in accordance with the approved submittals. The pipe shall be installed between the limits indicated on the Drawings to the specified line and grade, utilizing methods that include due regard for the safety of workers, adjacent structures, utilities, and the public. Any damage shall be immediately repaired to the satisfaction of the agency or utility having jurisdiction, at no additional cost to the Department.

Adequate control of the elevation and direction of the pipe shall be provided by means of a device that can alter the direction of the pipeline heading. This device shall adequately alter the direction of the leading section or shield when measurements made during the jacking operations show that the pipe or shield is drifting off the required line and/or grade.

Soil stabilization shall be performed in advance of the jacking operation as required to stabilize the soils, control water, prevent loss of material and prevent settlement or displacement of embankment.

The materials to be used and the method of injection shall be prepared by a Registered Professional Soils Engineer, or by an experienced and qualified company specializing in this work and submitted for approval to the Engineer before the start of work. Proof of experience and competency shall accompany the submission.

The following conditions shall be met by the Contractor:

1) Unless otherwise approved by the Engineer, pipe jacking shall be conducted continuously, on a 24 hour basis until the leading edge is beyond the limits of live load influence. Monitoring shall be performed during all pipe jacking work. At any interruption of the jacking operation, the heading shall be completely bulk-headed to the satisfaction of the Engineer as well as any other requirements of the work stoppage contingency plan.

2) The contractor shall comply with all Railroad requirements and regulations including but not limited to:

--Participation and proof of completion in a current Metro-North on-line safety orientation class of all persons entering Railroad property.

--Railroad safety rules.

--Drainage, water discharge, grouting spoils and tunneling spoils disposal. The contractor shall also comply with sedimentation control requirements shown on the drawings and contained in the project permit.

--The presence of any Railroad personnel required during construction such as Flagmen/Groundmen or engineers.

Each pipe section shall be jacked as the excavation progresses in such a way that leaves no length unsupported unless approved otherwise by the Engineer. Pipes shall be jacked into place without damaging the pipe or the interior lining. In the event a section of pipe is damaged

during the jacking operation, the pipe shall be jacked through to the receiving pit and removed. Other methods of repairing the damaged pipe may be used, subject to approval by the Engineer.

A lubrication system using bentonite and/or polymers shall be provided as necessary to minimize pipe friction.

The axial forces from the thrust jacks shall be distributed to the pipe uniformly through a ring of cushion material to prevent damage to the ends of the pipe. The cushioning material shall prevent contact between joint surfaces.

At a minimum, the thrust force, rate of advance, distance along the drive, deviation from line and grade, and steering jack adjustments shall be monitored and recorded within the first 12 inches and within the last 12 inches of each pipe segment installed.

The thrust block shall be properly designed and constructed to provide the required resistance to the forces developed by the main jacks. The thrust block shall be constructed normal to the pipe alignment and designed to support the maximum obtainable jacking pressure developed by the main jacking system.

Where boulders or other large obstructions are encountered which prevent the advancement of the pipe while it is being jacked, such obstructions shall be cut or otherwise broken off to the plane of the outer surface of the pipe. When such cutting or breaking off of the obstruction is not practicable, the obstruction may be completely removed by such methods as proposed by the Contractor and approved by the Engineer.

Blasting under this item will not be allowed for any purpose.

The Contractor shall not use water to aid in loosening the material, including large obstructions ahead of the pipe, to aid in removing material away from the front end of the pipe, nor for any other purpose in connection with the pipe installation.

The use of open trench method of excavation within the limits for jacking shown on the Drawings will not be permitted.

Where voids are unavoidably created outside the pipe during the advancement of the pipe or due to removal of material at the front of the pipe, such voids shall be immediately filled with damp sand, damp sand-clay or other suitable material, rammed into place.

The jacking pit, receiving pit, and the pipe shall be kept relatively dry during the progress of the jacking work.

Adequate provisions shall be made to assure that no voids will be left outside the pipe during the jacking work or after the work has been completed. Immediately upon completion of the jacking operation the pipeline shall be contact grouted. The grout holes shall subsequently be cleaned and suitably plugged.

The Contractor shall control settlement or heave above the pipeline so that the following limit is not exceeded:

Existing railroad tracks: 0.25-inch horizontal or vertical

Monitoring shall be in accordance with the item "Settlement Monitoring Program" supplemented with additional requirements herein. If the above settlement or heave limit is exceeded, pipe jacking shall stop, the face of pipe jacking shall be bulk-headed, Metro-North and the Engineer shall be notified and a meeting held to review the Contractor's contingency plan (required by this Specification) and actions to be taken by the Contractor. The contingency plan shall then be implemented, with any necessary modifications required by Metro-North and the Engineer, at no additional cost to the Owner.

Control of Line and Grade The Contractor shall use local benchmarks to furnish and maintain all reference lines and grades for the pipe installation. The Contractor shall also use these lines and grades to establish the exact location of the pipe using a laser guidance system on the tunneling machine.

The Contractor shall submit to the Engineer copies of field notes used to establish all lines and grades and provide 24 hours advance notice to allow the Engineer to check laser set up prior to beginning pipe jacking. The Contractor shall be fully responsible for the accuracy of the work and any corrections, if required. The Contractor shall use an acceptable laser system to monitor line and grade continuously during pipe jacking operations. Laser supports shall be independent of working slab, jacking frame and thrust block to avoid movement of the laser during jacking. The Contractor shall stop pipe jacking operations and reset laser immediately if movement of laser occurs during the Work. The Contractor shall monitor line and grade continuously during pipe jacking operations and record deviation with respect to design line and grade at least once per 5 feet and submit records to the Construction Manager as requested. The Contractor shall control line and grade of the pipe to within the following specified tolerances:

Design line: 4 inches

Design grade: 2 inches

When the excavation is off line or grade, make the necessary corrections, and return to the plan alignment at a rate of not more than 1-inch per 25 feet.

If the pipe installation exceeds the specified tolerances, correct the installation; all corrective work shall be performed at no additional cost to the Owner, and is subject to the approval of the Engineer.

Once per shift, the line and grade shall be checked by the Contractor's surveyor. Provide the Engineer with equipment to check the line and grade, as requested. Said checking shall not substitute for the Contractor's own line and grade control responsibilities.

Temporary Excavation Support at Jacking and Receiving Pits Jacking and receiving pits shall be located according to the Contractor's design submittal unless otherwise approved by the Engineer. Location of the excavation supports shall be within 4 inches of those shown on the submitted working drawings.

Install excavation support in accordance with submittals that have been reviewed and accepted by the Engineer. The Contractor shall not proceed with excavation to the next level until bracing has been installed and tightly blocked or shimmed to provide proper support of the excavation. If, in the opinion of the Engineer, support deflections indicate that the support system requires modification to prevent movements exceeding allowable, the Contractor shall submit a redesign and revised Working Drawings and calculations to the Engineer at no additional cost to the Department.

Perform all excavation regardless of the type or nature or conditions of the material encountered at no additional cost to the State. Method of excavation used is optional. Use hand methods for excavation that cannot be accomplished with mechanical excavation equipment without endangering existing or new structures or other facilities.

The temporary excavation support walls located closest to the railroad embankment shall not move laterally more than one (1) inch. Surface control points established at the top of each jacking and receiving pit wall located closest to the Railroad shall be used to monitor lateral movement of temporary excavation support walls. Monitoring of these surface control points shall be made at the same frequency and to the same precision as all settlement monitoring points as required in the Item "Settlement Monitoring Program" and as supplemented herein.

Contact Grouting Contact grouting shall commence immediately, not to exceed 2 hours, following completion of pipe jacking. Contact grout shall be used to fill any voids outside the pipe. An attempt shall be made to hook up and pump grout at every port coupling unless variance is granted by the Engineer.

All material should be free of lumps when put into the mixer and grout mix shall be constantly agitated. Grout shall flow unimpeded and shall completely fill voids. Grout not injected after 90 minutes of mixing shall be discarded.

The locations of contact grout holes in the pipe are specified herein. Drilling grout holes through the pipe will not be permitted.

The grouting process shall be operated and controlled so that the grout will be delivered uniformly and steadily.

Grouting shall generally progress sequentially in an upgrade direction from one grout hole to the next grout hole in the sequence indicated in the approved submittals.

Inject grout through grout fittings to completely fill all voids outside the pipe. Grout pressure shall be controlled to avoid damage to the pipe. Remove plugs and clean out adjacent

grout ports and install a valve to check for communication. Leave valves open and inject grout until communication is observed, then close valves until grout has set.

The sustained grouting pressure shall not exceed 14 psi at the grout hole collar connection unless approved otherwise by the Engineer.

All grouting operations are to be performed in the presence of the Engineer, Notify the Engineer at least 24 hours in advance of starting contact grouting operations.

No drilling or grouting spoils, runoff, or sediment of any kind shall be allowed to enter the drainage system. The Contractor shall provide for adequate disposal of all waste and wastewater from pipe grouting work and remove and properly dispose of all waste grout resulting from grouting operations in accordance with sediment and erosion control requirements shown on the Drawings and contained in the project permit, and with any applicable local, state, Railroad, and federal regulations. Grout spills shall be minimized and all cleanup of grout and waste materials shall be performed immediately to avoid damage to the pipe. The content of grout lines shall not be discharged into the tunnel. Removal and disposal shall be performed according to the approved grouting spoil disposal plan using Best Management Practices.

Recirculate grout mixes when any new mix is batched or after adding water, fluidifier, or sand to mix. Recirculate mix for at least two minutes prior to pumping grout into grout holes.

Instrumentation - Instrumentation shall be installed at the locations shown on the Drawings, and as approved by the Engineer. Installation shall be performed according to the schedule approved during the submittal process. In general, instrumentation and monitoring requirements shall be in accordance with the item "Settlement Monitoring Program" and as supplemented herein.

The Contractor shall install all surface control points at least two weeks prior to construction of the pipeline or jacking pits. The Contractor shall take two initial readings following installation and submit them to the Engineer. If baseline readings differ, the Contractor shall take additional readings as required to establish an adequate baseline, in the opinion of the Engineer.

The Contractor shall provide the Engineer with safe access to and assistance required for obtaining monitoring data, including adequate traffic control provisions. The Contractor shall notify the Engineer immediately of any damage to an instrument or if an instrument becomes non-functional for any reason. Replace or repair damaged or non-functional instruments or monitoring points within 24 hours of noting damage.

1) Control Points

Control points for monitoring settlement and heave shall consist of surface control points, and intermediate control points. Control points shall be placed prior to pipe jacking.

The Contractor shall establish all control points, and modify surface control point at the locations indicated on the Drawings during construction, as required for settlement and heave control and as required by the Engineer or site conditions. The survey measurements shall consist of determining the elevation of surface control points and the elevation and horizontal coordinates of other instrumentation elements with respect to the benchmark(s) approved by the Engineer. Elevations shall be determined to an accuracy of $\pm 1/8$ -inch. A rotating laser level shall be used for monitoring surface control points during construction. The laser shall be set up outside of the zone of settlement. Radio communication shall be provided so that surveyors on the ground surface can communicate with the machine operator. Radio communication shall additionally be provided between surveyors and the Railroad as required by the Railroad.

Provide survey data for control points to the Engineer in the field immediately after measurements are made and in the daily monitoring report. Survey data shall be immediately compared to baseline and any previous survey data to determine the amount of settlement that has occurred.

Any points that have movements exceeding specified settlement limits shall be immediately brought to the attention of the Engineer. All survey information shall be provided immediately to the Railroad's field representative.

2) Monitoring Frequency

| Location | Control Point Type | Monitoring Frequency | Notes |
|----------------------------|---|--|---|
| Railroad | Surface control points and Intermediate Control Points | Every two hours, and immediately prior to and Following train traffic during pipe Jacking. | Additional Monitoring if required by the Railroad |
| Jacking Pit/ Receiving Pit | Surface Control Points on Jacking and Receiving Pit walls | Twice Daily or as required by the Engineer | Additional monitoring required if significant movements are observed. |

After completion of the pipeline, surface, and intermediate control points shall be read once weekly for four weeks. Surface control points at the jacking and receiving pits shall be read weekly until the headwall and end wall are constructed and the jacking and receiving pits are backfilled.

- 3) Removal of Instruments - Where directed by the Engineer, leave surface control points in place after project completion for continued monitoring by the Engineer. Remove or grout in place all other surface control points during the cleanup and restoration work, as required by the Engineer. Any damage to existing utilities or structures caused by the Contractor's operations shall be repaired by the Contractor, at no additional cost to the Owner.

Method of Measurement: JACKING 48" R.C. PIPE (CLASS V) – 0' – 20' DEEP will be measured for payment by the actual number of linear feet of pipe installed by jacking methods, completed and accepted, measured in place. Limits of the pipe jacking shall be as shown on the Drawings unless otherwise approved by the Engineer. Removal of soil ahead of and around the jacked pipe, contact grouting, design, construction, monitoring for lateral movement of jacking and receiving pit walls, advance soil stabilization, removal of jacking and receiving pits, and backfilling, shall be incidental to pipe jacking.

Basis of Payment: This work will be paid for at the contract unit price per linear foot of JACKING 48" R.C. PIPE (CLASS V) – 0' – 20' DEEP, complete in place, which price shall include: the design, construction, and removal of jacking and receiving pits; pipe jacking, pipe materials; dewatering; backfilling; submittals; final contact grouting; instrumentation, monitoring of for vertical and lateral movement, soil stabilization, and all materials, equipment, tools and labor incidental thereto. The contract unit price shall also include cutting off and leaving portions of jacking and receiving pits in place as required by the Engineer.

Payment for dewatering required for the jacking operation shall be paid for under the items "HANDLING WATER" or "HANDLING CONTAMINATED GROUNDWATER" as applicable.

Payment for the portions of jacking or receiving pit lateral support systems within the plan limits for temporary sheet piling (railroad) shall be paid for under the item "TEMPORARY SHEET PILING (RAILROAD)".

ITEM #0686901A – SLIDE GATE AND APPURTENANCES

Description: Work under this item shall include all labor, materials, equipment, and incidentals required to furnish, install, ready for operation and test a stainless steel slide gate and appurtenances for a 48 inch diameter round opening. The gate shall be installed at the inlet of the primary (eastern) proposed reinforced concrete pipe as shown on the contract plans. The gate shall allow for proper fit on the headwall as dimensioned on the contract plans.

The slide gate and appurtenances shall be supplied in accordance with the latest edition of AWWA C561 Standard for Fabricated Stainless Steel Slide Gates except where the detailed specifications within this section provide for additional requirements.

All the equipment specified under this Section shall be furnished by a single supplier and shall be products of manufacturers regularly engaged in the production of said equipment.

Materials: Component Materials shall conform to the following requirements:

- | | |
|----------------------------------|---|
| 1. Frame Assembly and Retainers: | Stainless Steel, Type 316L, ASTM A-240 |
| 2. Slide and Stiffeners: | Stainless Steel, Type 316L, ASTM A-240 |
| 3. Stem: | Stainless Steel, Type 316, ASTM A-276 |
| 4. Anchor Bolts, Fasteners | Stainless Steel, Type 316, ASTM A-276, F-593 & 594 |
| 5. Invert Seal: | Neoprene ASTM D-2000 or EPDM |
| 6. Seat/Seals and Facing: | Ultra-High Molecular Weight Polyethylene (UHMW) ASTM D4020 |
| 7. Lift Nuts: | Bronze ASTM B584 |
| 8. Pedestals and Wall Brackets: | Stainless Steel, Type 316L, ASTM A-276 |
| 9. Operator Housing: | Cast aluminum or ductile iron |

General Requirements:

1. The gate shall be designed for 8.5 ft of seating/unseating head. The gate opening shall be a minimum of 4 ft by 4 ft. The gate shall be wall mounted and upward opening.
2. The structural portion of the frame that incorporates the seat/seals shall be formed into a one-piece shape for rigidity. The gate shall be delivered to the job site fully assembled.

3. The gate shall be operated by a manual handwheel or a manual crank-operated gearbox. The operator shall be mounted on the yoke of self-contained gate. The gate manufacturer shall select the proper gear ratio to ensure that the gate can be operated with no more than a 40 lb effort when the gate is in the closed position and experiencing the maximum operating head.
4. The gate shall utilize self-adjusting seals. Gates that utilize adjustable wedges, wedging devices or pressure pads are not acceptable.
5. All structural components of the frame and slide shall be fabricated of stainless steel having a minimum thickness of 1/4-inch and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.
6. All welds shall be performed by welders with AWS D1.6 certification.
7. Mill finish on stainless steel. Welds shall be sandblasted to remove weld burn and scale. All cast iron and steel components shall be properly prepared and shop coated with a primer. All castings shall be clean and sound, without defects which could impair their function.
8. Frame design shall allow for mounting directly to a wall with stainless steel anchor bolts and grout. Mounting style shall be as shown on the Drawings.
9. The frame shall extend to accommodate the entire height of the slide when the slide is in the fully closed or fully opened position. The handwheel or pinion shaft of the handcrank shall be no more than 5" above the top of the headwall railing height of 3'-7 5/8". The operation of the handwheel or handcrank shall not interfere with the railing.
10. A rigid stainless steel invert member shall be provided across the bottom of the opening. The invert member shall be of the flushbottom type on upward opening gates.
11. In compression, the stem shall be designed for a critical buckling load caused by a 40 lb effort on the crank or handwheel with a safety factor of 2, using the Euler column formula. The stem shall be designed to withstand the tension load caused by the application of a 40 lb effort on the crank or handwheel without exceeding 1/5 of the ultimate tensile strength of the stem material.
12. An arrow with the word "OPEN" shall be permanently attached or cast onto the operator to indicate the direction or rotation to open the gate.
13. The handwheel shall be removable and shall have a minimum diameter of 15 inches. If a crank is used it shall be removable. A weather resistant chain and lock or other suitable device for securing the handwheel from unauthorized use shall be provided.
14. Stems shall be provided with adjustable stop collars to prevent over opening or closing of the slide.

15. After final testing the gate shall be positioned such that the side gate is 1'-5" above the invert elevation. The gate shall be fabricated with two mechanical means of limiting the vertical movement of the gate from this position.
16. Anchor hardware shall be provided by the gate manufacturer for mounting the gates and appurtenances. The location of the anchor bolts shall be such that it eliminates or minimizes installation of bolts within the wall area of the reinforced concrete pipe.
17. The gate shall be suitable for operation after periods of inactivity of a year or more.

The stainless steel slide gates shown in Table A are known to have met the specified requirements:

Table A

| Product | Supplier |
|--------------------------|---|
| Hydrogate | Atlantic Fluid Technology 354 West Boylston Street, Suite 221 West Boylston, MA 01583 |
| Waterman Industries, LLC | MSC Industrial Supply Co. 50 Inwood Road Rocky Hill, CT 06067 |
| Whipps, Inc. | Atlantic Fluid Technology 354 West Boylston Street, Suite 221 West Boylston, MA 01583 |

Other slide gates manufactured for water control purposes conforming to the aforementioned requirements will be considered for use provided they are submitted in advance for approval to the Engineer. Other slide gate systems will be considered for use only if a complete product description is submitted, as well as documentation describing at least 10 installations of the product. These documented installations must demonstrate that the product has performed successfully for at least five years on similar applications.

Product Data: Before installation of the slide gate, the Contractor shall submit product data for the gate to the Engineer for review in accordance with Section 1.05.02. Product data submissions shall include: complete gate plans including principal dimensions, complete description of all materials, installation drawings showing all details of construction, for all parts of the slide gate and lift mechanism including the proposed locking mechanism.

As part of this item the contractor shall provide a PDF copy of the operation and maintenance manual for each component specified. The manual shall include details to serve as a guide in assembly and disassembly of the gate and in ordering repair parts.

Construction Methods: The Contractor shall handle, store and install the slide gate in accordance with the manufacturer’s drawings and recommendations.

The gate shall be installed in a true vertical plane, square and plumb. The Contractor shall fill the void between the gate frame and the wall with non-shrink grout as shown on the manufacturer’s installation drawings.

After installation, the gate shall be tested. A representative of the manufacturer shall be present for the test. After all adjustments have been made and the mechanisms properly lubricated, the slide gate shall be operated through three complete cycles. The gate shall be cycled to confirm that it operates without binding, scraping, or distorting.

Method of Measurement: This item, being paid for on a lump sum basis, will not be measured for payment.

Basis of Payment: Payment for this item will be made at the lump sum price for “Slide Gate and Appurtenances”, complete and accepted in place, which price shall include all materials, equipment, tools, testing and labor incidental to the installation of a stainless steel slide gate as shown on the contract plans.

Pay Item
Slide Gate and Appurtenances

Pay Unit
L.S.

ITEM #0714026A – TEMPORARY SHEET PILING (RAILROAD)

Work under this item shall conform to the requirements of Section 7.14, supplemented and amended as follows:

7.14.01-Description: Add the following:

The system(s) shall be designed for lateral earth pressure, piezometric forces, construction loads and Cooper E80 live loads as applicable.

It is required that temporary excavation support system(s) be properly designed soldier pile and lagging or alternative properly braced systems. Cantilevered retaining systems are not acceptable for applications with railroad live load effects unless specifically approved by the Engineer.

The Contractor shall monitor the temporary excavation support system and the Railroad facilities being supported for movement in accordance with applicable monitoring items.

7.14.02-Materials: Add the following:

Steel- Steel soldier piles, walers and fabrications shall conform to the requirements of AASHTO M 183 (ASTM A 36) or AASHTO M 223 (ASTM A 572).

Lagging – Timber lagging shall be construction grade, rough cut and shall be a minimum of 3” thick, and shall conform to Specification for Structural Timber, Lumber and Piling, AASHTO M168. Where necessary, the Contractor shall provide certification that the timber conforms to the grade, species, and other specified requirements. If timber is to be treated with a preservative, a certificate of compliance shall be furnished.

Precast concrete lagging shall conform to Section 8.13 “Precast Concrete Members” of AASHTO “Standard Specifications for Highway Bridges.” Concrete for the precast elements shall have a minimum 28-day compressive strength of 5000 psi.

7.14.03-Construction Methods: Add the following:

Installation of any tieback anchor system, soldier piles and other miscellaneous components of temporary excavation support systems shall not interfere with stage construction requirements or existing facilities.

The Contractor shall perform all work required for the design, installation, maintenance, and removal of temporary excavation support systems in a manner that satisfies the operational requirements of the railroad as noted in the Contract documents.

7.14.04-Method of Measurement: Add the following:

No separate measurement will be made for maintenance (including replacement, if necessary) of the temporary excavation support systems if required to provide adequate support to the protected facilities.

7.14.05-Basis of Payment: Delete the first sentence of this section and replace with the following:

Payment for this work will be made at the contract unit price per square foot for “Temporary Sheet Piling (Railroad),” measured as described in Section 7.14.04, as modified above. The unit price shall include all materials, tools, equipment, and labor incidental to the design, construction, maintenance and removal to the required limits of the temporary excavation support systems required at the locations specified on the plans.

Monitoring of the rail facilities and the excavation support systems for movement during construction will be performed and paid under the applicable monitoring item.

**ITEM #0715021A – SHEET PILING MATERIAL LEFT IN PLACE
(RAILROAD)**

Work under this item shall conform to the requirements of Section 7.15, supplemented and amended as follows:

Replace all references to “temporary sheet piling” with “temporary sheet piling (railroad)”, and replace all references to “sheet piling material left in place” with “sheet piling material left in place (railroad)”.

ITEM #0803015A – PRECAST CONCRETE BLOCK REVETMENT

Description: Work under this item shall consist of designing, furnishing, and installing an articulated concrete block (ACB) revetment system on bedding material with geotextile to the limits shown on the plans and as recommended by the manufacturer of the system. Included in this item is excavation and disposal of material, subgrade preparation, bedding material, geotextile, concrete, cables, anchoring and other erosion control measures required by the manufacturer associated with the revetment.

Materials: Materials shall conform to the following requirements:

Precast Concrete Block Revetment, Cables and Fittings: The articulated precast concrete block revetment shall consist of individual preformed open-cell concrete units which are held together by cables to form a continuous blanket or mat for the purpose of armoring against erosion. Material to be used shall conform to the requirements of ASTM D6684. Additionally the ACB system must be tested in accordance with ASTM D7277 and interpretation of test data shall conform to the requirements of ASTM D7276.

Geotextile: Geotextile shall be a high survivability geotextile listed in the Department's Qualified Products List for use in Category 4 "Separation" applications.

Bedding Material: Bedding material shall be granular fill conforming to the requirements of Section M.02.01: 1.-broken or crushed stone or 2.-bank or crushed gravel.

Concrete/Grout: Class "F" concrete conforming to the requirements of Section M.03.02 or Non Shrink Grout conforming to the requirements of Section M.03.05. Minimum strength shall be 4,000 psi.

The articulated precast concrete block revetment systems shown in Table A are known to have met the specified requirements:

Table A

| Product | Supplier |
|----------------|---|
| ArmorFlex | Contech Engineering Solutions, LLC 9025 Centre Pointe Drive, Suite 400 West Chester, Ohio 45069 |
| Shoreblock SD | ACF Environmental 2831 Cardwell Road Richmond, VA 23234 |

Other ACB revetment systems expressly manufactured for erosion control that conform to the aforementioned ASTM requirements will be considered for use provided they are submitted in advance for approval to the Engineer. Other revetment systems will be considered for use only if a complete product description is submitted, as well as documentation describing at least five installations of the product. These documented installations must demonstrate that the product has performed successfully for at least three years on similar inlet/outlet protection and slope stabilization applications.

Design Requirements: The revetment shall be designed in accordance with Design Guideline 8, “Articulating Concrete Block Systems”, found in Hydraulic Engineering Circular No. 23 (FHWA-NHI-09-112) or the National Concrete Masonry Association’s Design Manual for Articulating Concrete Block Revetment Systems (TR-220A), Second Edition, using the following hydraulic data for this stream:

| | |
|---|-------|
| Design Flow Rate (ft ³ /sec) | 307 |
| Design Velocity (ft/s) | 15.95 |
| Bed Slope (ft/ft) | 0.006 |
| Channel Side Slopes (_H:1V) | 2:1 |
| Channel Bottom Width (ft) | 8 |
| Channel Depth (ft) | 2.8 |
| Allowable Unit Protrusion (in) | 0.5 |
| Factor of Safety | 1.8 |

The Contractor is responsible for the design of the revetment.

Working Drawings: Before installation of the revetment, the Contractor shall submit working drawings for the revetment to the Engineer for review in accordance with Section 1.05.02. Working drawings shall include details of each component, material specifications and installation and handling procedures (including details at curves, connections, protection of mat ends and splicing of mats.).

Design Computations: With the submission of working drawings, the Contractor shall also submit to the Engineer for review design computations for the revetment. These computations shall be stamped by a qualified Professional Engineer licensed in Connecticut.

Construction Methods: A technically competent representative of the manufacturer shall be present during installation of the revetment to give such aid and instruction in the installation of the system as is required to obtain satisfactory results. The installation of the precast block revetment system shall be in accordance with ASTM D6884 and the manufacturer’s recommendations, unless otherwise directed by the Engineer.

The stream flow shall be diverted in accordance with the Item – Handling Water.

Any material within the footprint of the ACB system deemed reusable as natural streambed material shall be excavated, removed and stored as described in the special provision “Excavation and Reuse of Existing Channel Bottom Material”.

Prior to installation, construct the area to be stabilized to an elevation such that, upon completion of stabilizing operations, the completed stabilized system will conform to the lines, grades and cross sections shown in the Plans. Excavate the subgrade surface to a plane approximately parallel to the plane of the proposed finished surface, such that, upon placement of the minimum depth of bedding material and the mat, no individual block within the ACB mat will protrude more than one-half inch from any adjacent block. The bedding material shall be placed on the prepared subgrade in accordance with Section 2.13.03.

Immediately prior to placing the geosynthetic material and ACB system, inspect the prepared surface to ensure it is free of loose material and the surface is smoothly compacted. Place the geosynthetic material directly on the prepared area, in intimate contact with the bedding material and free of folds or wrinkles. Do not glue or physically bond the geosynthetic material to the ACB mat. No overlapping of mats will be accepted. Mat seams or openings between mats greater than two inches will be backfilled with 4000 p.s.i. non-shrink grout, concrete or other material approved by the Manufacturer.

All units shall be sound and free of defects which would interfere with the proper placement of the unit, or which would impair the performance of the system. Surface cracks incidental to the usual methods of manufacture, or surface chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection. Cracks exceeding 0.25 inches in width and/or 1.0 inch in depth shall be deemed grounds for rejection. Chipping resulting in a weight loss exceeding 10% of the average weight of a concrete unit shall be deemed grounds for rejection. Rejected blocks shall be repaired with structural grout or replaced at the Contractor’s expense upon request of the Engineer.

The leading edges, edges at walls, flanks and adjoining revetment mats shall be anchored as shown on the plans or in accordance with the manufacturer’s recommendations.

At the completion of this work, the Contractor shall remove from the job site and properly dispose of all remaining debris, waste materials, excess materials, and equipment.

After the installation of the concrete block system, natural streambed material shall be placed to a depth of one foot over the revetment. This work shall be paid for under and done in accordance with the item “Excavation and Reuse of Existing Channel Bottom Material”.

Method of Measurement: This work will be measured for payment by the number of square feet of ACB revetment installed and accepted, the limits of which are shown on the plans.

Basis of Payment: This work shall be paid at the contract unit price per square feet for “Precast Concrete Block Revetment”, completed and accepted, which price shall include design, all materials, equipment, tools and labor incidental to installation of the ACB revetment. Excavation and disposal of material, grading of the stream bed and embankments for placement of the revetment, furnishing and installing geotextile, bedding material and concrete will be included in the payment of this item.

Any necessary water diversion and handling will be paid for under items “Handling Water” or “Handling Contaminated Groundwater” as applicable.

| Pay Item | Pay Unit |
|----------------------------------|-----------------|
| Precast Concrete Block Revetment | S.F. |

ITEM #0913850A – HIGH VISIBILITY SAFETY FENCE

Description: Work under this section shall consist of furnishing, installing, and maintaining temporary high visibility fence at the limits shown on the contract plans or as directed by the Engineer. The fencing is to create a physical boundary providing delineation between construction work zones and the active tracks. The Contractor shall limit his work from extending beyond this fence to the extent possible.

Materials: The fencing fabric shall be high visibility green high-density Polyethylene or Polypropylene material and shall be a minimum of four feet in height. Opening sizes shall be a minimum of 1" x 1" and a maximum of 2" x 4". The fabric shall have a temperature service range of -40 to 200 degrees F.

Posts for the barrier fence shall be made of wooden stakes with the minimum dimensions of 1 inch x 2 inches and a minimum length of 5 feet.

The post material and spacing shall be as necessary to ensure the installation is rigid, plumb and does not deflect laterally more than 2 inches under wind loading including from passing trains. A tension wire shall run through the top of the fence and be secured to the end posts to increase rigidity. The Contractor may propose alternate temporary fence materials to the Engineer for approval.

Construction Methods: The fencing shall remain on the manufacture roll until ready for use and stored in a location that prevents damage to the material. Fencing shall be installed prior to any construction or on-site activities in the locations shown on the contract plans and shall not be removed until construction is complete and all disturbed areas are adequately stabilized.

The Contractor shall install high visibility safety fences (4 feet in height) in the locations shown on plans or as directed by the Engineer. All posts shall be driven a minimum of 12 inches into the ground and shall be spaced appropriately to support the fabric firmly. The fabric shall be firmly attached to the post.

The Contractor shall not encroach beyond the limits of the temporary fencing with personnel or equipment of any kind except when authorized by the Railroad in accordance with the requirements of Section 1.05.06.

The fence is to be maintained in position and any damage to posts or fence shall be repaired or replaced by the Contractor at no additional charge to the State. The Contractor shall perform a daily visual inspection of all fences with any deficiencies corrected immediately.

Method of Measurement: This work shall be measured by the total number of linear feet of High Visibility Safety Fence installed and accepted by the Engineer.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for "High Visibility Safety Fence", complete and accepted in place, which price shall include all materials, equipment, tools, and labor incidental thereto. It shall also include maintenance, removal of materials, and backfilling and repairing holes, depressions and other ground disturbance that are the result of maintaining or removing the fence.

Pay Item

High Visibility Safety Fence

Pay Unit

L.F.

ITEM #0914205A – FURNISH AND INSTALL RAILING

Description:

This item consists of the furnishing and installation of steel railings to be mounted on the precast or cast-in-place concrete walls. This item also includes anchor hardware and all other materials, equipment and labor necessary to install the railings as detailed on the plans and/or in accordance with these specifications.

Materials:

The materials for this work shall conform to the requirements of Sections M.06.02, M.06.03 and M.06.04 of Form 817.

Structural steel for posts, railings and support brackets shall conform to ASTM A36 and shall be hot-dipped galvanized in accordance with M.06.03.

Expansion anchors shall be galvanized steel. The Contractor may also propose alternate anchors using chemical anchoring material from the Department's current Qualified Products List.

Construction Methods:

The Contractor shall provide shop drawings in accordance with Section 1.05.02. The drawings shall include product data for anchors and touch up galvanizing. The shop drawings shall also include materials, plans, elevations, sections and attachments to other work. Signed mill certificates of the steel products shall be provided by the manufacturer certifying that the furnished products comply with requirements.

The Contractor shall position railings and supports accurately in the plan locations and anchor locations shall be marked and drilled. Railing posts shall then be secured to the concrete substrate using the mechanical anchors with the anchors installed per manufacturer recommendations. Posts shall be set plumb within a tolerance of 1/8-inch in three feet. Align rails so variations from level for horizontal members and variations from parallel for sloping members, do not exceed 1/4-inch in 8 feet. All field welding shall be performed in accordance with Section 6.03.

All field welded areas and any damaged galvanized coating shall be coated with an inorganic zinc paint conforming to ASTM A780.

Method of Measurement:

Payment under this item shall be measured by the number of linear feet of railing completed and accepted.

Basis of Payment:

This work will be paid for per linear foot for “FURNISH AND INSTALL RAILING”, which price shall include all materials, tools, equipment and labor incidental to the installation.

| Pay Item | Pay Unit |
|-----------------------------|-----------------|
| Furnish and Install Railing | L.F. |

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. **5311 Conservation Mix**, Ernst Conservation Seeds, Inc. 8884 Mercer Pike, Meadville, PA 16335, or equal. Rate shall be 3-5 pound PLS per 1,000 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. |

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 DEEP General Permit – WRCA
201807280-PCN

approval on August 2, 2018

CT DEEP Connecticut Addendum Army
Corps of Engineers General Permit
State of Connecticut

pending approval

- **Construction Contracts - Required Contract Provisions (State Funded Only Contracts)**



Date August 2, 2018

Diane M. Ray
Regulatory and Enforcement Branch B
U.S. Army Corps of Engineers
New England District
CENAE-RDB
696 Virginia Road
Concord, MA 01742-2751

Connecticut Department of Transportation
c/o Kim C. Lesay, Transportation Assistant Planning Director
2800 Berlin Turnpike
P.O. Box 317546
Newington, CT 06131-7546

SUBJECT: DEEP License #: 201807280-PCN
State Project No. 301-175, New Haven Mainline MP 65.60 over Unnamed Watercourse,
Town of Milford

Dear Ms. Lesay:

Please find attached a copy of your subject license and relevant enclosures which are being issued pursuant to your application of May 18, 2018. 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 860-424-3214, or colin.clark@ct.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Colin Clark", is written over a horizontal line.

Colin Clark, P.E.
Land & Water Resources Division
Bureau of Water Protection & Land Reuse

Encl(s): License # 201807280-PCN

cc: File 201807280-PCN

cc (via email): Kim C. Lesay: Kimberly.lesay@ct.gov
David Miroslaw, H.W. Lochner: dmiroslaw@hwlochner.com
City of Milford Mayor: mayor@ci.milford.ct.us
Diane M. Ray, USACE: Diane.M.Ray@usace.army.mil
Stephen Gephard 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): 201807280-PCN

Municipality: City of Milford

Project Description: Replacement of existing masonry box culvert with twin 48” inch
diameter reinforced concrete pipes.

Project Address/Location: Milepost 65.60 of the New Haven Mainline, Milford

Waters: Unnamed

**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: *“Environmental Permit Plans, State Project No. 301-175,
Replacement of Culvert at MP 65.60 New Haven Mainline over
Unnamed Stream, Town of Milford,”* 10 sheets, prepared by H. W.
Lochner, Inc. and dated 3/23/2018.

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 # 201807280-PCN:

1. Install sedimentation control system and high visibility safety fence, and construct anti-tracking pads and access road.
2. Install water handling system.
3. Excavate channel bottom material and install jacking and receiving pits.
4. Jack two new 48" diameter 101-ft long reinforced concrete pipe culvert under the railroad embankment.
5. Construct headwall and endwalls for the new culverts and install railing, slide gate and block off pipe number 2.
6. Install precast concrete clock revetments.
7. Place natural stream bed materials.
8. Fill existing culvert with controlled low strength material.
9. Regrade railroad embankment slopes.
10. Remove water handling system, construction mats and excess construction equipment and materials.
11. Place wetland seed mix on disturbed areas within wetland limits.
12. Place conservation seed mix on disturbed embankments slopes.
13. Total wetland impacts shall not exceed 15,750 sf in area.

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:

August 2, 2018
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

**INTERDEPARTMENTAL
MESSAGE**

STATE OF CONNECTICUT

| | | |
|-------------|---|-----------------------------|
| To | NAME, TITLE Central Permit Processing | DATE 5/11/2018 |
| | AGENCY, ADDRESS Department of Energy and Environmental Protection, 79 Elm Street, Hartford | |
| From | NAME, TITLE Ms. Kimberly C. Lesay, Transportation Assistant Planning Director | TELEPHONE (860) 594-2931 |
| | AGENCY, ADDRESS Department of Transportation, Bureau of Policy and Planning, Newington | |

**Subject: State Project No. 301-175
New Haven Mainline MP 65.60 o/Unnamed Watercourse
Town of Milford**

Attached are an original and two copies of the PGP Addendum application associated with the above referenced project. The project has concurrently submitted a PCN application to the USACE. A Flood Management Certification is not required for the project.

Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner at 860-594-2157.

Attachments

Amanda M. Saul/ams

bcc: Andrew H. Davis – Amanda M. Saul
Jayantha Mather – Jay D. Young
Domenic LaRosa – District 3



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, P.O. Box 317546
City/Town: Newington State: CT Zip Code: 06131-7546
Business Phone: 860-594-2931 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)
State Project No. 301-175
Replacement of an existing masonry box culvert with twin 48 inch diameter class V reinforced concrete pipes
Location (City/Town): Milford
Other Project Related Permits (not included with this form):
Table with 6 columns: Permit Description, Issuing Authority, Submittal Date, Issuance Date, Denial Date, Permit #
Rows: General Permit (CT DEEP, TBD), ACOE PCN GP-19 (ACOE, Concurrent)

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 |
| | INLAND WATER RESOURCES- | | | | |
| | Dam Safety | none | | | 1 + 2 |
| | Flood Management Certification | none | | | 1 + 1 |
| | Inland Wetlands and Watercourses | none | | | 1 + 5 |
| | Inland 401 Water Quality Certification | none | | | |
| | FERC- Hydropower Projects- 401 Water Quality Certification | none | | | 1 + 1 |
| | Water Diversion | ★ | | | 1 + 5 |
| | OFFICE OF LONG ISLAND SOUND PROGRAMS | | | | |
| | 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 ➡ | 0 | 0 | |
| | | Enter subtotals from Part IV, pages 3 - 6 of this form Subtotals Page 5 ➡ | 1 | 0 | |
| | | Subtotals Page 6 ➡ | 0 | 0 | |
| | | TOTAL ➡ | 1 | 0 | |
| | | <input type="checkbox"/> Indicate whether municipal discount or state waiver applies. Less Applicable Discount ➡ | | | |
| | | AMOUNT REMITTED ➡ | | 0 | |
| 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**

| <input checked="" type="checkbox"/> 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 | | | | |
| <input type="checkbox"/> Boiler Blowdown Wastewater | Expired- wastewater discharge authorized under MISC GP | | | |
| <input type="checkbox"/> Categorical Industry User to a POTW Discharges > 10,000 gpd Discharges < 10,000 gpd | \$6250.00 \$3125.00 | | | 1 + 0 |
| <input type="checkbox"/> Domestic Sewage | \$625.00 | | | 1 + 0 |
| <input type="checkbox"/> Food Preparation Establishment Wastewater | No Registration | | | |
| <input type="checkbox"/> Food Processing Wastewater | \$500.00 | | | 1 + 0 |
| <input type="checkbox"/> Groundwater Remediation Wastewater to a Sanitary Sewer | \$500.00 | | | 1 + 0 |
| <input type="checkbox"/> Groundwater Remediation Wastewater to a Surface Water Registration Only | \$625.00 | | | 1 + 0 |
| <input type="checkbox"/> Approval of Registration by DEEP | \$1250.00 | | | |
| <input type="checkbox"/> Hydrostatic Pressure Testing Wastewater Registration Only | \$625.00 | | | 1 + 0 |
| <input type="checkbox"/> Approval of Registration by DEEP (natural gas pipelines) | \$1250.00 | | | |
| <input type="checkbox"/> Miscellaneous Discharges of Sewer Compatible Wastewater 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"/> Non-Contact Cooling and Heat Pump Water (Minor) | \$625.00 | | | 1 + 0 |
| <input type="checkbox"/> Photographic Processing Wastewater (Minor) | Expired- wastewater discharge authorized under MISC GP | | | |
| <input type="checkbox"/> Point Source Discharges from Application of Pesticides | \$200.00 | | | 1 + 0 |
| <input type="checkbox"/> Printing & Publishing Wastewater (Minor) Flow < 40 gpd | \$500.00 \$100.00 | | | 1 + 0 |
| <input type="checkbox"/> Stormwater Associated with Commercial Activities | \$300.00 | | | 1 + 0 |
| <input type="checkbox"/> Stormwater Associated with Industrial Activities <50 employees—see general permit for additional requirements >50 employees—see general permit for additional requirements | \$500.00 \$1000.00 | | | 1 + 0 |
| <input type="checkbox"/> Stormwater & Dewatering Wastewaters-Construction Activities | ★ | | | 1 + 0 |
| <input type="checkbox"/> Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) | \$250.00 | | | 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)

| WATER DISCHARGES (continued) | | | | |
|---|--|------------|---|-------|
| <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 |
| <input type="checkbox"/> Tumbling or Cleaning of Parts Wastewater (Minor) | Expired- wastewater discharge authorized under MISC GP | | | |
| 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"/> Water Treatment Wastewater | \$625.00 | | | 1 + 0 |
| <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 |
| INLAND WATER RESOURCES | | | | |
| <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 checked="" type="checkbox"/> Programmatic General Permit | ★ | 1 | 0 | 1 + 3 |
| <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): | | | | |
| OFFICE OF LONG ISLAND SOUND PROGRAMS | | | | |
| <input type="checkbox"/> 4/40 Docks | \$700.00 | | | 1 + 1 |
| <input type="checkbox"/> Beach Grading | \$100.00 | | | 1 + 1 |
| <input type="checkbox"/> Buoys or Markers | No Registration | | | |
| <input type="checkbox"/> Coastal Remedial Activities Required by Order | \$700.00 | | | 1 + 1 |
| <input type="checkbox"/> Dock Reconstruction | \$300.00 | | | 1 + 1 |
| <input type="checkbox"/> Harbor Moorings | No Registration | | | |
| <input type="checkbox"/> Maintenance of Catch Basins and Tide Gates | 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"/> Non-harbor Moorings | \$100.00 | | | 1 + 1 |
| <input type="checkbox"/> Osprey Platforms and Perch Poles | none | | | 1 + 1 |
| <input type="checkbox"/> Pump-out Facilities (no fee for Clean Vessel Act grant recipients) | \$100.00 | | | 1 + 1 |
| <input type="checkbox"/> Programmatic General Permit | ★ | | | 1 + 1 |
| <input type="checkbox"/> Removal of Derelict Structures | \$100.00 | | | 1 + 1 |
| <input type="checkbox"/> Residential Flood Hazard Mitigation | \$100.00 | | | 1 + 1 |
| <input type="checkbox"/> Swim Floats | \$100.00 | | | 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 |
| Certain Recycling Facilities: | | | | |
| <input type="checkbox"/> Drop-site Recycling Facility | \$200.00 | | | 1 + 0 |
| <input type="checkbox"/> Limited Processing Recycling Facility | \$500.00 | | | 1 + 0 |
| <input type="checkbox"/> Recyclables Transfer Facility | \$500.00 | | | 1 + 0 |
| <input type="checkbox"/> Single Item Recycling Facility | \$500.00 | | | 1 + 0 |
| <input type="checkbox"/> Collection and Storage of Post Consumer Paint | \$0 | | | 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"/> Connecticut Solid Waste Demonstration Project | \$1000.00 | | | 1 + 0 |
| <input type="checkbox"/> Disassembling Used Electronics | \$2000.00 | | | 1 + 0 |
| <input type="checkbox"/> Leaf Composting Facility | none | | | 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: | <input type="checkbox"/> Eligible Category 2 <input type="checkbox"/> Eligible Category 1 <input type="checkbox"/> Individual Permit |

Town where site is located: Milford

Brief Description of Project: State Project No. 301-175 consists of the replacement of a masonry culvert that carries the New Haven Mainline over an unnamed watercourse. The existing culvert at MP 65.60 is approximately 89 ft long and has an opening 2 ft wide by 2 ft high. The proposed replacement consists of twin 48 inch diameter class V R.C.P. The pipes will be 101 ft long with flared wingwalls at both ends.

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, P.O Box 317546**

City/Town: **Newington** State: **CT** Zip Code: **06131-7546**

Business Phone: **860-594-2931** ext. Fax: **860-594-3028**

Contact Person: **Kimberly C. Lesay** Title: **Transportation Assistant 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: **H.W. Lochner**

Mailing Address: **55 Hartland Street, Suite 401**

City/Town: **East Hartford**

State: **CT**

Zip Code: **06108**

Business Phone: **860-760-5840**

ext. **30326**

Fax: **860-760-5841**

Contact Person: **David Miroslaw**

Title: **Project Engineer**

E-Mail: **dmiroslaw@hwlochner.com**

Service Provided: **Project Design, Permit Application Preparation**

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 : **New Haven Mailine over unnamed watercourse**

Street Address or Description of Location: **Railroad Mile Post 65.60**

City/Town: **Milford**

State: **CT**

Zip Code: **06460**

Latitude and longitude of the exact location of the proposed activity in degrees, minutes, and seconds or in decimal degrees: Latitude: **41°-14'-0.46" N** Longitude: **73°-1'-8.10" W**

Method of determination (check one):

GPS USGS Map Other (please specify):

If a USGS Map was used, provide the quadrangle name: **Milford**

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 2017**

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.

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: **N/A**

- 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): |

Culvert Replacment

Part V: Environmental Information

1. Wetland Impact

- a. Direct Impact

(Fill includes permanent & temporary): **12,770 sf** **0.293 acres**

- b. Secondary/Indirect Impact:

0 sf **0 acres**

- c. **Total Impact:**

12,770 sf **0.293 acres**

2. Waters/Waterways/Watercourses Impact

- a. Direct Impact

(Fill includes permanent & temporary): **260 lf** **15,750 sf**

- b. Secondary/Indirect Impact:

0 lf **0 sf**

- c. **Total Impact:**

260 lf **15,750 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 type="checkbox"/> | <input checked="" 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: | 111 cfs | | | |
| Indicate Frequency Recurrence (year): | 2-year | | | |
| Indicate Design Velocity for bank-full flow: | 10.7 fps | | | |
| Indicate Frequency Recurrence (year): | 2-year | | | |
| 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/deep/lib/deep/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 ___

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? **Proposed twin 48" Class V R.C.P.**

3. Where is the structure located on the site plans? **At Railroad track crossing with stream**

4. For bridge/culvert structures, what is the **openness ratio?** **0.01** 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? **67.1** Acres **0.10** 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 | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | | | |
| 33.96 | 33.26 | -0.70 | 35.56 | 34.95 | -0.61 | 36.24 | 35.63 | -0.61 | 36.72 | 36.08 | -0.64 | 37.18 | 36.50 | -0.68 |

Aerial Extent of Inundation (square feet) (Maximum)

| | | Storm Event Frequency | | | | | | | | | | | | |
|--------------|--------------|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | | 10-yr | | 25-yr | | 50-yr | | 100-yr | | | | | | |
| Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | | | |
| 75930 | 73770 | -2160 | 87460 | 86360 | -1100 | 90540 | 89160 | -1380 | 93060 | 91400 | -1660 | 95590 | 93710 | -1880 |

Duration of Inundation (hours)

| | | Storm Event Frequency | | | | | | | | | | | | |
|-----------|-----------|-----------------------|-----------|-----------|--------------|-------------|-------------|--------------|-------------|------------|--------------|------------|------------|------------|
| | | 10-yr | | 25-yr | | 50-yr | | 100-yr | | | | | | |
| Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | | | |
| 24 | 24 | 24 | 24 | 24 | 10.7 | 13.1 | 13.8 | 14.2 | 14.6 | 111 | 188 | 235 | 271 | 307 |

Discharge Velocity (feet/second)

| | | Storm Event Frequency | | | | | | | | | | | | |
|--------------|--------------|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | | 10-yr | | 25-yr | | 50-yr | | 100-yr | | | | | | |
| Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | | | |
| 75930 | 73770 | -2160 | 87460 | 86360 | -1100 | 90540 | 89160 | -1380 | 93060 | 91400 | -1660 | 95590 | 93710 | -1880 |

Flow Volume (cubic feet/second)

| | | Storm Event Frequency | | | | | | | | | | | | |
|-----------|-----------|-----------------------|-----------|-----------|--------------|-------------|-------------|--------------|-------------|------------|--------------|------------|------------|------------|
| | | 10-yr | | 25-yr | | 50-yr | | 100-yr | | | | | | |
| Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | Existing | Proposed | Change (+/-) | | | |
| 24 | 24 | 24 | 24 | 24 | 10.7 | 13.1 | 13.8 | 14.2 | 14.6 | 111 | 188 | 235 | 271 | 307 |

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 checked="" 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 checked="" 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 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 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 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 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> | |
|  <hr/> Signature of Applicant | 5-14-2018 <hr/> Date |
| Thomas J. Maziarz <hr/> Name of Applicant (print or type) | Bureau Chief, Policy and Planning <hr/> Title (if applicable) |
|  <hr/> Signature of Preparer (if different than above) | 3-23-18 <hr/> Date |
| David Miroslaw <hr/> Name of Preparer (print or type) | Project Engineer <hr/> 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.

**DEPARTMENT OF THE ARMY
GENERAL PERMIT
STATE OF CONNECTICUT**

**NOTICE TO APPLICANTS FOR CT GP CATEGORY 2 AUTHORIZATION
NEW ENGLAND DISTRICT ARMY CORPS OF ENGINEERS**

If you are filing a Federal Clean Water Act Section 404 application with the New England District Army Corps of Engineers for a CT GP Category 2 authorization for an activity located within the State of Connecticut, then you must also submit the required documents listed below directly to the Connecticut Department of Energy and Environmental Protection for Section 401 authorization (Water Quality Certification) at the following address:

CENTRAL PROCESSING UNIT
CONNECTICUT DEPARTMENT OF ENERGY AND
ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

The Central Processing Unit is located on the first floor and is open for deliveries Monday through Friday from 8:30 AM to 4:30 PM.

Applications submitted to the Connecticut Department of Energy and Environmental Protection are **not** to be mailed or delivered directly to the Department's Inland Water Resources Division.

Applications for PGP Category 2 authorization submitted to the Connecticut Department of Energy and Environmental Protection shall include **three (3) copies** *of each of the following:

- CT GP Addendum form (DEP-ACGP-APP-001),
- Army Corps of Engineers application form (ENG Form 4345),
- 8.5" x 11" drawings (plans),
- Large scale drawings (plans) (1" = 40'),
- Wetland functions and values assessment,
- Federal wetland delineation data sheets,
- Documentation of any proposed wetland mitigation,
- Any other supporting documentation provided to the Army Corps in support of the Army Corps of Engineers application, and
- Any application fee as may be required by the State of Connecticut, Department of Energy and Environmental Protection.

* Applicants may submit one paper copy with original signatures along with 2 copies in PDF format on 2 CDs or DVDs in lieu of 3 paper copies.

Attachment A: Description of the proposed activities and the purpose

Connecticut Addendum ACOE General Permit State of Connecticut (CT GP)

Applicant: State of Connecticut, Department of Transportation
Project No: 301-175
Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

This project consists of the replacement of a masonry culvert that carries the New Haven Mainline over an unnamed watercourse. The existing culvert is approximately 89 feet long and has an opening that is approximately two feet high by two feet wide. There is ten feet of embankment material between the top of the culvert and the bottom of the railroad ties. The culvert carries four tracks of the New Haven Mainline at mile post 65.60. The New Haven Mainline is a critical rail corridor with service from Metro-North Railroad, Amtrak and a moderate volume of freight traffic. The watershed for the unnamed watercourse is very developed. The measured drainage area is 67.14 acres or 0.10 square miles. Discharge from the culvert flows southwest parallel with the railroad and eventually feeds into the Indian River.

The inlet and the outlet of the existing structure have partially collapsed. In addition sediment and debris have accumulated within the culvert. As a result the hydraulic capacity of the structure has been reduced. The low lying developed areas immediately upstream of the culvert have a history of flooding. The frequency of flooding has increased due to the reduced capacity of the structure. The partial collapse of the culvert at the outlet has resulted in a localized steepening of the embankment slope. This has created a maintenance concern which has the potential to become a safety concern for Track No. 4. Due to the deteriorated condition of the existing masonry culvert, the increased risk of flooding and ongoing maintenance concerns the structure has been recommended for replacement.

The proposed replacement consists of twin 48 inch diameter reinforced concrete pipes. The total structure length is 101 feet. Endwalls with flared wings will be installed up and downstream. The replacement pipes will be jacked through the railroad embankment. The high volume of traffic and the depth of embankment make conventional cut and cover construction impractical, therefore jacking will be used. The existing culvert will be filled in with controlled low strength material and abandoned in the final condition. A requirement for this project is that no drainage easements be acquired up or downstream of the crossing. Based on this, the proposed structure opening must match the existing in order not to increase discharges and flood limits downstream. To accomplish this, a gate will be installed at the inlet of the primary culvert to limit its effective opening. CTDOT policy is to size structures to be hydraulically adequate for the design storm event. In order to meet this criteria a supplemental culvert will be installed adjacent to the primary culvert. The combined structure is sized to be hydraulically adequate. The supplemental culvert will be blocked off until the downstream crossings are improved

Attachment A: (continued)

Connecticut Addendum ACOE General Permit State of Connecticut (CT GP)

Applicant: State of Connecticut, Department of Transportation
Project No: 301-175
Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

sometime in the future. This methodology satisfies the CTDOT's direction of not impacting downstream properties, not acquiring flood easements and having a structure that has potential to meet hydraulic requirements. The proposed replacement will provide an improved hydraulic structure, improve safety for railroad operations, reduce maintenance costs and limit the impact to railroad traffic during construction.

Access to the site is limited to two easements through private property. Access to the upstream side of the structure will be from the cul-de-sac at the end of Eastern Steel Road. The State of Connecticut (State) has acquired an access easement through Connors Properties LLC from Eastern Steel Road to the Railroad Right-of-Way (ROW). Access to the downstream side of the structure will be from Pepes Farm Road. The State has also acquired an access easement through Rolling Frito-Lay Sales, LP from Pepes Farm Road to the Railroad ROW. At the downstream easement the contractor will have to construct an access road to the outlet of the structure. This will require cutting down small trees, clearing brush and bringing in suitable fill. Metro-North Railroad has requested that this access road be permanent so that they can perform future maintenance on the structure.

During construction water will be handled by a combination of bypass pipes and cofferdams. The proposed pipes will be installed adjacent to the existing culvert so that it can be used for water handling.

The proposed construction is anticipated to begin in the spring of 2019 and be completed in the fall of 2019.

Due to the location of the project between highly developed industrial areas and the rail line embankments, the ordinary high water (OHW) line has been determined to be either nearly coincident with the wetland limits (outlet) or just above the wetland limit (inlet). At the inlet in particular, localized frequent inundation occurs above the wetland line, however, due to the fact that waters pond on disturbed surfaces, no wetland conditions develop. The 'total impacts' as presented in the permit represent the footprint out-to-out, to the OHW limits; the 'wetland' impacts reported are the portion within the total that are strictly vegetated wetlands.

Attachment B: Site Plan

Connecticut Addendum ACOE General Permit State of Connecticut (CT GP)

Applicant: State of Connecticut, Department of Transportation

Project No: 301-175

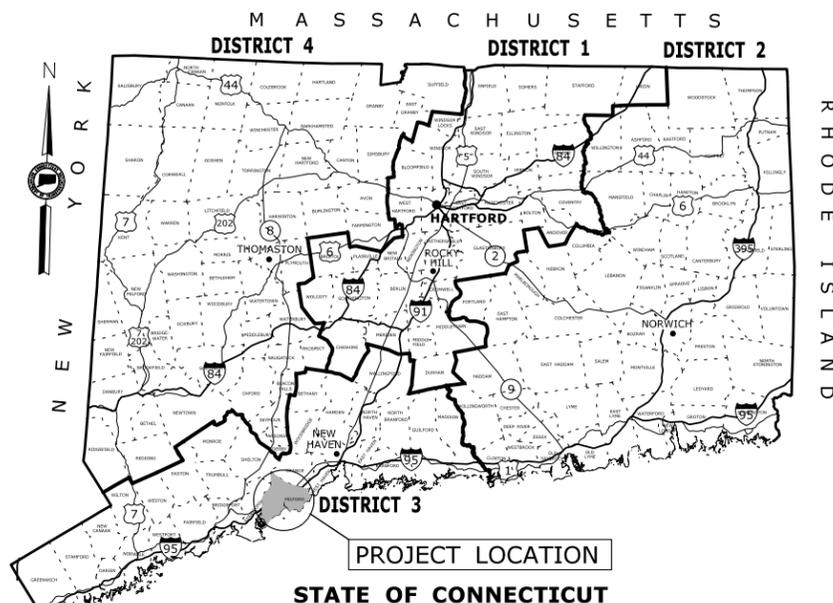
Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

| Sheet No. | Description | Date |
|------------------|--|-------------|
| 1 | Title Sheet | Mar 2018 |
| 2 | Wetland Impact Plan | Mar 2018 |
| 3 | Site Plan | Mar 2018 |
| 4 | General Plan | Mar 2018 |
| 5 | Construction Stage - 1 | Mar 2018 |
| 6 | Construction Stage - 2 | Mar 2018 |
| 7 | Access Road Details | Mar 2018 |
| 8 | Precast Concrete Block Revetment Details | Mar 2018 |
| 9 | Miscellaneous Details - 1 | Mar 2018 |
| 10 | Miscellaneous Details - 2 | Mar 2018 |

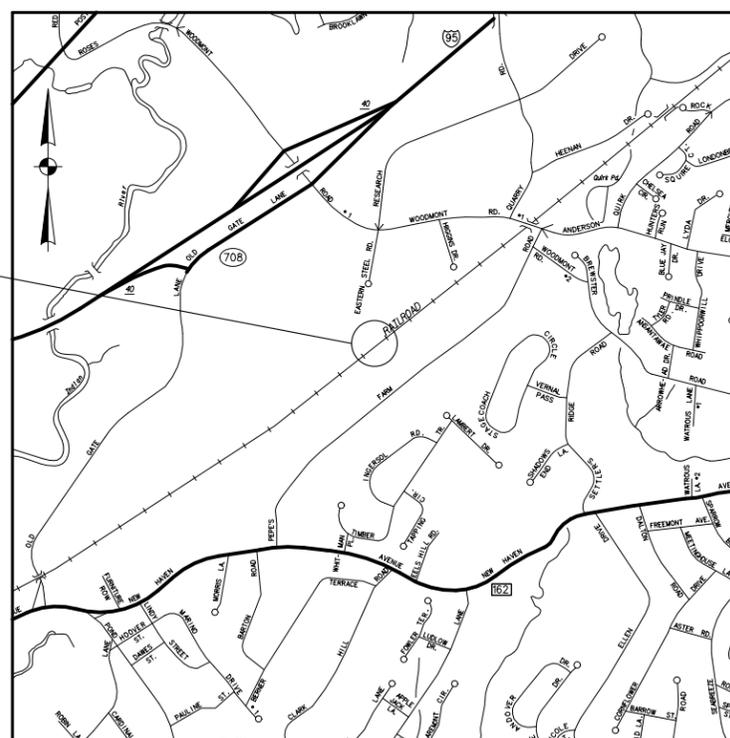
ENVIRONMENTAL PERMIT PLANS STATE PROJECT NO. 301-175 REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM

Town of
MILFORD

| INDEX OF DRAWINGS | |
|--|-------------|
| TITLE | DRAWING NO. |
| TITLE SHEET | ENV-01 |
| WETLAND IMPACT PLAN | ENV-02 |
| SITE PLAN | ENV-03 |
| GENERAL PLAN | ENV-04 |
| CONSTRUCTION STAGE - 1 | ENV-05 |
| CONSTRUCTION STAGE - 2 | ENV-06 |
| ACCESS ROAD DETAILS | ENV-07 |
| PRECAST CONCRETE BLOCK REVETMENT DETAILS | ENV-08 |
| MISCELLANEOUS DETAILS - 1 | ENV-09 |
| MISCELLANEOUS DETAILS - 2 | ENV-10 |

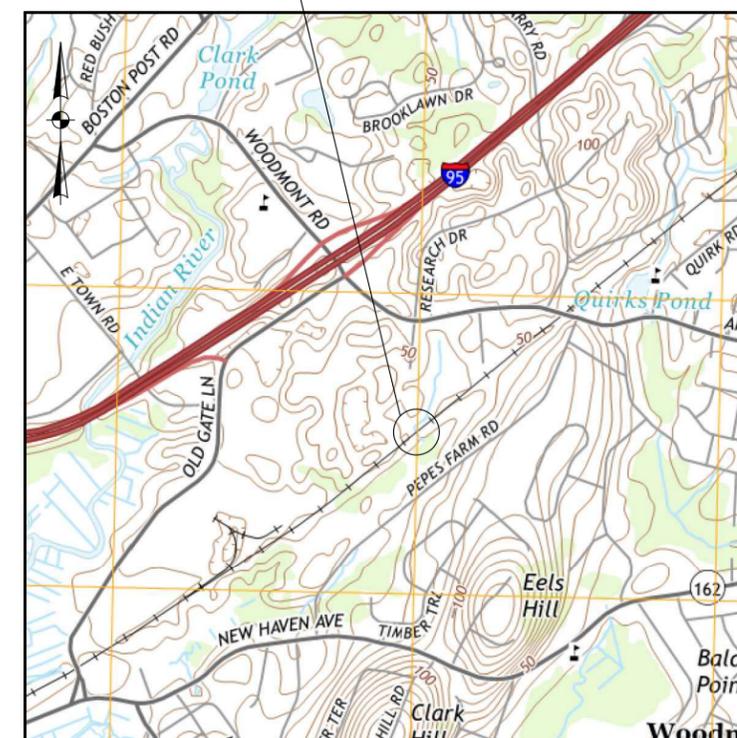


PROJECT LOCATION



LOCATION MAP
SCALE 1" = 1000'

PROJECT LOCATION

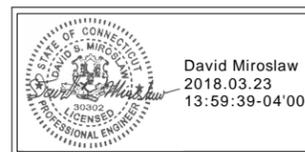


USGS QUADRANGLE TOPOGRAPHIC MAP
MILFORD QUADRANGLE
7.5 MINUTE SERIES
SCALE 1" = 1000'

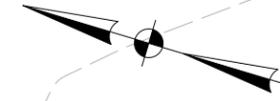
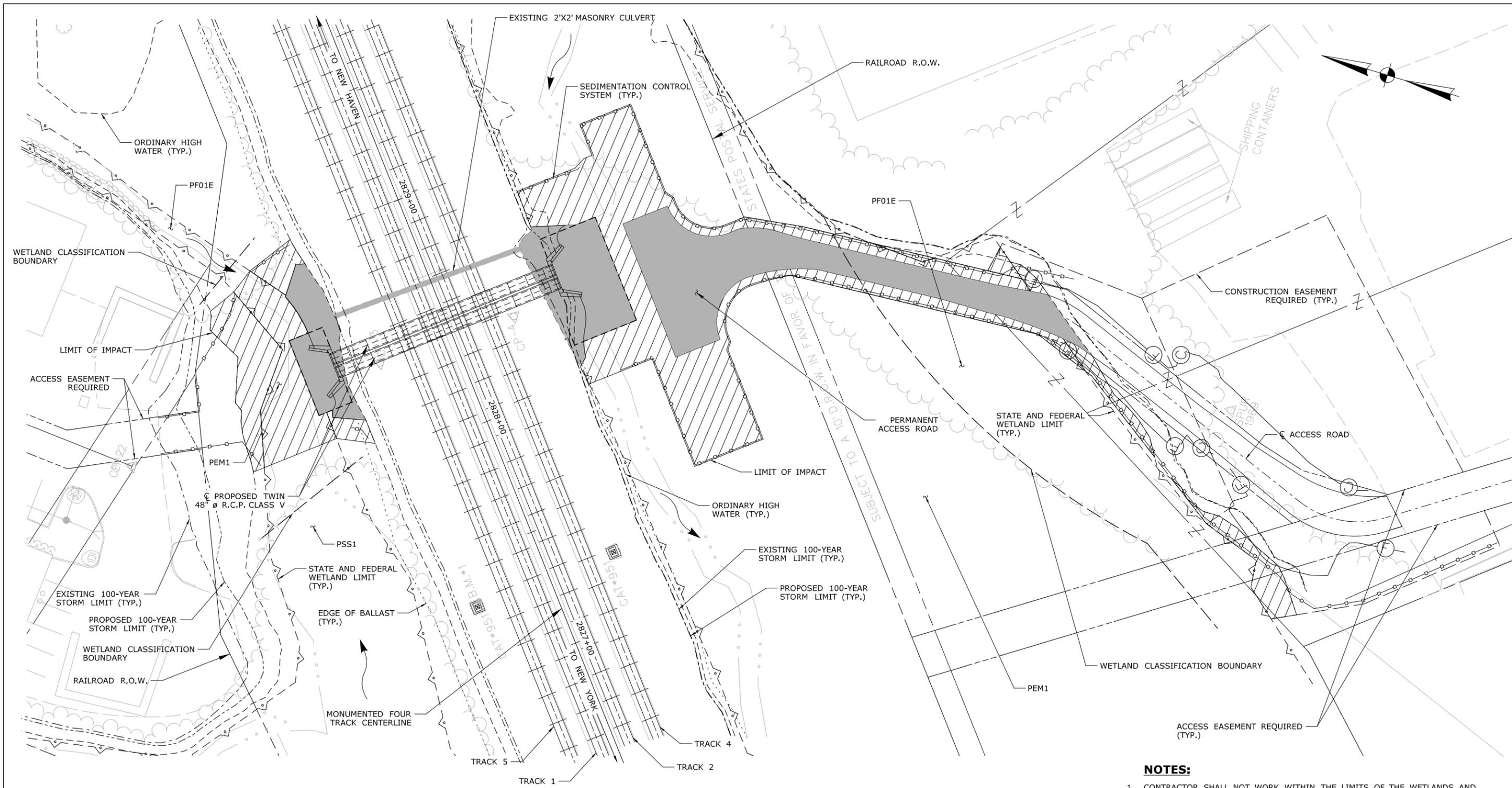
GENERAL NOTES

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. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
3. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENT'S STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, 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 MAUAL.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NAVD 1988.
5. WETLANDS DELINEATED BY CONNECTICUT ECOSYSTEMS LLC ON OCTOBER 20, 2015.

DESIGNED BY:
LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street, Suite 401
East Hartford, CT 06108



| | | | | | | | | | | | | | | |
|------|------|----------------------|-----------|--------------------|--------------------------------|---------------------|----------------|--|--|--------------------|------------------|--|------------------------------|-------------------------------|
| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | DESIGNER/DRAFTER: D.M./C.R. | CHECKED BY: R.B. | SCALE AS NOTED | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION | LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108 | APPROVED BY: RB | DATE: 3-23-18 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| | | | | | | | | | | | | DRAWING TITLE: TITLE SHEET | DRAWING NO. ENV-01 | |
| | | | | | | | | | | | | | SHEET NO. 1 OF 10 | |



| WETLAND IMPACT TABLE | | | | |
|----------------------|------------------|------------------------|-------------------------|-------------------------|
| | WETLAND SITE NO. | WATERWAY IMPACTS | WETLAND IMPACTS | TOTAL |
| PERMANENT IMPACTS | 1 | 815 S.F. (0.018 AC.) | 5,605 S.F. (0.129 AC.) | 6,420 S.F. (0.148 AC.) |
| TEMPORARY IMPACTS | 1 | 2,165 S.F. (0.050 AC.) | 7,165 S.F. (0.164 AC.) | 9,330 S.F. (0.214 AC.) |
| TOTAL IMPACTS | | 2,980 S.F. (0.068 AC.) | 12,770 S.F. (0.293 AC.) | 15,750 S.F. (0.362 AC.) |

WETLAND IMPACT PLAN
SCALE: 1" = 20'-0"

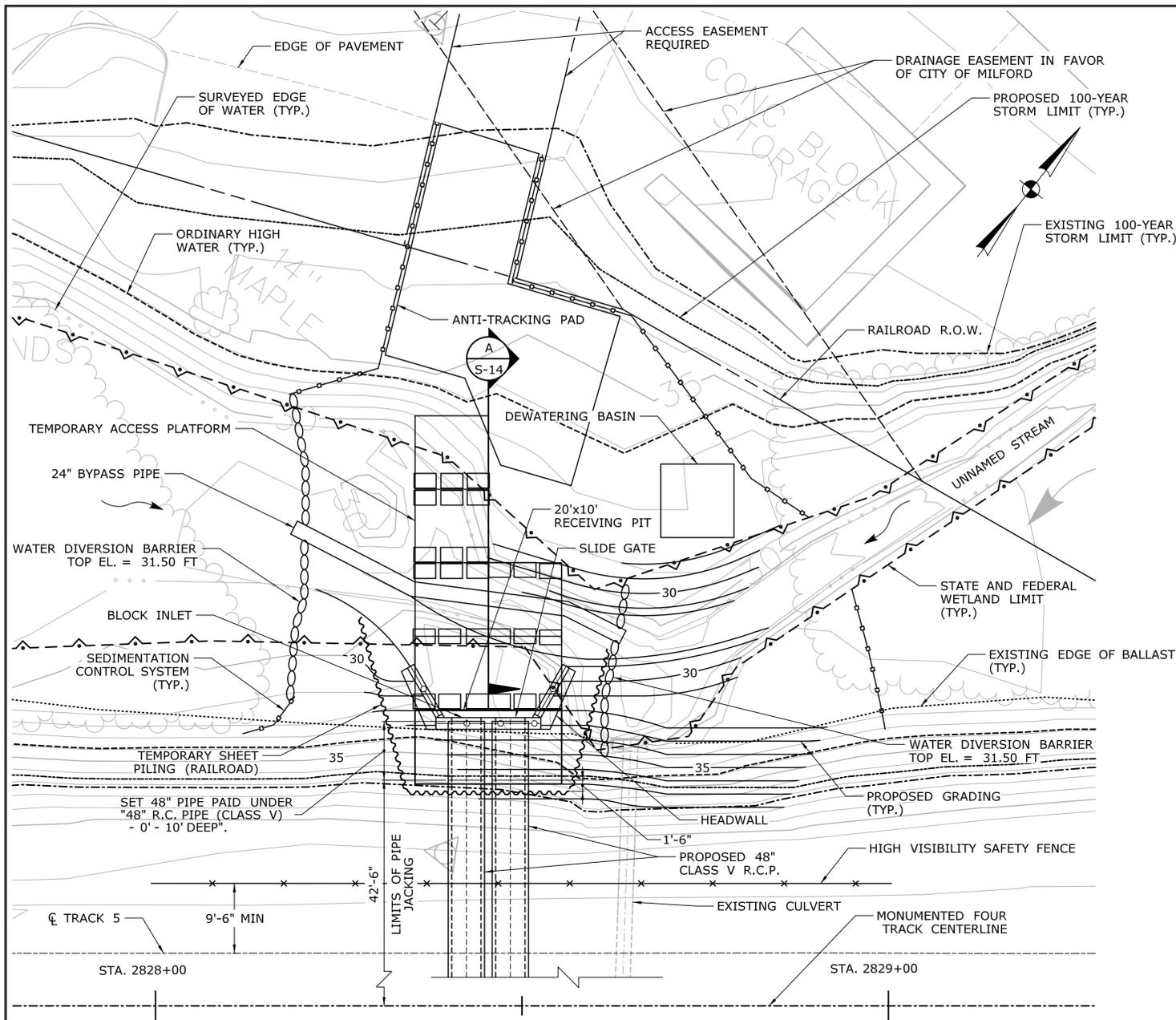
LEGEND

- PERMANENT IMPACT
- TEMPORARY IMPACT
- SEDIMENTATION CONTROL SYSTEM

NOTES:

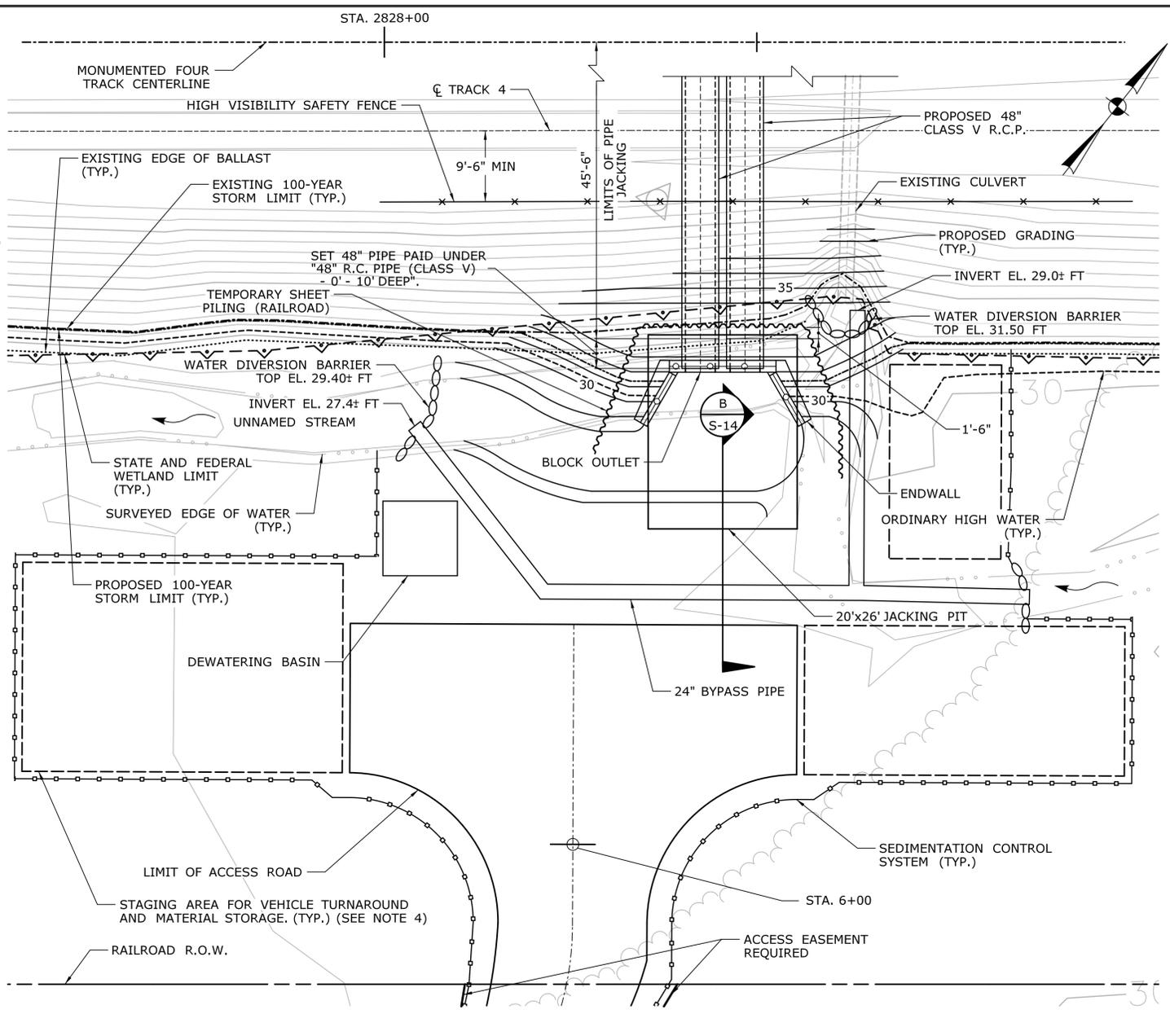
- CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WETLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED.
- DUE TO THE LOCATION OF THE PROJECT BETWEEN HIGHLY DEVELOPED INDUSTRIAL AREAS AND THE RAIL LINE EMBANKMENTS, THE ORDINARY HIGH WATER (OHW) LINE HAS BEEN DETERMINED TO BE EITHER NEARLY COINCIDENT WITH THE WETLAND LIMITS (OUTLET) OR JUST ABOVE THE WETLAND LIMIT (INLET). AT THE INLET IN PARTICULAR, LOCALIZED FREQUENT INUNDATION OCCURS ABOVE THE WETLAND LINE, HOWEVER, DUE TO THE FACT THAT WATERS POND ON DISTURBED SURFACES, NO WETLAND CONDITIONS DEVELOP. THE 'TOTAL IMPACTS' AS PRESENTED IN THE PERMIT REPRESENT THE FOOTPRINT OUT-TO-OUT, TO THE OHW LIMITS; THE 'WETLAND' IMPACTS REPORTED ARE THE PORTION WITHIN THE TOTAL THAT ARE STRICTLY VEGETATED WETLANDS.

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|--|------|----------------------|----------------------|-----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|---|--|---|--|
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">REV.</td><td style="width: 10%;">DATE</td><td style="width: 60%;">REVISION DESCRIPTION</td><td style="width: 20%;">SHEET NO.</td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table> | 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: D.M. / C.R. CHECKED BY: R.B. SCALE AS NOTED | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION FILENAME: ...\\SB_MSH_MP65.60_0301_0175_4.1 Wetland.dgn | LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108 APPROVED BY: R.B. DATE: 3-23-18 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD DRAWING TITLE: WETLAND IMPACT PLAN | PROJECT NO. 301-175 DRAWING NO. ENV-02 SHEET NO. 2 OF 10 |
| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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PLAN AT INLET

SCALE: 1" = 10'-0"



PLAN AT OUTLET

SCALE: 1" = 10'-0"

SEQUENCE OF CONSTRUCTION NOTES STAGE - 1

1. INSTALL SEDIMENTATION CONTROL SYSTEM AND HIGH VISIBILITY SAFETY FENCE.
2. CONSTRUCT ANTI-TRACKING PADS AND ACCESS ROAD.
3. INSTALL WATER HANDLING SYSTEM
4. ESTABLISH SETTLEMENT MONITORING POINTS AT APPROVED LOCATIONS AND BEGIN TAKING MEASUREMENTS AS REQUIRED.
5. EXCAVATE EXISTING CHANNEL BOTTOM MATERIAL AND STORE AT APPROVED LOCATION.
6. INSTALL TEMPORARY SHEET PILING (RAILROAD), EXCAVATE AND INSTALL JACKING AND RECEIVING PITS.
7. JACK PIPES 1 AND 2 THROUGH THE RAILROAD EMBANKMENT
8. PLACE BEDDING MATERIAL AND SET REMAINING SECTIONS OF PIPE
9. CONSTRUCT HEADWALL AND ENDWALL.
10. INSTALL RAILING, SLIDE GATE AND BLOCK OFF PIPE 2.
11. INSTALL PRECAST CONCRETE BLOCK REVETMENT.

GENERAL NOTES:

1. THE SIZE OF THE JACKING AND RECEIVING PITS IS APPROXIMATE AND IS SHOWN HERE ONLY AS A REFERENCE. THE CONTRACTOR SHALL DETERMINE THE ACTUAL SIZE REQUIRED TO COMPLETE THE JACKING OPERATION. THE COST OF JACKING AND RECEIVING PITS SHALL BE PAID UNDER THE ITEM "JACKING 48" R.C. PIPE (CLASS V) - 0' - 20' DEEP".
2. THE COST OF FURNISHING AND INSTALLING THE BYPASS PIPES, WATER DIVERSION BARRIERS AND NECESSARY INCIDENTAL APPURTENANCES REQUIRED FOR BYPASSING THE STREAM AROUND THE SITE SHALL BE INCLUDED IN THE COST OF THE ITEM "HANDLING WATER".
3. ALL WATER PUMPED FROM CONSTRUCTION AREAS ISOLATED BY THE WATER DIVERSION BARRIER IS TO BE HANDLED THROUGH THE TEMPORARY DEWATERING BASIN. COST OF TEMPORARY DEWATERING BASIN SHALL BE INCLUDED IN THE COST OF THE ITEM "HANDLING WATER".
4. STAGING AREAS USED FOR CONSTRUCTION ACTIVITIES SHALL USE MATS TO SUPPORT ANY AND ALL OF THE CONTRACTORS EQUIPMENT. THE MATS SHALL BE APPROVED BY THE ENGINEER AND REMOVED UPON COMPLETION OF THE WORK. COST OF MATS TO BE INCLUDED IN THE PRICE OF THE ITEM "CONSTRUCTION ACCESS".

5. CONSTRUCTION MATS SHALL BE THOROUGHLY CLEANED BEFORE USE TO PREVENT THE SPREAD OF INVASIVE SPECIES.
6. THE ENDWALLS AND 48" R.C.P. SHALL BE FOUNDED ON GRANULAR FILL OR BEDDING MATERIAL AS SHOWN ON THE DETAIL DRAWINGS. IF THE OVERLYING ORGANIC CLAYEY SILT LAYER EXTENDS BELOW THE BOTTOM OF THE GRANULAR FILL OR BEDDING MATERIAL AT THESE LOCATIONS IT SHALL BE REMOVED AND REPLACED WITH THE BEARING MATERIAL SPECIFIED AT THAT LOCATION.
7. SUBGRADE PREPARATION SHALL BE CONDUCTED IN A WAY TO MINIMIZE DISTURBANCE. THE FINAL 6" OF EXCAVATION SHALL BE MADE WITH A SMOOTH-EDGE BLADE OR HAND SHOVELED.
8. NATURAL STREAMBED MATERIAL SHALL BE PAID FOR UNDER ITEM "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL".

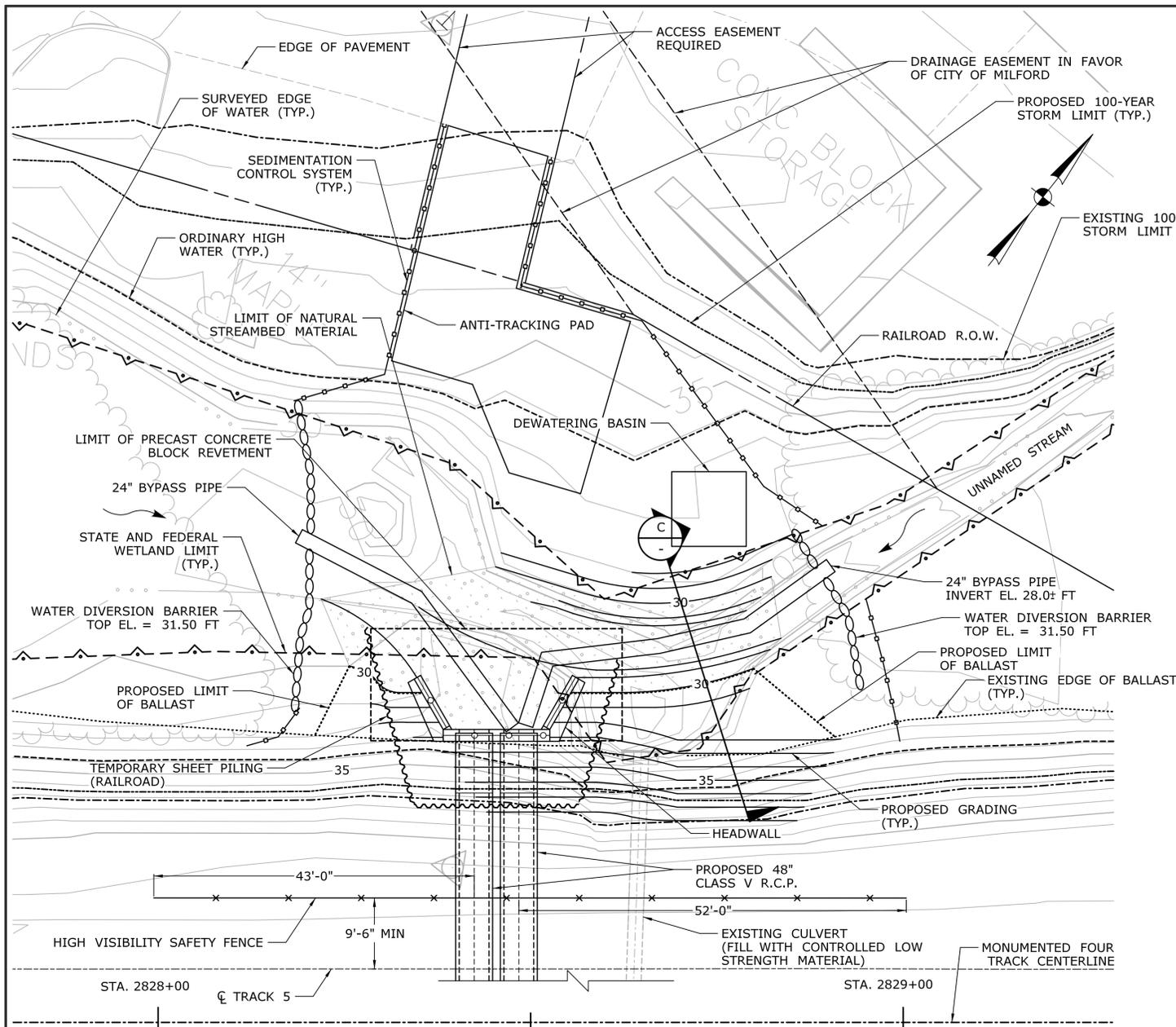
TEMPORARY HYDRAULIC DATA - UNNAMED STREAM

| | |
|--|-----------------|
| AVERAGE DAILY FLOW | 0.2 CFS |
| AVERAGE SPRING FLOW | 0.4 CFS |
| 2-YEAR FREQUENCY DISCHARGE | 111 CFS |
| TEMPORARY DESIGN DISCHARGE | 4 CFS |
| TEMPORARY DESIGN FREQUENCY | 10X SPRING FLOW |
| TEMPORARY WATER SURFACE ELEVATION UPSTREAM | 30.94 FT |
| TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM | 27.53 FT |

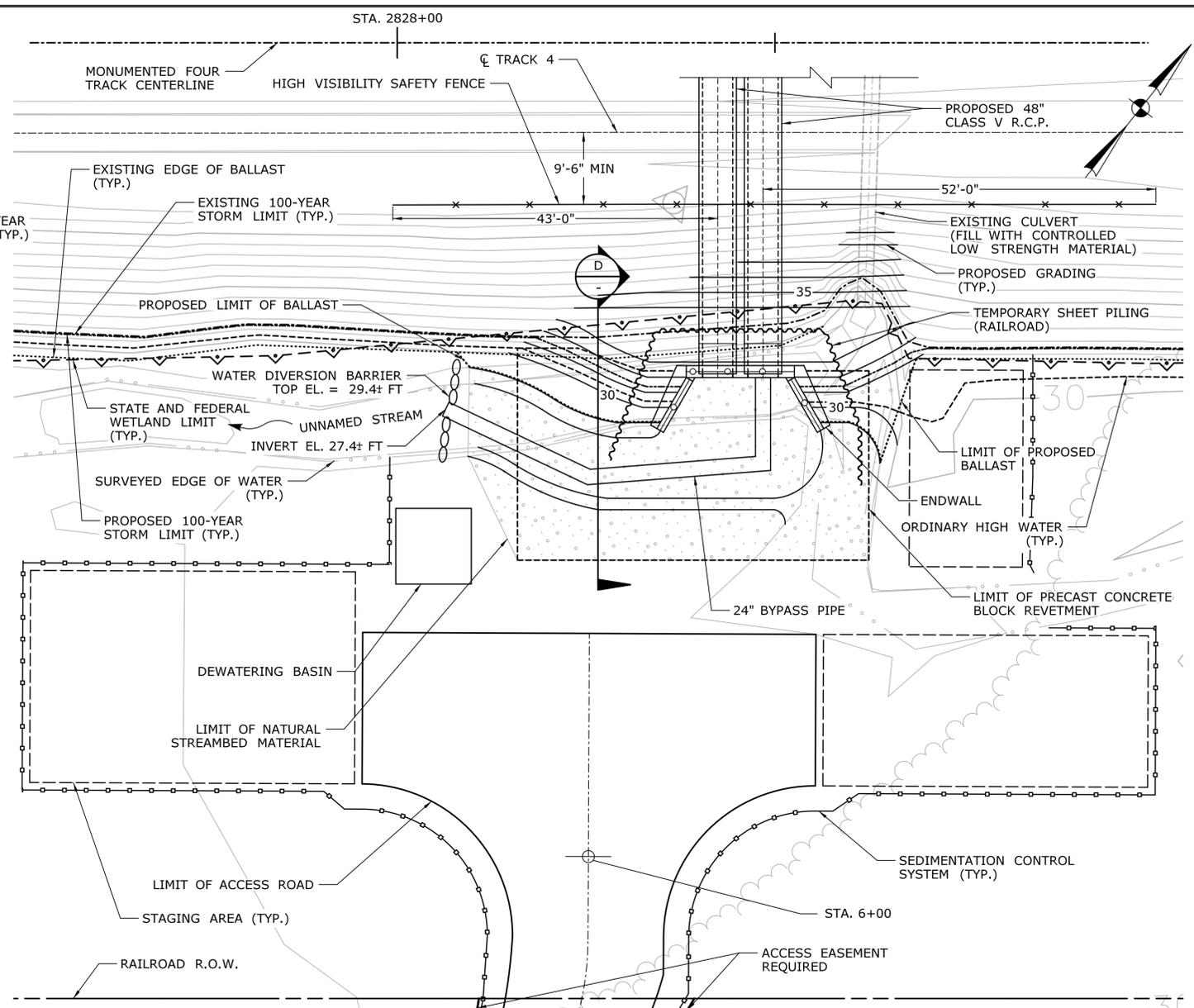
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|---|--|---------------------------------------|--|--|--|---|-------------------------------|
| | | DESIGNER/DRAFTER: D.M./C.R. | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION | LOCHNER H.W. LOCHNER, INC. 55 Hartland Street, Suite 401 East Hartford, CT 06108 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| | | CHECKED BY: R.B. | | APPROVED BY: R.B. DATE: 3-23-18 | | DRAWING TITLE: CONSTRUCTION STAGE-1 | DRAWING NO. ENV-05 |
| REV. DATE REVISION DESCRIPTION SHEET NO. | | SCALE AS NOTED | FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.7_STG1.dgn | | | | SHEET NO. 5 OF 10 |

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: 3/23/2018



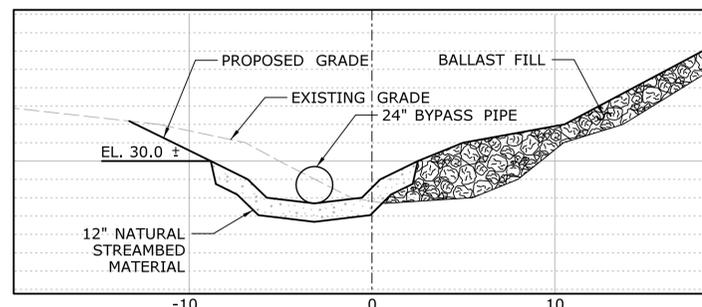
PLAN AT INLET
SCALE: 1" = 10'-0"



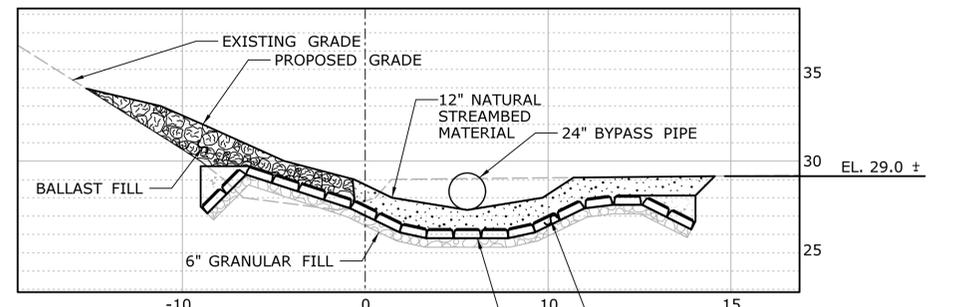
PLAN AT OUTLET
SCALE: 1" = 10'-0"

SEQUENCE OF CONSTRUCTION NOTES STAGE - 2

1. MODIFY WATER HANDLING TO ROUTE WATER THROUGH THE PROPOSED PIPE.
2. PLACE NATURAL STREAMBED MATERIAL. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL.
3. REGRADE RAILROAD EMBANKMENT SLOPES.
4. REMOVE WATER HANDLING SYSTEM, CONSTRUCTION MATS AND MATERIALS USED TO ACCESS THE SITE.
5. PLACE WETLAND SEED MIX ON DISTURBED AREAS WITHIN THE WETLAND LIMITS. WETLAND SEED MIX SHALL NOT BE PLACED OVER NATURAL STREAMBED MATERIAL, BALLAST OR THE PERMANENT ACCESS ROAD. TO BE PAID FOR UNDER ITEM "WETLAND GRASS ESTABLISHMENT".
6. PLACE TOPSOIL AND CONSERVATION SEEDING FOR SLOPES ON DISTURBED EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLAND LIMITS.



SECTION C
TYPICAL CHANNEL SECTION UPSTREAM
SCALE: 1" = 5'-0"



SECTION D
TYPICAL CHANNEL SECTION DOWNSTREAM
SCALE: 1" = 5'-0"

| REV. | DATE | REVISION DESCRIPTION | SHEET NO. |
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DESIGNER/DRAFTER:
D.M./C.R.
CHECKED BY:
R.B.
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.8_STG2.dgn

LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street, Suite 401
East Hartford, CT 06108

APPROVED BY: R.B. DATE: 3-23-18

PROJECT TITLE:
**REPLACEMENT OF CULVERT AT
MP 65.60 NEW HAVEN MAINLINE
OVER UNNAMED STREAM**

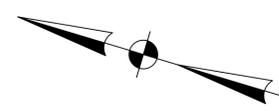
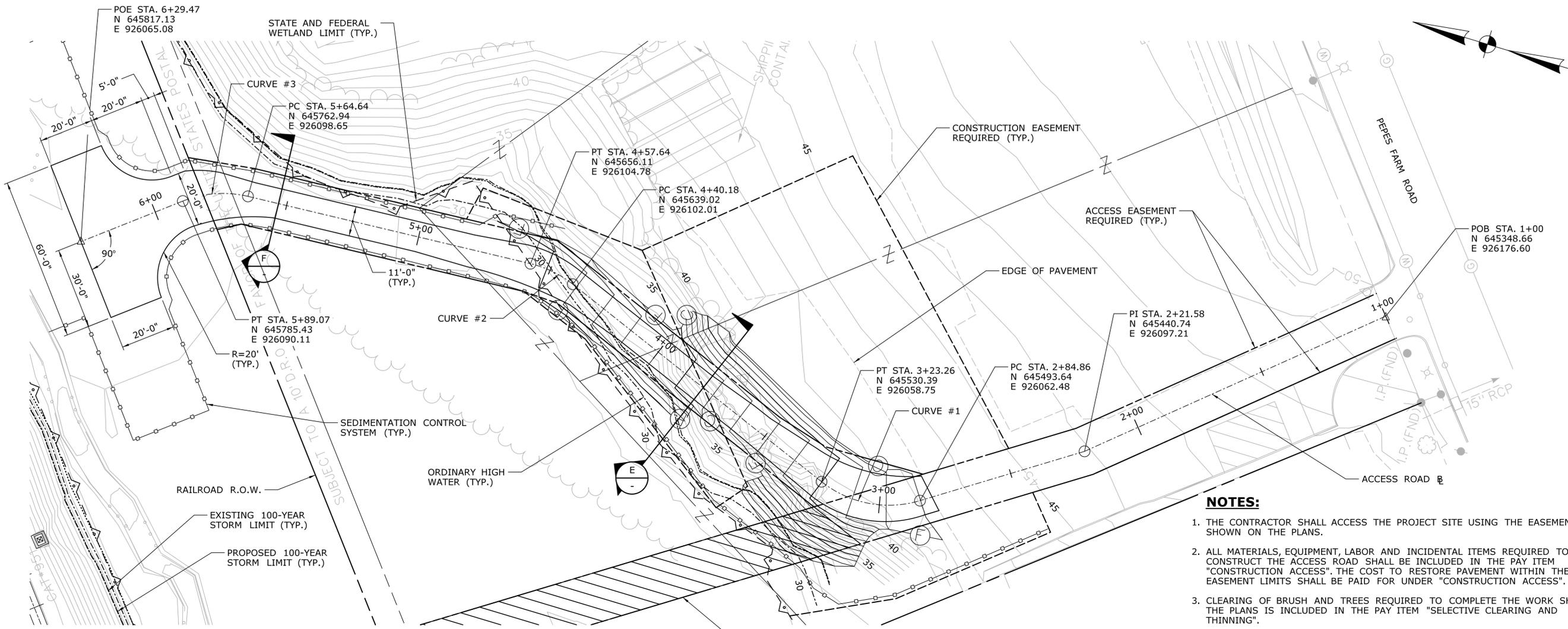
TOWN:
MILFORD

DRAWING TITLE:
CONSTRUCTION STAGE-2

PROJECT NO.:
301-175

DRAWING NO.:
ENV-06

SHEET NO.:
6 OF 10



CURVE DATA

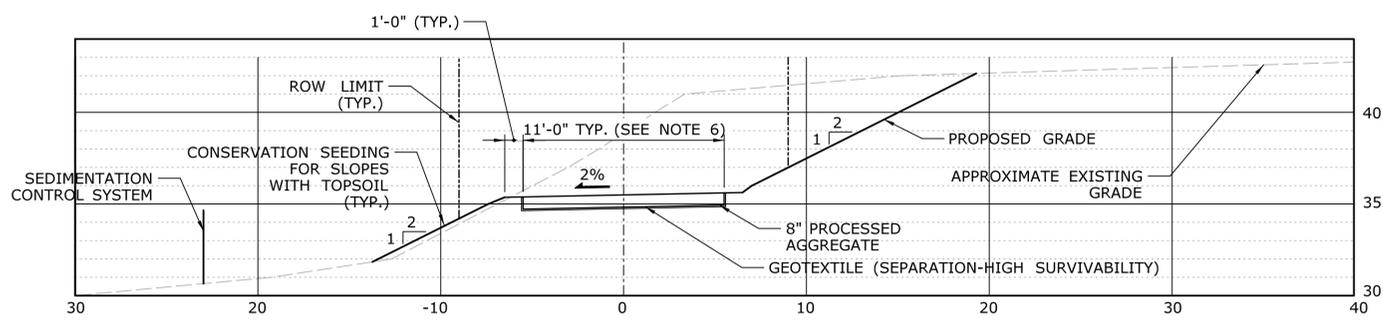
| CURVE #1 | CURVE #2 | CURVE #3 |
|------------------|------------------|------------------|
| Δ = 55° | Δ = 25° | Δ = 35° |
| T = 20.82' | T = 8.87' | T = 12.61' |
| L = 38.40' | L = 17.45' | L = 24.43' |
| R = 40' | R = 40' | R = 40' |
| PI N = 645511.05 | PI N = 645647.26 | PI N = 645775.53 |
| PI E = 926051.05 | PI E = 926105.29 | PI E = 926097.92 |

ACCESS ROAD PLAN

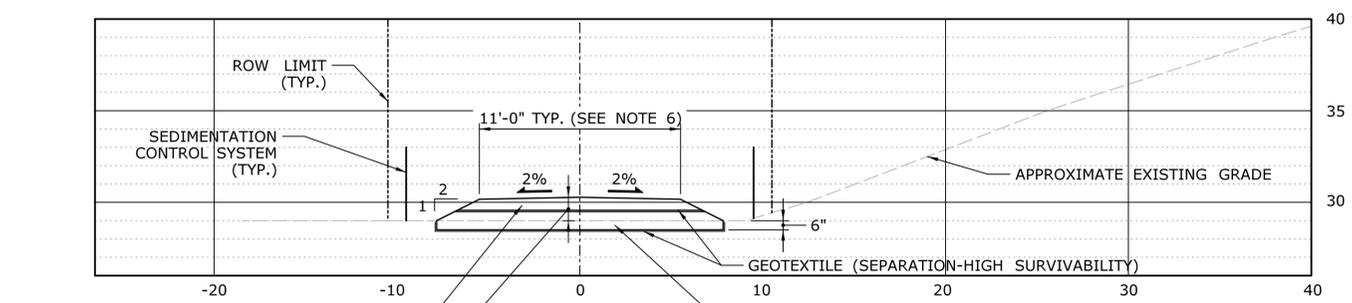
SCALE: 1" = 20'-0"

NOTES:

1. THE CONTRACTOR SHALL ACCESS THE PROJECT SITE USING THE EASEMENTS SHOWN ON THE PLANS.
2. ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTAL ITEMS REQUIRED TO CONSTRUCT THE ACCESS ROAD SHALL BE INCLUDED IN THE PAY ITEM "CONSTRUCTION ACCESS". THE COST TO RESTORE PAVEMENT WITHIN THE EASEMENT LIMITS SHALL BE PAID FOR UNDER "CONSTRUCTION ACCESS".
3. CLEARING OF BRUSH AND TREES REQUIRED TO COMPLETE THE WORK SHOWN ON THE PLANS IS INCLUDED IN THE PAY ITEM "SELECTIVE CLEARING AND THINNING".
4. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS UPON THE COMPLETION OF THE GRADING WORK. WETLAND SEED MIX SHALL BE USED WITHIN THE WETLAND LIMITS. THE RAILROAD EMBANKMENT ABOVE THE LIMIT OF BALLAST, AREAS OF NATURAL STREAMBED MATERIAL AND THE ACCESS ROAD SHALL NOT BE SEEDED. CONSERVATION SEED MIX SHALL BE USED ON EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLANDS.
5. TOPSOIL SHALL BE PLACED ON EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLAND LIMITS.
6. THE WIDTH OF THE ACCESS ROAD IN THE CURVES SHALL BE INCREASED AS NECESSARY TO PROVIDE SUFFICIENT ROOM FOR VEHICLE MOVEMENTS.



SECTION E
TYPICAL SLOPE SECTION
SCALE: 1" = 5'-0"



SECTION F
TYPICAL WETLAND SECTION
SCALE: 1" = 5'-0"

| REV. | DATE | REVISION DESCRIPTION | SHEET NO. |
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DESIGNER/DRAFTER:
D.M./C.R.
CHECKED BY:
R.B.
SCALE AS NOTED

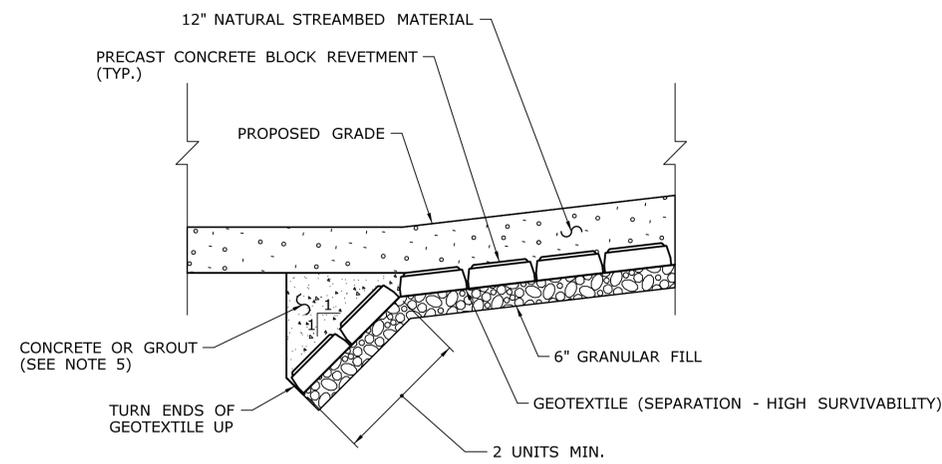
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street
East Hartford, CT 06108
APPROVED BY: **R.B.** DATE: **3-23-18**

PROJECT TITLE:
**REPLACEMENT OF CULVERT AT
MP 65.60 NEW HAVEN MAINLINE
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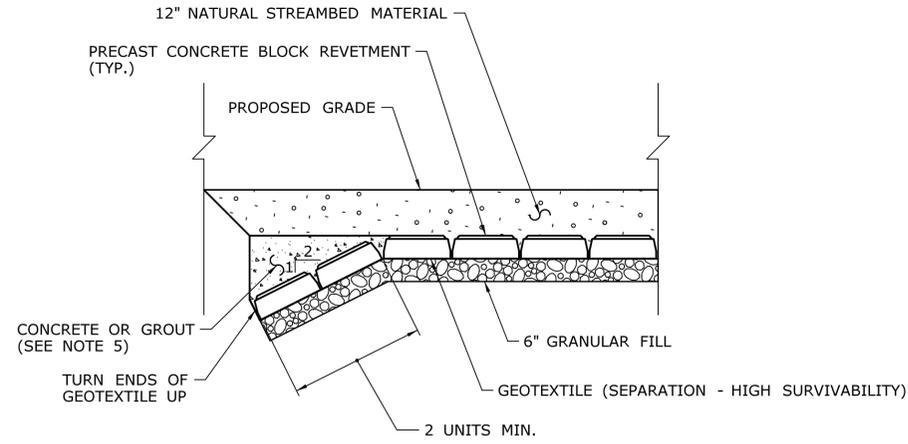
TOWN:
MILFORD
DRAWING TITLE:
ACCESS ROAD DETAILS

PROJECT NO.: **301-175**
DRAWING NO.: **ENV-07**
SHEET NO.: **7 OF 10**



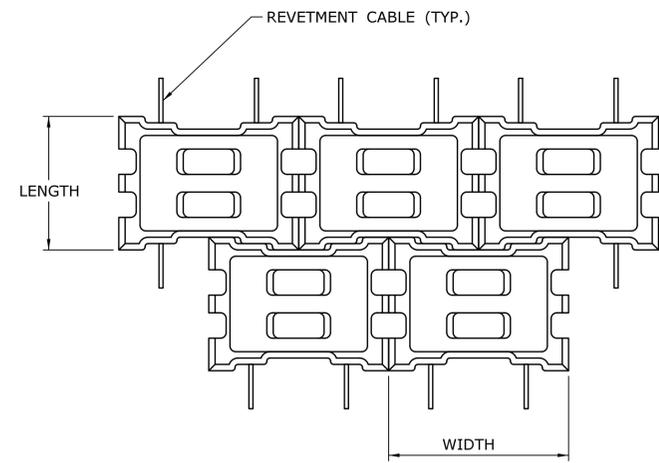
TOE TERMINATION DETAIL

N.T.S



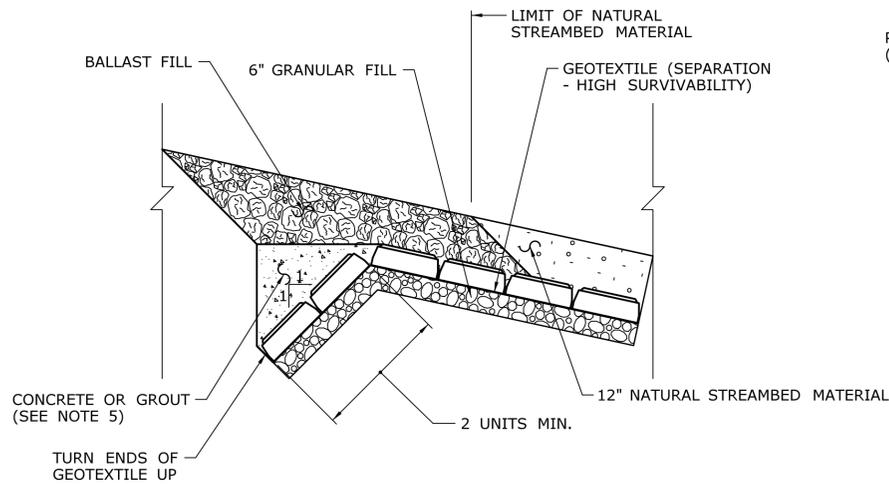
FLANK TERMINATION DETAIL

N.T.S



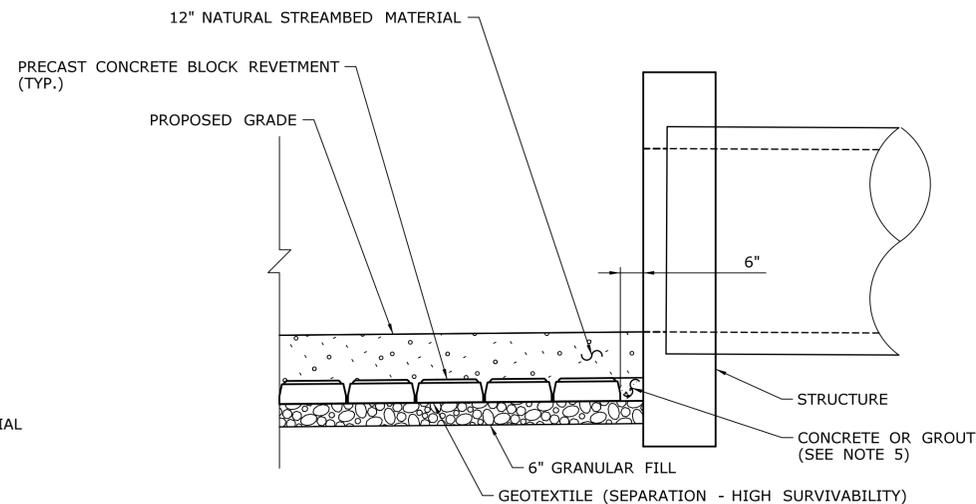
PRECAST CONCRETE BLOCK DETAIL

N.T.S



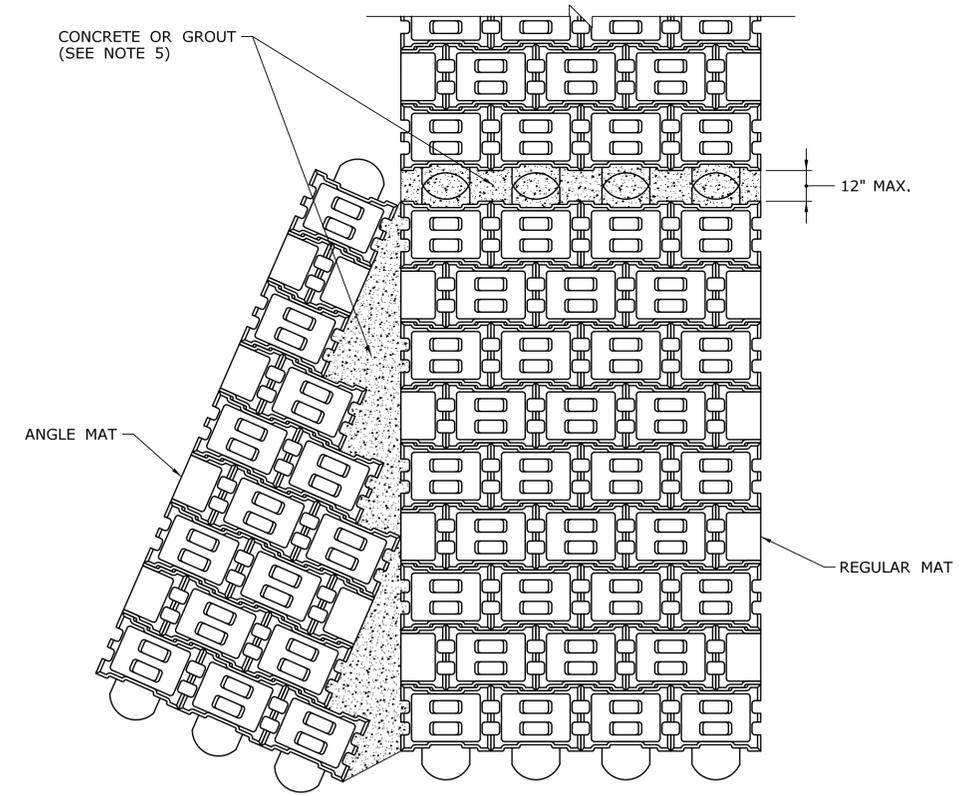
TOP TERMINATION DETAIL

N.T.S



TERMINATION AT STRUCTURE DETAIL

N.T.S



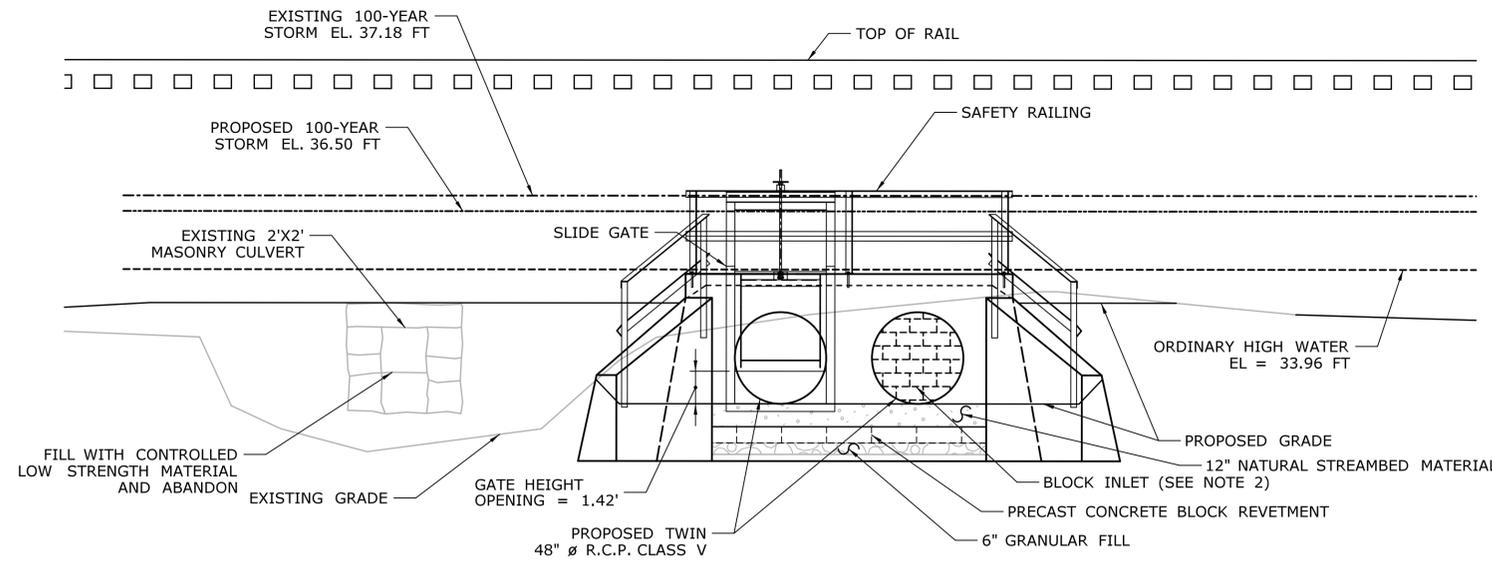
INSTALLATION DETAIL

N.T.S

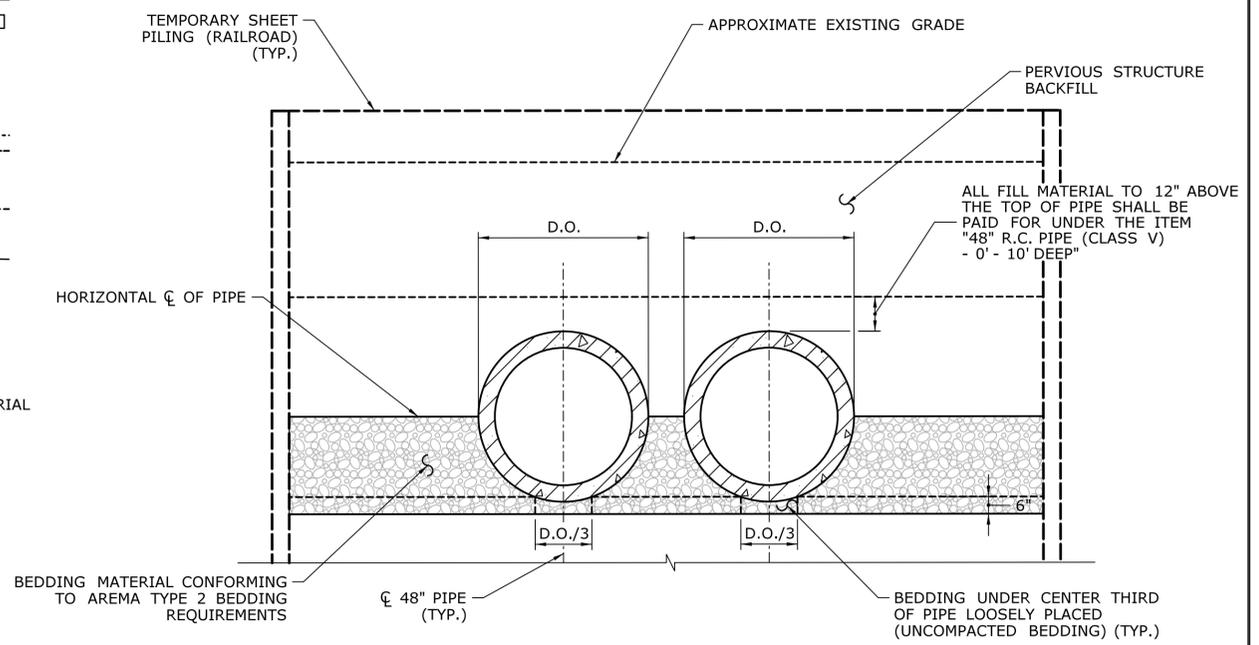
PRECAST CONCRETE BLOCK REVETMENT NOTES:

- BLOCKS MUST BE OPEN CELL AND NON-TAPERED.
- THE INSTALLATION OF THE PRECAST CONCRETE BLOCK REVETMENT SYSTEM SHALL BE IN ACCORDANCE WITH ASTM D6884 AND THE MANUFACTURER'S RECOMMENDATIONS.
- THE 6" LAYER OF GRANULAR FILL, GEOTEXTILE (SEPARATION - HIGH SURVIVABILITY), GROUT OR CONCRETE AND PRECAST CONCRETE BLOCKS SHALL BE PAID FOR UNDER ITEM "PRECAST CONCRETE BLOCK REVETMENT".
- IF PRECAST CONCRETE BLOCK MATS ARE USED THEY SHALL BE MATCHED UP TO THE GREATEST EXTENT POSSIBLE. GAPS GREATER THAN ONE BLOCK SIZE SHALL BE FILLED WITH A BLOCK. NO OVERLAPPING OF MATS WILL BE ACCEPTED.
- 4,000 PSI NON SHRINK GROUT OR CONCRETE SHALL BE USED WHERE THE LOOP ENDS OF THE MATS MEET, AT TERMINATION ENDS AS SHOWN AND WHEREVER THERE IS GREATER THAN A 2 INCH GAP BETWEEN ADJACENT MATS OR STRUCTURES.
- BACKFILLING OF THE REVETMENT SYSTEM WITH NATURAL STREAMBED MATERIAL SHALL BE COMPLETED AS SOON AS PRACTICABLE AFTER THE REVETMENT HAS BEEN INSTALLED.

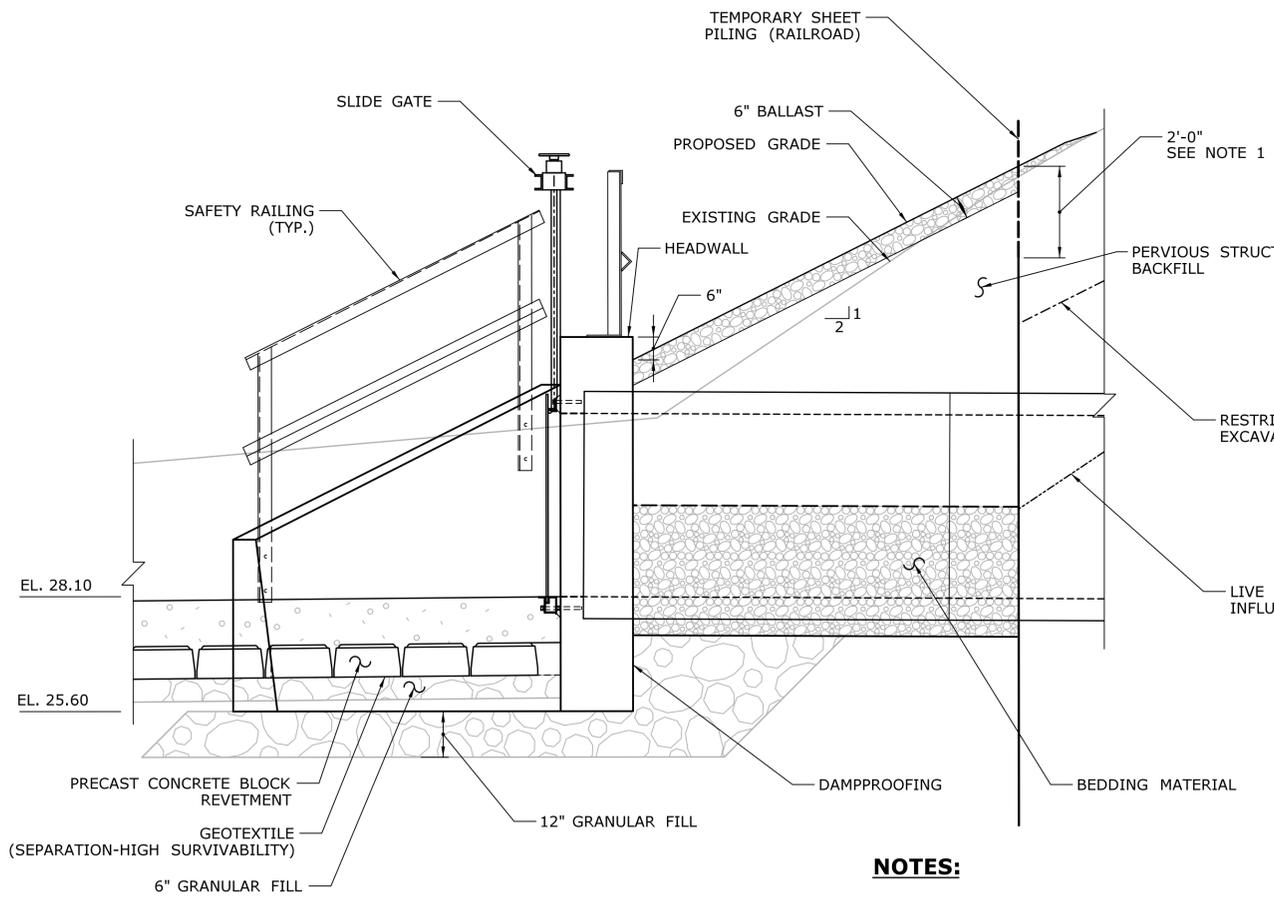
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| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | DESIGNER/DRAFTER: D.M. | <p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> | <p>LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108</p> | <p>PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM</p> | <p>TOWN: MILFORD</p> | <p>PROJECT NO. 301-175</p> |
| | | | | | CHECKED BY: R.B. | | <p>APPROVED BY: DATE: R.B. 3-23-18</p> | <p>DRAWING TITLE: PRECAST CONCRETE BLOCK REVTMENT DETAILS</p> | <p>SHEET NO. 8 OF 10</p> | |



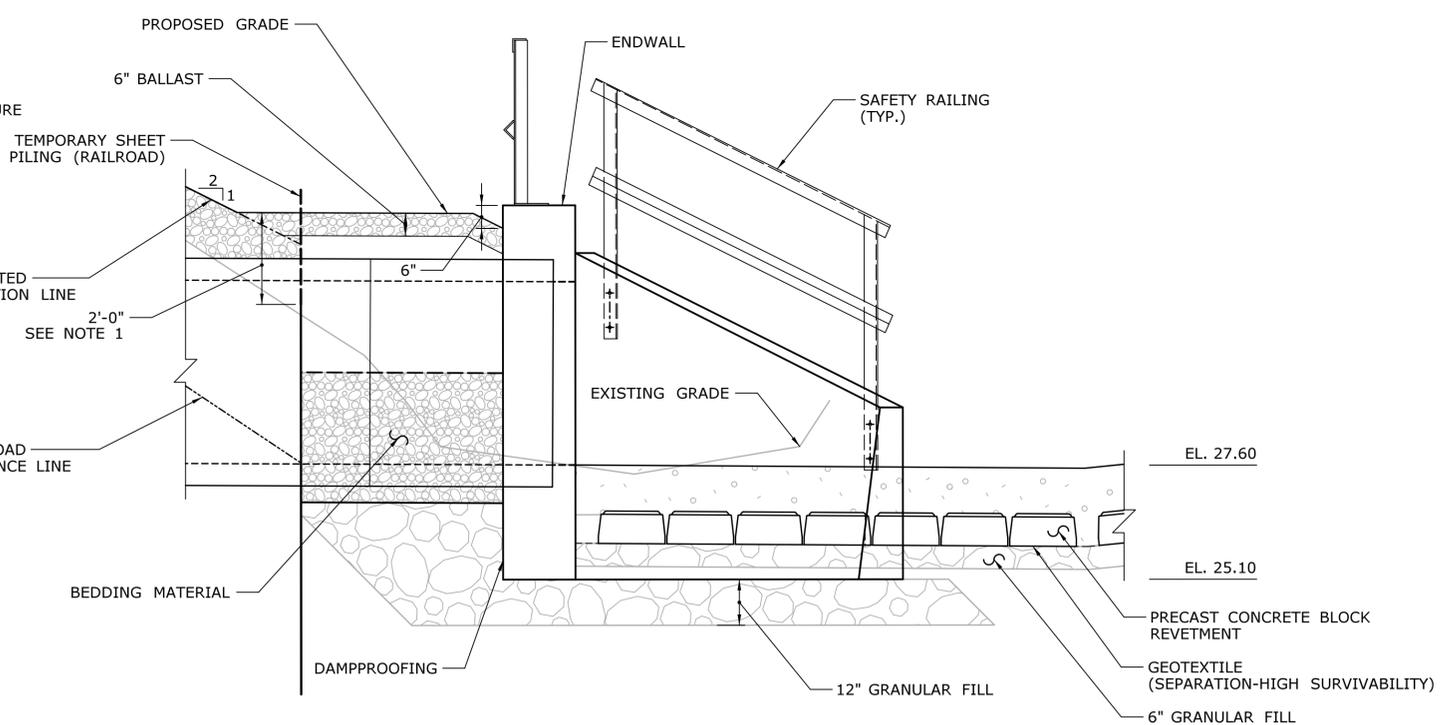
UPSTREAM ELEVATION
SCALE: 1/4"=1'-0"



PROPOSED ENDWALL ELEVATION
SCALE: 3/8"=1'-0"



PROPOSED HEADWALL ELEVATION
SCALE: 1/2"=1'-0"

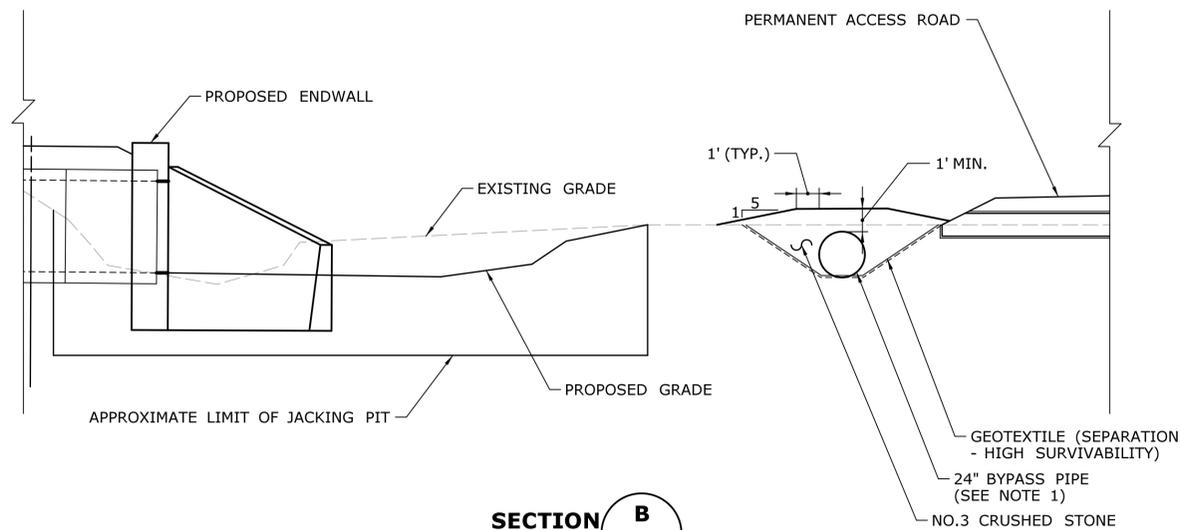


PROPOSED ENDWALL ELEVATION
SCALE: 1/2"=1'-0"

NOTES:

1. REMOVE TEMPORARY SHEET PILING (RAILROAD) 2'-0" BELOW THE PROPOSED GRADE AS SHOWN. THE REST OF THE TEMPORARY SHEET PILING (RAILROAD) SHALL REMAIN IN PLACE.
2. THE INLET AND OUTLET OF THE SUPPLEMENTAL (WESTERN) CULVERT SHALL BE BLOCKED OFF. THE MEANS FOR BLOCKING THE PIPE SHALL BE A MASONRY WALL OR OTHER SYSTEM SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER SUITABLE FOR BLOCKING OFF FLOW FROM THE CULVERT, CAPABLE OF WITHSTANDING PROLONGED EXPOSURE TO WATER AND CAPABLE OF BEING REMOVED WITH NEGLIGIBLE IMPACT ON THE HEADWALL/ENDWALL. THE COST OF BLOCKING OF THE PIPE SHALL BE INCLUDED IN THE ITEM "CLASS "A" CONCRETE".

| | | | | | | | | | |
|--------------------------------|----------------------|-------------------------------|--|--|----------------------|------------------|--|------------------------------|-------------------------------|
| DESIGNER/DRAFTER: D.M./C.R. | CHECKED BY: R.B. | SCALE IN FEET SCALE 1"=40' | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION | LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108 | APPROVED BY: R.B. | DATE: 3-23-18 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| REV. DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.13 Misc Det 1.dgn | | | DRAWING TITLE: MISCELLANEOUS DETAILS - 1 | DRAWING NO. ENV-09 | SHEET NO. 9 OF 10 |



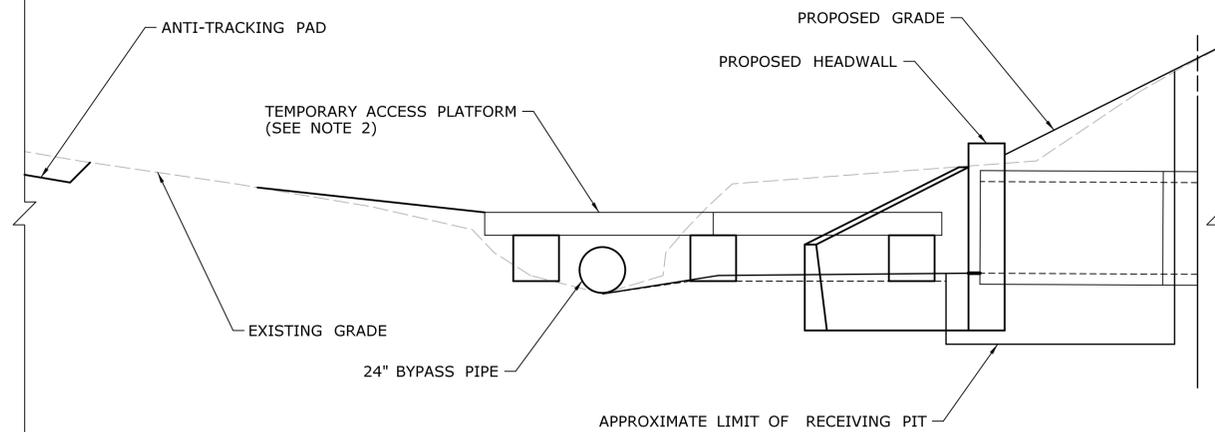
SECTION B
S-07

CONSTRUCTION STAGING ENDWALL ELEVATION

SCALE: 1/4"=1'-0"

NOTES:

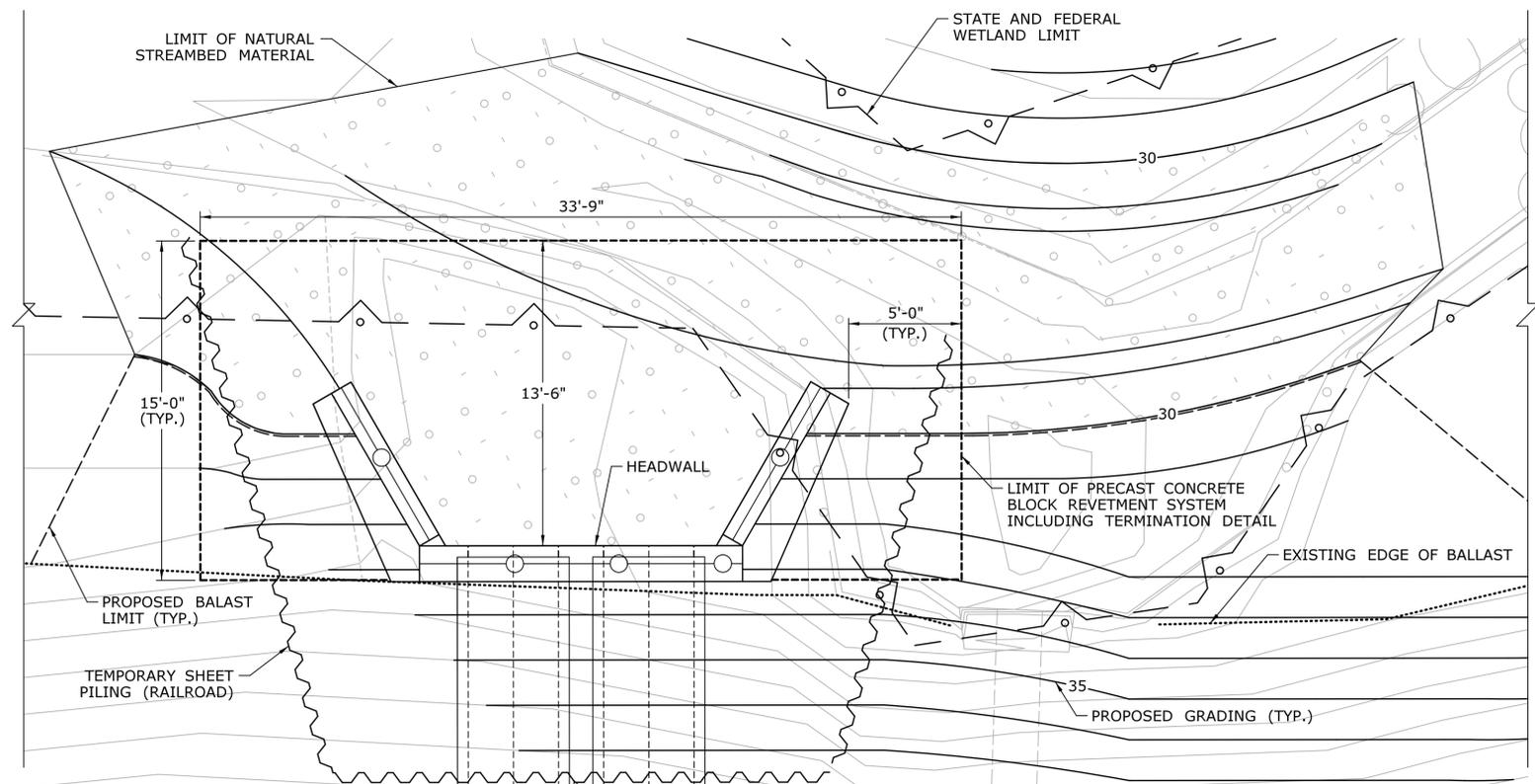
1. THE TEMPORARY BYPASS PIPE IS PROPOSED TO BE BURIED ON THE DOWNSTREAM SIDE TO PROVIDE WORK ACCESS AND A CONSTANT DOWN GRADIENT. THE FILL (CRUSHED STONE) AND GEOTEXTILE ASSOCIATED WITH THIS SHALL BE INCLUDED IN THE ITEM "HANDLING WATER". THE CONTRACTOR MAY PROPOSE AN ALTERNATE MEANS FOR THE BYPASS PIPE LAYOUT.
2. THE TEMPORARY ACCESS PLATFORM SHOWN IS A POSSIBLE MEANS OF ACCESSING THE SITE. THE CONTRACTOR MAY PROPOSE AN ALTERNATE MEANS FOR ACCESSING THE WORK AREAS. ANY MEANS OF ACCESS SHALL BE PAID UNDER THE ITEM "CONSTRUCTION ACCESS".



SECTION A
S-07

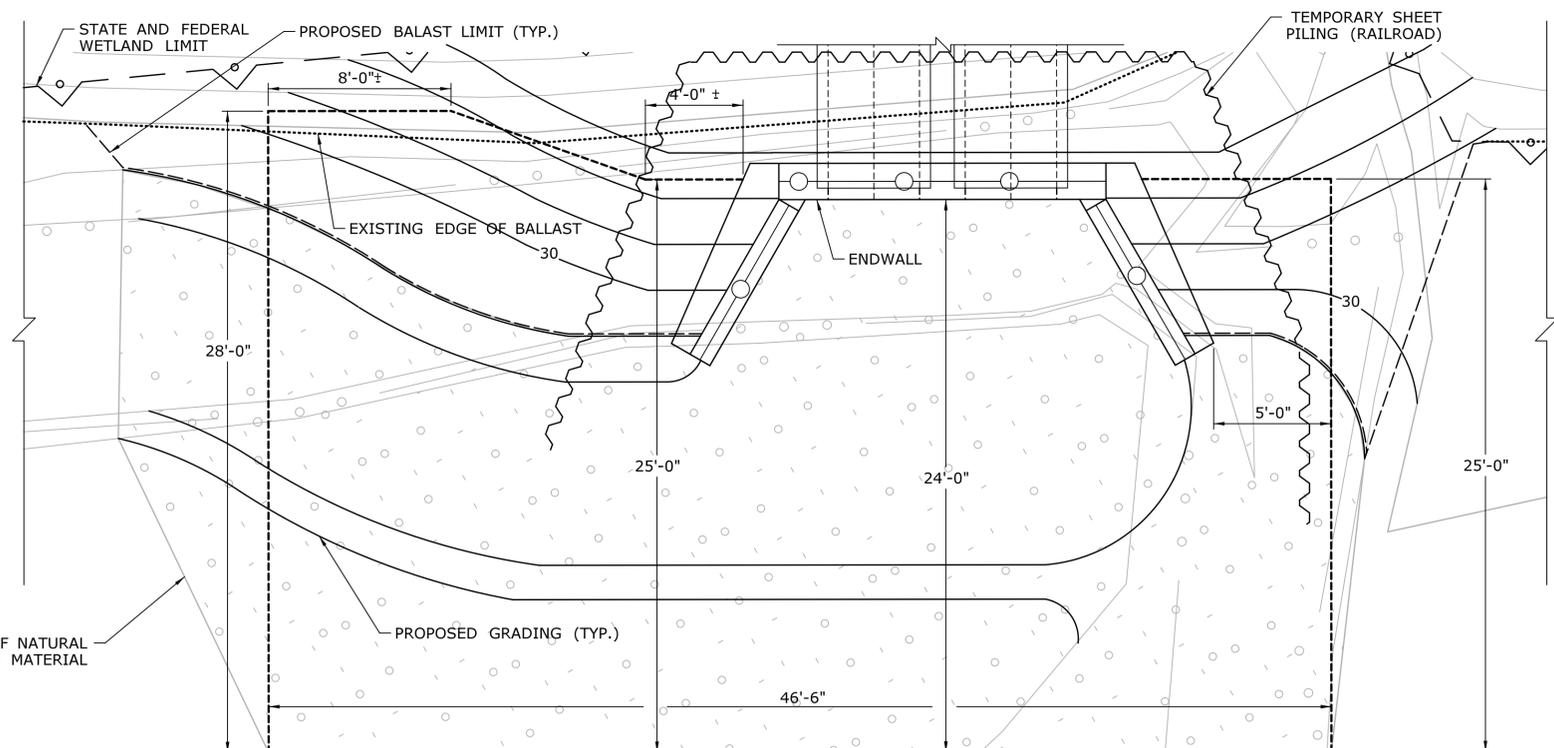
CONSTRUCTION STAGING HEADWALL ELEVATION

SCALE: 1/4"=1'-0"



UPSTREAM IN CHANNEL WORK LIMITS

SCALE: 1/4"=1'-0"



DOWNSTREAM IN CHANNEL WORK LIMITS

SCALE: 1/4"=1'-0"

| REV. | DATE | REVISION DESCRIPTION | SHEET NO. |
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PLOTTED: 3/23/2018

DESIGNER/DRAFTER:
D.M./C.R.

CHECKED BY:
R.B.

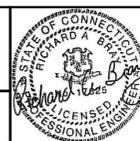
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.14 Misc Det 2.dgn

LOCHNER
H.W. LOCHNER, INC
55 Hartland Street
East Hartford, CT 06108

APPROVED BY: R.B. DATE: 3-23-18



PROJECT TITLE:
REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM

TOWN:
MILFORD

DRAWING TITLE:
MISCELLANEOUS DETAILS - 2

PROJECT NO.
301-175

DRAWING NO.
ENV-10

SHEET NO.
10 OF 10

Attachment C: Evaluation of the functions and values of all wetlands

Connecticut Addendum ACOE General Permit State of Connecticut (CT GP)

Applicant: State of Connecticut, Department of Transportation

Project No: 301-175

Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

List of Attachments

- Wetland and Soils Report
Prepared by: Connecticut Ecosystems LLC

Connecticut Ecosystems LLC

- Wetland Delineation • Wetland & Aquatic Evaluation • Mitigation
- Natural Resource Inventory • Permit Assistance • Expert Testimony



March 2, 2018

Lochner

Attn.: Mr. Richard Bray, P.E.
55 Hartland Street, Suite 401
East Hartford, CT 06108

**Re: Culvert replacement at Mile Post 65.60
New Haven Mainline over an unnamed stream in Milford, CT
CE Job# 15-10**

Dear Mr. Bray:

The replacement of the culvert at mile post 65.60 is proposed on the New Haven Mainline in Milford, CT (Figures 1 and 2).

In association with this work, Connecticut Ecosystems LLC was retained to delineate the State and Army Corps wetlands and watercourses at the project site. The following additional information was compiled: wetland description and functions/values assessment, plant and wildlife inventories, soils descriptions and Army Corps data sheets.

I inspected the project site on October 20, 2015 to delineate the wetlands and watercourses, and collect the necessary soils and wetland data. State wetlands were field delineated in accordance with the standards of the National Cooperative Soil Survey and the definition of wetlands as found in the Connecticut General Statutes, Chapter 440, Section 22A-38. Federal wetlands were delineated using the Army Corps three-parameter methodology (soils, vegetation and hydrology). I reinspected the site on February 26, 2018 to collect additional information. The results of these investigations are presented in this report.

A modified version of the “Highway Methodology”, developed by the U.S. Army Corps of Engineers (USACE 1995), was used to assess wetland functions and values (data sheets are found in Appendix 1). A Soils Report and Army Corps data sheets are in Appendices 2 and 3, respectively.

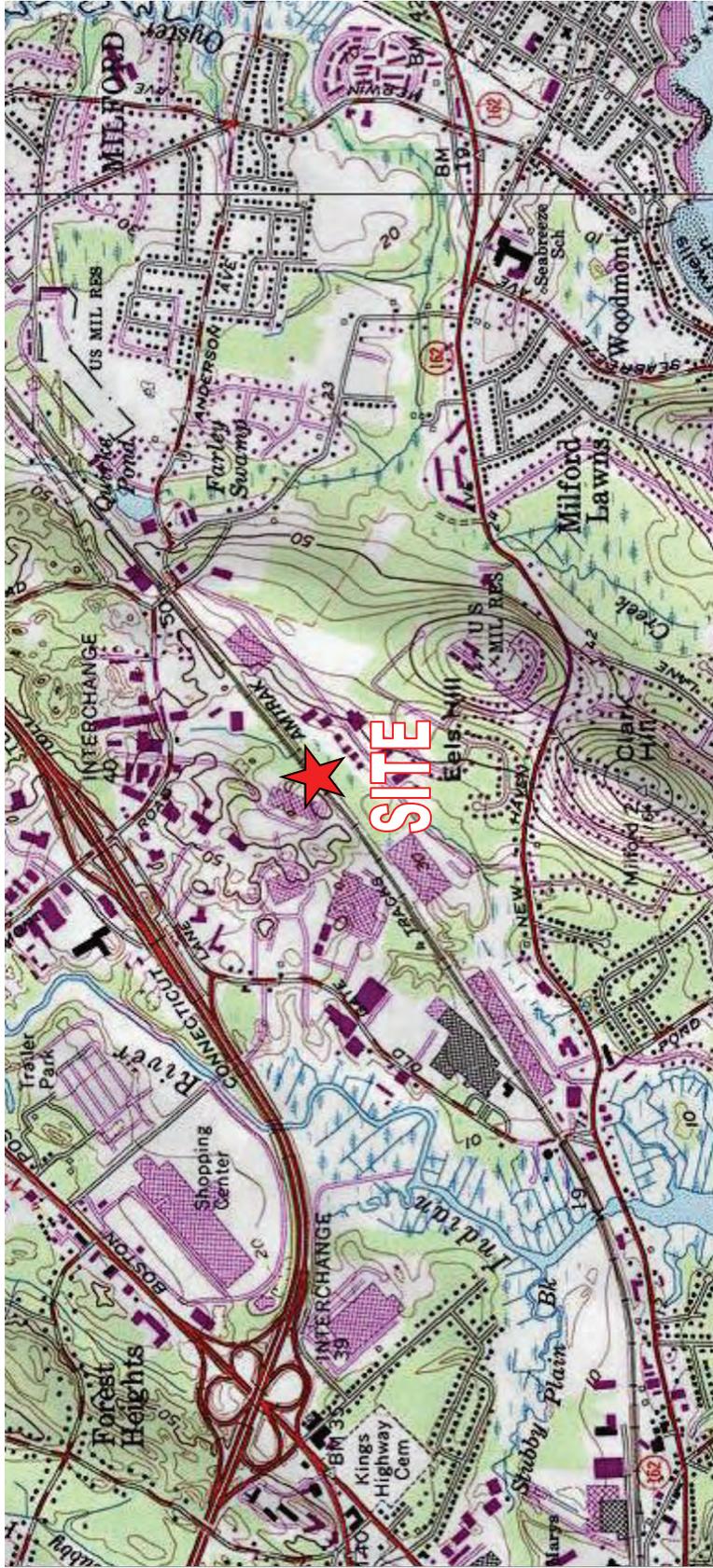
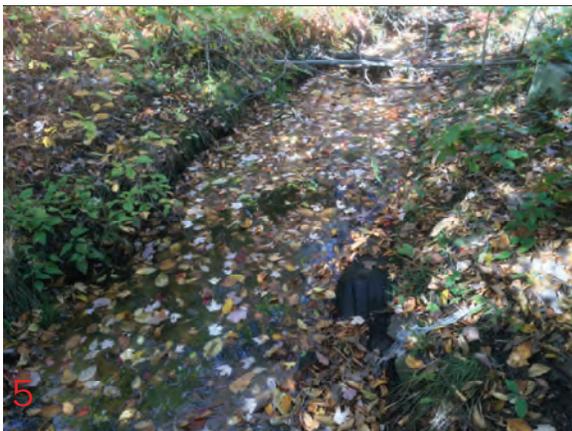


Figure 1. Site Location Map
Culvert Replacement—New Haven Mainline
Milford, CT
Connecticut Ecosystems LLC
November 12, 2015
Milford, CT Quadrangle Map



Figure 2. Aerial Photograph
Culvert Replacement—New Haven Mainline
Milford, CT
Connecticut Ecosystems LLC
November 12, 2015



New Haven Mainline Culvert Milford, CT 10/20/15 1. Deciduous wooded swamp south of railroad 2. Seasonal watercourse with sand deposits south of railroad 3. Debris in swamp south of railroad 4. Culvert north of railroad 5. Watercourse north of railroad 6. Alder thicket north of railroad



New Haven Mainline Culvert (Upstream Side) Milford, CT 2/26/18 7. Watercourse adjacent to industrial park steep fill embankment 8. Fourspine Stickleback collected from watercourse 9. Deep pool at submerged, blocked culvert 10. Proposed work area 11. Edge of marsh adjacent to industrial park



New Haven Mainline Culvert (Downstream Side) Milford, CT 2/26/18 12. Wooded swamp adjacent to steep slope 13. Pockets of inundation in swamp 14. Dense stand of Phragmites in marsh 15. Discharge from culvert

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Wetland Description

The wetland at the project site is bisected by the railroad line into north and south sections, both of which contain State and Federal wetlands (Figure 2). North of the tracks the wetland is confined between steep fill slopes associated with the industrial development to the north (Photo 11), and the railroad line (Figure 2). A narrow unnamed watercourse channel (Photo 5) parallel to the railroad tracks is lined with thick soft sediments, and carries sluggish flow to a culvert (Photo 4) located below the railroad tracks. West of the culvert the soils were very soft and wet on the inspection date, with groundwater at the soil surface. Red maple, multiflora rose, alder, Phragmites, and tussock sedge are present in this wetland.

The wetland is wider south of the railroad tracks, although it too is confined between the steep slopes adjacent to the railroad tracks and industrial development to the south (Figure 2). This wetland consists of deciduous wooded swamp (Photo 1) and shallow marsh opponents, with the latter dominated by an extremely dense thicket of tall Phragmites. Gray water-stained leaves occur on the ground throughout the wetland, indicating seasonal inundation. A very low gradient watercourse channel (Photo 2) carries very sluggish flow through the wetland. Figure 1 indicates that this watercourse is a tributary to the Indian River off-site to the west.

A variety of flora are found in the southerly wetland, including trees (red maple, green ash), shrubs (multiflora rose, sweet pepperbush, spicebush, northern arrowwood, elderberry, buckthorn, highbush blueberry, winterberry), herbs (Phragmites, skunk cabbage, cinnamon fern, royal fern) and vines (greenbriar).

White-throated sparrows and rufous-sided towhees were vocalizing throughout the wetland on the 2015 inspection date. During the spring and summer months it is likely that a variety of other wildlife species that favor urbanized wetland habitats also occur there, including northern cardinal, black capped chickadee, downy woodpecker, and American robin.

Wetland Functions and Values Assessment

Below are the principal functions associated with the subject wetland, and some of the important characteristics that contributed to the assessment:

- **Groundwater Recharge/Discharge** - Groundwater recharge is likely limited by the silty soils found in the wetland. However, groundwater discharges were evident in some portions of the wetland.

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• **Floodflow Alteration** - Factors that contribute to this function include a very gentle slope, very dense vegetation, the presence of an outlet constriction (culvert), the presence of a seasonal watercourse, and well developed microtopography.

• **Pollutant Removal**- The wetland provides this service as a result of very gentle slope, very dense vegetation, silty soils and well developed microtopography. Sediments deposited by the seasonal watercourse were observed on the wetland soil surface.

• **Production Export** - Biomass produced in the wetland is exported via the seasonal watercourse.

• **Finfish Habitat: Streams/Rivers** - An unnamed perennial watercourse is located within the project area (Figure 1), and described below. The capacity of this stream channel to support a finfish population is severely impaired by multiple factors: lack of shade and gravel spawning areas; channel substrate dominated by sand, silt and organic materials; lack of instream habitat diversity; channelization; lack of instream cover objects; narrow riparian zones; and intensive nearby development in the form of industrial parks and a major railroad line (Figure 2). The existing blocked culvert also represents a barrier to the movement of aquatic species. Nonetheless, one fish was collected in limited sampling (described below), which indicates that, despite these impairments, the watercourse has some limited capacity to support finfish.

• **Wildlife Habitat** - The wetland wildlife habitat is significantly impaired by the nearby industrial development and the railroad line, which fragment the landscape and impair the wildlife movement. The very dense Phragmites thickets are utilized by very few wildlife species. However, the deciduous wooded swamp does provide habitat structure and native flora that are attractive to a variety of wildlife species that have adapted to a human presence and a fragmented landscape.

Existing Conditions on Upstream Side of Culvert

A 2'x2' masonry culvert conveys surface water in a southerly direction below the railroad line. It is partially blocked (Photo 9), which significantly reduces the flow of water through it. As a result, a significant amount of water backs up along the railroad embankment on the upstream side of the culvert.

Surface water is conveyed to the upstream (north) side of the culvert by an unnamed watercourse (Photo 7) that is shown as perennial on the USGS topographic map, and which extends north to Woodmont Road on this map (Figure 1). The watercourse channel is approximately 4-6 feet wide, and is located at the base of a very steep constructed slope, stabilized with riprap, adjacent to an industrial park. The water temperature was 7.5° Centigrade on February 26, 2018. Several sweeps with an aquatic net collected

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several small snails, a freshwater clam and a fourspine stickleback (*Apeltes quadracus*) (Photo 8). According to Whitworth (1996), this species, which is not listed by the Connecticut Department of Environmental and Energy Protection Natural Diversity Data Base, is “regularly found throughout most of the year in freshwaters near the mouths of all watercourses in Connecticut that drain into Long Island Sound.”

According to the wetland classification system developed by Cowardin et al (1979), the narrow band of wetland northeast of the railroad embankment is “Palustrine Forested Broad-Leaved Deciduous, Seasonally Flooded/Saturated” (PFO1E). The wetland in the vicinity of the inlet of the existing culvert is classified as “Palustrine Emergent Persistent, Seasonally Flooded/Saturated” (PEM1). This is bordered to the southwest by a wetland area classified as “Palustrine Scrub-Shrub Broad-Leaved Deciduous, Seasonally Flooded/Saturated” (PSS1). These wetland classifications are shown on the “Wetland Impact Plan”. The dominant vegetation in the wetland north of the railroad line includes red maple, multiflora rose, alder, tussock sedge and Phragmites.

Existing Conditions on Downstream Side of Culvert

After flowing through the masonry culvert, the watercourse channel (Photo 15) turns to the southwest along the railroad embankment, and eventually discharges to Gulf Pond off-site and west of the project area. The straight watercourse channel is approximately 6-10 feet wide, 8-10 inches deep, and is located at the base of a very steep railroad embankment. The channel substrate consists of sand, silt and deposited organic material. The water temperature was 6.5° Centigrade on February 26, 2018. Several sweeps with an aquatic net revealed several small snails and an isopod.

This watercourse is associated with a wetland that lies between the railroad embankment and a steep slope to the south. A narrow band of “Palustrine Forested Broad-Leaved Deciduous, Seasonally Flooded/Saturated” (PFO1E) wetland occurs on the southern portion of this wetland (Photo 12), where red maple, American Elm, green ash, yellow birch, multiflora rose and skunk cabbage are found. Small pockets of shallow standing water were scattered across this wooded swamp on February 26, 2018 (Photo 13). A much wider “Palustrine Emergent Persistent, Seasonally Flooded/Saturated” (PEM1) wetland area is located between this swamp and the railroad embankment. This marsh is dominated by a dense stand of tall Phragmites (Photo 14).

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Project Description

The project engineer provided the following description of this project:

“The existing culvert will be filled in with flowable fill and the embankments will be regraded. The embankment slope at the ends of the structure are steeper than the adjacent embankment and therefore need to be flattened. This will fill in some of the existing wetlands. The regrading will result in a minor shift of the channel however the channel width will be maintained.

Due to high velocities at the inlet and outlet of the proposed structure an articulated concrete block (ACB) revetment system is proposed. The limits of the ACB system have been set to provide effective long term channel stability and reduce the impact area to the greatest extent possible. The excavation depth required to install the system is 12”. This is significantly less than the 48” required to install an effective riprap system at this location. In order to reduce the impact of the ACB system it will be covered with one foot of natural streambed material.

There is currently no access to the downstream side of the structure. In order to install the replacement pipes an access road will be required to the downstream end. The layout of the access road has been designed to reduce impacts. The access road will be benched into the embankment on the backside of the property and follow the edge of the slope to the turnaround. The width of the road and the footprint of the turnaround have been reduced to the minimum required for construction equipment. The turnaround does not extend all the way to the downstream end of the structure. From the turnaround location the contractor shall use crane mats or a similar product to access the structure. This reduces the impact area of the road and does not bisect the wetland habitat.

The poor condition of the existing structure is partially due to a lack of maintenance access to the downstream side. For this reason the road will be made permanent to provide Metro-North Maintenance forces access to the site in the future.

In addition to the mitigation measures incorporated into this project an in-lieu fee will be paid. The fee will be based on 100% of the permanent impacts and 15% of the temporary impacts to account for the fact that some of the temporary impacts may never fully recover. The in-lieu fee will be used to create new sites to compensate for the aquatic resources lost as a result of this project. This project results in 9,330 square feet of temporary impacts and 6,420 square feet of permanent impacts.”

Temporary Wetland Impacts

The “Wetland Impact Plan” contains a table that breaks out permanent and temporary impacts to wetlands and waterways. A waterway is defined as land below the Ordinary

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High Water elevation, which is shown on the plan. For this project most of the impacts that are tabulated as “waterway impacts” are also regulated wetland impacts. For the purposes of clarity, the total permanent and temporary impacts shown on the table are considered wetland impacts.

The “Wetland Impact Plan” shows a temporary disturbance of 9,330 square feet (0.214 acre) associated with the proposed project. Most of this would be located in the wetland south of the railroad line, and would consist of “swamp mats” or similar that would be temporarily placed in the wetland in order to provide a stable base for temporary material storage and large construction equipment maneuvering. The plan calls for this area of temporary wetland disturbance to be seeded with a wetland seed mix at the end of construction activities. It should be noted that this area, which currently is dominated by Phragmites, will likely revert to Phragmites, despite the seeding initiative, given the very aggressive growth pattern of this invasive plant.

Permanent Wetland Impacts

The “Wetland Impact Plan” shows a permanent disturbance of 6,420 square feet (0.148 acre) associated with the proposed project. Most of this would be located in the wetland south of the railroad line, and would be associated with the construction of a permanent access road to allow future maintenance of the culvert. As noted above, the wetland disturbance area has been minimized to provide sufficient room for vehicle access and maneuvering. A 20 foot wide gap will remain undisturbed near the terminus of the access road to avoid bisecting the wetland.

Impacts to Wetland Functions and Values

This report identified five functions and values associated with the subject wetland: Floodflow Alteration, Pollutant Removal, Production Export, Finfish Habitat, and Wildlife Habitat (only in the wooded portion of the wetland.) Because the amount of permanent wetland disturbance is relatively small compared to the total size of this wetland, the level at which these functions are currently provided will not be materially reduced. Also, the replacement of the blocked culvert will remove a barrier to the longitudinal movements of finfish and other aquatic organisms.

Most of the permanent wetland impact will occur in the highly disturbed and low functioning wetland area dominated by a dense stand of Phragmites, an aggressive invasive species.

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Cumulative Wetland Impacts

As noted above, the wetland area that will be impacted by the proposed project has been disturbed historically by the construction of a major railroad corridor and industrial parks (Figure 2). These historical impacts have significantly reduced the functions and values provided by this wetland, in particular Wildlife Habitat and Finfish Habitat. The scope of the proposed wetland impact is much smaller than these historical disturbances, but is part of a long-term pattern of disturbances to this wetland. As noted above, the replacement of the blocked culvert will improve finfish habitat somewhat by eliminating a barrier to the movement of fish and other aquatic species below the railroad corridor.

Mitigation

As noted above, the applicant proposes to pay an in-lieu fee to create new sites to compensate for the aquatic resources that would be lost as a result of this project. In my professional opinion this represents an appropriate mitigation strategy for this project. Opportunities for wetland creation at the project site are extremely limited, primarily by topography and adjacent land uses. Furthermore, given the dominance of Phragmites at the site, it is very likely that this aggressive, invasive plant would colonize and quickly overtake any wetland creation efforts at the site.

Please do not hesitate to contact me if you have any questions regarding this correspondence.

Very truly yours,

Connecticut Ecosystems LLC

A handwritten signature in black ink, appearing to read 'E. M. Pawlak', written over a light grey shadow of the same signature.

Edward M. Pawlak
Registered Soil Scientist
Certified Professional Wetland Scientist

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References

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish & Wildlife Service.

Whitworth, W.R. 1996. Freshwater Fishes of Connecticut (Second Edition). Department of Environmental Protection Bulletin 114.

Professional Resume

Edward M. Pawlak

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- EDUCATION**
- New England Regional Soil Science Certificate Program, University of Massachusetts at Amherst, 1998
 - M.S., Silviculture, SUNY College of Environmental Science & Forestry, Syracuse, NY, 1983.
 - B.A., Biology & Secondary Education, State University College at Oswego, Oswego, NY, 1977.

EXPERIENCE
1995-present

Connecticut Ecosystems LLC

38 Westland Avenue West Hartford, CT 06107

Owner of environmental consulting company.

Provides professional wetland and aquatic consulting services to private and municipal clients. Professional services include:

- Inland and coastal, State and Federal wetland boundary delineations
- Wildlife and vegetative inventories
- Environmental reports
- Permit assistance
- Wetland mitigation
- Aquatic studies
- Expert testimony

1989-1995

Soil Science & Environmental Services, Inc.

545 Highland Avenue Cheshire, CT 06410

Senior Wetland Scientist - Managed nearly one hundred projects for private and municipal clients.

1984-1989

Bristol-Myers Company

Syracuse, NY & Wallingford, CT

Statistical Programmer - Prepared analysis tables and graphics for statistical and medical staff in support of New Drug Applications.

-

Supervisor of Statistical Programmers - Supervised Statistical Programmers in the Oncology Therapeutic Area.

1979-1981 **Paul V. Moore High School**
Central Square, NY

Science Teacher - Taught Regents Biology and non-Regents Chemistry lecture and laboratory classes.

1977-1979 **Franklin Junior High School**
Reisterstown, MD

Science Teacher - Taught seventh and ninth grade General Science.

PROFESSIONAL CERTIFICATIONS

AFFILIATIONS ■ Professional Wetland Scientist, Society of Wetland Scientists

Memberships

- Society of Soil Scientists of Southern New England (SSSSNE)
- Connecticut Association of Wetland Scientists
- Hartford Audubon Society
- Connecticut Botanical Society
- Society of Wetland Scientists

PAPERS &

PRESENTATIONS

- *Pawlak, E. 2013. Vernal Pool Monitoring.* CACIWC Annual Meeting November 2013.
- *Pawlak, E. 2012. Benefits of Monitoring Wetland Mitigation Projects: A Case Study.* CAWS Annual Meeting, March 2012.
- *Pawlak, E. 2010. The Use of GPS Technology in Rare Species Surveys.* CACIWC Annual Meeting, November 2010.
- *Pawlak, E. 1999. Town of Haddam Vernal Pool Study.* Vernal Pool Workshop, Wesleyan University, May 1999.
- *Pawlak, E. 1999. Criteria for Vernal Pool Identification and Inventory.* NY State Wetlands Forum, Inc. Fifth Annual Meeting, Syracuse, NY.
- *Pawlak, E. 1998. Town of Columbia Wetland Study.* CAWS First Annual Meeting, "Selecting a Wetlands Evaluation Method", Cromwell, CT.

-
-
- *Pawlak, E. 1997. Town of Haddam Vernal Pool Study.* Vernal Pool Workshop, Wesleyan University, November 1997.
 - *Pawlak, E. 1997. Haddam, CT Town-Wide Vernal Pool Study.* Poster Session at CACIWC Annual Meeting, November 1997.
 - *Pawlak, E. 1996. Haddam, CT Town-Wide Vernal Pool Study.* Poster Session at CACIWC Annual Meeting, November 1996.
 - *Pawlak, E. and G. T Logan. 1995. Draft Cromwell Wetland Buffer Designation Methodology.* SWS Annual Meeting, Cambridge, MA, May 1995.
 - *Pawlak, E. and G. T. Logan. 1994. Draft Cromwell Wetland Buffer Designation Methodology.* Poster Session of the "Wetland Buffer Conference" sponsored by SSSSNE, Stockbridge, MA, November 1994.

**WORKSHOPS &
CONFERENCES**

- Vernal Pool Mapping Workshop. April 2014.
- Wildlife Tracking Workshop. CAWS, September 2013.
- Invasive Species Workshop. CAWS, Summer 2013.
- Red Soil Workshop. SSSSNE. Wallingford, CT. Summer, 2013.
- Instructor, DEP Municipal Inland Wetland Commissioners Training Program (Vernal Pools). October 2007, 2013.
- Member of DEP Vernal Pool Model Regulations Committee. September-October 1999.
- Hydric Soils Workshop. SSSSNE. Brooklyn, CT. July 1999.
- Floodplain Wetlands Workshop. AMWS. Amherst, MA. July 1999.
- Winter Botany. AMWS. Boylston, MA. January 1999
- Vernal Pool Policy Workshop. Yale University. May 1988
- Vernal Pool Field Trip Leader. DEP Vernal Pool Workshop. April 1998
- Vernal Pools. Wesleyan University. November 1997 & January 1998
- Vernal Pool Ecology. Tufts University. Spring 1997
- Tidal Wetland Botany. IWEER. Fall 1996
- Systematics Workshop: Carex Section Ovales. UConn, Summer 1996
- Identification of Grasses, Sedges & Rushes. IWEER. Summer 1996

-

- Systematics Workshop: Scirpus. UConn, Summer 1995
- Wetland Buffer Conference, SSSSNE, Stockbridge, MA, Fall 1994
- 17th Annual Conference of the New England Association of Environmental Biologists, Spring 1993

**CONTINUING
EDUCATION**

- Wetlands Assessment & Field Techniques. UMass at Amherst, Spring 2011
- Field Ornithology - SCSU, Spring 1998
- Soil Physics - UMass at Amherst, Fall 1997
- Wetland Delineation - UMass at Amherst, Summer 1997
- Soil Formation & Classification - UMass at Amherst, Spring 1997
- Soil Morphology & Mapping - UMass at Amherst, Spring 1996
- Hydric Soils - UMass at Amherst, Fall 1994
- Aquatic Insect Ecology & Systematics - SCSU, Spring 1993
- Aquatic Entomology - SCSU, Fall 1992
- Limnology - CCSU, Fall 1991
- Herpetology - SCSU, Spring 1990

**MUNICIPAL
PROJECTS**

Connecticut Ecosystems LLC has identified potential vernal pools in 20 towns in Connecticut by remote sensing:

- Avon
- Barkhamstead
- Bolton
- Canton
- Colebrook
- East Granby
- East Haddam
- Farmington
- Granby
- Guilford
- Haddam
- Hartland
- Lyme
- New Hartford
- Salem
- Simsbury
- Somers
- Suffield
- Vernon

-

■ Westbrook

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APPENDIX 1. HIGHWAY METHODOLOGY DATA SHEETS

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Introduction

The assessment of wetland functions and values in this report is based upon the "Highway Methodology Workbook Supplement" developed by the U.S. Army Corps of Engineers New England Division. This "descriptive approach" moves away from numerical or ranking methodologies, and instead relies upon professional judgment of the reviewer. It provides criteria to standardize the assessment process.

Many of these criteria appear in the data sheets that follow. Additional criteria were obtained from other assessment methodologies (Magee and Hollands 1998; Ammann et al. 1991) and the experience of the author. Responses to these criteria that are indicators of the function are listed under the "+" column. Those that detract from the function appear in the "-" column. Excluding conditions preclude a wetland from performing a particular function. The determination of whether a particular function is identified as a "principal function" is based upon the number of positive criteria responses, and the judgment and professional experience of the evaluator.

Descriptions of Functions and Values

Groundwater Recharge

The capacity of a wetland to influence the amount of water moving from surface water to ground water (Magee and Hollands 1998).

Groundwater Discharge

The capacity of a wetland to influence the amount of water moving from ground water to surface water (Magee and Hollands 1998).

Floodflow Alteration

The storage of inflowing water from storm or flooding events, resulting in detention and retention of water on the wetland surface (Magee and Hollands 1998).

Finfish Habitat: Ponds & Lakes

Considers the quality of the aquatic habitat of a pond or lake, and its capacity to support finfish.

Finfish Habitat: Streams & Rivers

Considers the quality of the aquatic habitat of a perennial watercourse, and its capacity to support finfish.

Sediment, Pollutant & Nutrient Removal

The capacity of a wetland to remove dissolved, suspended and floatable pollutants from storm water runoff.

Production Export

The capacity of a wetland to produce wildlife food sources, or to export biomass that sustains downstream ecosystems.

Recreation

The suitability of a wetland to support various recreation activities (e.g., hiking, canoeing, boating, fishing, hunting, bird watching).

Wildlife Habitat

The capacity of a wetland to support a diverse and abundant wildlife community.

Educational/Scientific Value

The suitability of a wetland for classroom field trips, or for scientific research.

Uniqueness/Heritage

The degree to which a wetland is considered a locally or regionally unique natural resource.

Wetland #:
 Inspection Date: 10/20/15

Project: Miford Culvert
 Weather:

Photograph(s):
 Inspector: E.M. Pawlak

GROUNDWATER RECHARGE (Excluding Condition: Slope Wetland)

| Criteria | + | - | Comments |
|--|---------------------|--|----------|
| Soils | sand/gravel outwash | hardpan, (tight fine-grained soils), shallow ledge | |
| Wetland associated with perennial or seasonal watercourse? | (yes) | no | |
| Slope | (gentle) | moderate or steep | |
| PRINCIPAL FUNCTION? (yes) no | | | |

GROUNDWATER DISCHARGE

| Criteria | + | - | Comments |
|--|------------------------|-----------------------|----------|
| Soils | hardpan, shallow ledge | --- | |
| Seeps, springs observed? | (yes) | no | |
| Wetland microrelief | (well developed) | none/poorly developed | |
| Wetland contains an outlet but no inlet? | yes | (no) | |
| PRINCIPAL FUNCTION? (yes) no | | | |

FLOODFLOW ALTERATION (Excluding Condition: Slope Wetland)

| Criteria | + | - | Comments |
|---|------------------|-----------------------|----------|
| Area of wetland is relatively | (large) | small | |
| Amount of impervious surface in wetland watershed | (large) | small | |
| Wetland slope | (gentle) | steep | |
| Wetland characterized by variable water level? | (yes) | no | |
| Wetland in floodplain of adjacent watercourse? | (yes) | no | |
| Valuable properties, structures or resources located in or near floodplain downstream from wetland? | (yes) | no | |
| Watershed has a history of economic loss due to flooding? | yes | no | ? |
| Wetland outlet constricted? | (yes) | no | Culvert |
| Wetland vegetation density | (high) | low | |
| Wetland microrelief | (well developed) | none/poorly developed | |
| PRINCIPAL FUNCTION? (yes) no | | | |

FINFISH HABITAT: PONDS/LAKES (Excluding Condition: Wetland not associated with a pond or lake)

| Criteria | + | - | Comments |
|--|-----------------------|-------|----------|
| Dominant land use adjacent to waterbody | forest, shrub, meadow | lawn | |
| Shallow littoral zone with emergent vegetation present? | yes | no | |
| Waterbody at least 10' deep? | yes | no | |
| % of pond covered by submerged or emergent vegetation | 15-40% | other | |
| Direct stormwater discharge via culvert? | no | yes | |
| Sandbar present at inlet(s) | no | yes | |
| Water transparency | high | low | |
| Significant nutrient sources (fertilizers, waterfowl) present in watershed? | no | yes | |
| Pond size ≥ 0.5 acre? | yes | no | |
| Pond experiences dense algal blooms, nuisance aquatic vegetation, or duckweed? | no | yes | |
| PRINCIPAL FUNCTION? yes no | | | |

Wetland #:

FINFISH HABITAT: STREAMS/RIVERS (Excluding Condition: Wetland not associated with perennial stream)

| Criteria | + | - | Comments |
|--|----------------------|--------------------------------------|------------------------------------|
| Channel shaded by riparian trees and/or shrubs? | yes | no | some shade up stream |
| Gravel spawning areas present? | yes | no | |
| Barriers to anadromous fish (dams, high culverts) present in stream reach? | no | yes | |
| Dominant bottom substrate | gravel/cobbles | sand/silt organic | |
| Substrate embeddedness by sand & silt | low | high | |
| Instream habitat diversity (riffle, run, pool, shallow, deep) | high | low | |
| Channel alterations (channelization, islands or point bars) | absent or few | numerous | channel straightened |
| Bank stability | stable | unstable, eroding | |
| Bank vegetative cover | high (trees, shrubs) | low | trees on banks of upstream channel |
| Cover objects (fallen logs, boulders, undercut banks) | many | absent or few | |
| Riparian zone | wide | narrow | |
| Watershed development | low | high | |
| Water quality | good | poor - likely given industrial parks | |
| Pollution tolerance of benthic macroinvertebrate taxa | mostly intolerant | mostly tolerant | |
| PRINCIPAL FUNCTION? yes no | | | but highly impacted |

SEDIMENT, POLLUTANT & NUTRIENT REMOVAL

| Criteria | + | - | Comments |
|--|---------------------------|-----------------------|----------|
| Duration of water retention in wetland | long | short | |
| Wetland edge broad & intermittently aerobic? | yes | no | |
| Drainage ditches constructed in wetland? | no | yes | |
| Water flow through wetland | diffuse | channelized | |
| Vegetation density | high | low | |
| Evidence of sediment trapping in wetland? | yes | no | |
| Ponded water present in wetland? | yes | no | |
| Alluvial soils present? | yes | no | |
| Soil type | organic/high clay content | sand/gravel | |
| Wetland basin topographic gradient | low | high | |
| Wetland microrelief | well developed | none/poorly developed | |
| PRINCIPAL FUNCTION? yes no | | | |

PRODUCTION EXPORT (Excluding Condition: No outlet)

| Criteria | + | - | Comments |
|--|----------|-----|----------|
| Wildlife food sources in wetland | abundant | few | |
| Vegetation density | high | low | |
| Nutrients flushed out of wetland into watercourse? | yes | no | |
| Evidence of wildlife use in wetland? | yes | no | |
| Fish or shellfish develop/occur in wetland? | yes | no | |
| PRINCIPAL FUNCTION? yes no | | | |

RECREATION

| Criteria | + | - | Comments |
|--|-----|----|--|
| Wetland is part of a recreation area, park, refuge, etc. | yes | no | |
| Fishing is available in or from the wetland | yes | no | |
| Hunting is permitted in wetland | yes | no | |
| Hiking occurs or has potential to occur in wetland | yes | no | |
| Wetland is a valuable wildlife habitat | yes | no | |
| Wetland has high visual/aesthetic quality | yes | no | |
| Boating or canoeing feasible in wetland | yes | no | |
| Off-road public parking near wetland available | yes | no | |
| Safety hazards (if present, list them) | ✓ | | Very dense vegetation, steep adjacent slopes |
| PRINCIPAL FUNCTION? yes no | | | |

Wetland #:

WILDLIFE HABITAT

| Criteria | + | - | Comments |
|--|----------------|-------------------------|---|
| Wetland degradation by human activity | little or none | moderate to <u>high</u> | |
| Wetland fragmentation by development | little or none | moderate to <u>high</u> | |
| Buffer (F=forest M=meadow S=sapling/shrub thicket L=lawn A=agricultural) | | ✓ | |
| Buffer width | | ✓ | |
| Connectivity with other wetlands | | | <i>Roads sever connections</i> |
| Size of landscape block in which wetland is located | | ✓ | |
| Wildlife food sources in wetland | abundant | few | <i>moderate</i> |
| Interspersion of vegetation & open water | high | <u>low</u> | |
| Upland islands | present | <u>absent</u> | |
| Wetland class diversity (WS=wooded swamp SS=shrub swamp M=marsh WM=wet meadow OW=open water) | <u>high</u> | low | |
| Vegetation density | <u>high</u> | low | |
| Vegetation strata (T=tree S=sapling SH=shrub V=vine H=herbaceous LL=leaf litter) | ✓ | | |
| Wetland plant species diversity | high | <u>low</u> | |
| Vernal pool? | yes | <u>no</u> | |
| Edge diversity (list types, including upland cover types) | | ✓ | |
| Water regime | <u>wetter</u> | drier | |
| Habitat features (S=snags L=fallen logs SE=seep/spring) | | ✓ | |
| Cover objects (L=log/branches R=rocks B=bark) | abundant | ✓ few | |
| Flat rocks in/near watercourse (stream salamanders) | present | <u>absent</u> | |
| Sphagnum hummocks next to shallow pools? | present | <u>absent</u> | |
| Bare well drained sandy soils near wetland (turtle nest site) | present | <u>absent</u> | |
| Abundance of invasive exotic flora? (give examples) | none/low | <u>high</u> | <i>Phragmites But highly impacted</i> |
| PRINCIPAL FUNCTION? <u>yes</u> no | | | |

EDUCATIONAL/SCIENTIFIC VALUE

| Criteria | + | - | Comments |
|--|-------------|------------|------------------------------|
| Wetland contains listed species | yes | <u>no</u> | |
| Wetland provides valuable wildlife habitat | yes | <u>no</u> | |
| Wetland class diversity | high | low | <i>moderate</i> |
| Adjacent upland cover types (F=forest M=meadow S=sapling/shrub thicket A=agricultural) | high | <u>low</u> | |
| Off-road parking near wetland available | <u>yes</u> | no | |
| Proximity to schools | <u>near</u> | far | |
| Wetland contains perennial watercourse | yes | <u>no</u> | |
| Wetland contains pond/lake | yes | <u>no</u> | |
| Safety hazards (if present, list them) | | ✓ | <i>very dense Phragmites</i> |
| Site currently used for educational/scientific purposes | yes | <u>no</u> | |
| PRINCIPAL FUNCTION? <u>yes</u> <u>no</u> | | | |

UNIQUENESS/HERITAGE

| Criteria | + | - | Comments |
|---|-----|-----------|----------|
| Wetland contains listed species | yes | <u>no</u> | |
| Wetland identified as exemplary natural community | yes | <u>no</u> | |
| Wetland locally/regionally significant (explain) | | ✓ | |
| PRINCIPAL FUNCTION? <u>yes</u> <u>no</u> | | | |

Notes

Connecticut Ecosystems LLC

- Wetland Delineation • Wetland & Aquatic Evaluation • Mitigation
- Natural Resource Inventory • Permit Assistance • Expert Testimony



APPENDIX 2. SOILS REPORT

Connecticut Ecosystems LLC

- Wetland Delineation • Wetland & Aquatic Evaluation • Mitigation
- Natural Resource Inventory • Permit Assistance • Expert Testimony



ON-SITE SOIL INVESTIGATION REPORT

Project Name & Location

Culvert Replacement
New Haven Mainline over unnamed
stream
Milford, CT

CE Job No.: 15-10

Field Investigation Date(s): 10/20/15

Field Investigation Method(s):

- Spade & Auger
 Backhoe & Test Pits

Longitude: N 41° 13' 59.90"

Latitude: W 73° 1' 8.66"

Report Prepared For:

Lochner
55 Hartland Street, Suite 401
East Hartford, CT 06108

Field Conditions:

Weather: Sunny 65° F
Recent Precipitation: below average
Soil Moisture: average
Snow Depth: "
Frost Depth: "

Purpose of Investigation:

- Wetland Delineation/Flagging
 Sketch Wetland Boundaries on Base Map (No Flagging)
 High Intensity Soil Mapping by Soil Scientist
 Medium Intensity Soil Mapping from SCS Soil Survey Maps

Wetland Boundary Marker Series:

State: CT 1-1→1-21 CT 2-1→2-18 CT 3-1→3-15 CT 4-1→4-15

Army Corps: AC 1-1→1-21 AC 2-1→2-18 AC 3-1→3-15 AC 4-1→4-15

Intermittent Watercourse Marker Series: ---

Wetland Notes:

- **Type(s)**: deciduous wooded swamp; shallow marsh
- **Hydroperiod(s)**: seasonally saturated; intermittently flooded
- **Soil Parent Material(s)**: alluvial
- **Drainage Class(es)**: poorly drained
- **Slope**: very gentle

CONNECTICUT ECOSYSTEMS LLC
ON-SITE SOIL INVESTIGATION REPORT (CONTINUED)

Project Name & Location: Culvert Replacement New Haven Mainline Milford, CT
Project #: 15-10

SOIL MAP UNITS

Soil symbols used below and on the accompanying Wetland Sketch Map correspond to those in the National Cooperative Soil Survey.

WETLAND SOIL SERIES

Rippowam Series (103)

This soil was formerly mapped in Connecticut as **Rumney**.

The Rippowam series consists of deep, poorly drained soils formed in loamy, alluvial sediments. They are nearly level soils on floodplains. The soils formed in recent alluvium derived mainly from schist, gneiss or granite.

Typically, these soils have a very dark grayish brown fine sandy loam surface layer 5 inches thick. The subsoil from 5 to 27 inches is dark grayish brown, mottled fine sandy loam and sandy loam. From 27 to 60 inches the substratum is dark gray and grayish brown, loose stratified, loamy sand and very gravelly sand.

Rippowam soils are poorly drained. The seasonal high water table is within 0 to 18 inches of the surface from fall through spring. Surface runoff is slow. Permeability is moderate to moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum. This soil is subject to frequent flooding, mainly from fall to spring.

UPLAND (NON-WETLAND) SOIL SERIES

Urban Land (307)

The Urban land soil mapping unit consists mainly of areas that are covered by paved roads, parking lots, buildings and other structures. The areas are mostly in densely populated regions of the State. They range in size mostly from 5 to several hundred acres. Most of the original soils underlying Urban land have been altered by excavation or have been covered with fill material. Slopes range from 0 to 25 percent but are mostly 0-8 percent. Included with this mapping unit are small, intermingled areas of Udorthents.

CONNECTICUT ECOSYSTEMS LLC
ON-SITE SOIL INVESTIGATION REPORT (CONTINUED)

Project Name & Location: Culvert Replacement New Haven Mainline Milford, CT
Project #: 15-10

The wetlands were field delineated in accordance with the standards of the National Cooperative Soil Survey and the definition of wetlands as found in the Connecticut General Statutes, Chapter 440, Section 22A-38. The investigation was conducted and reviewed by a Registered Soil Scientist.

Respectfully submitted,

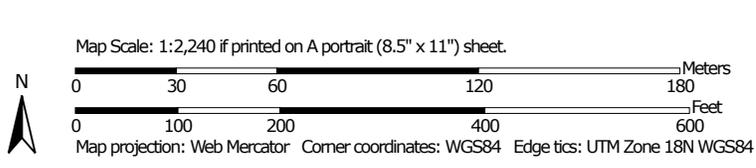
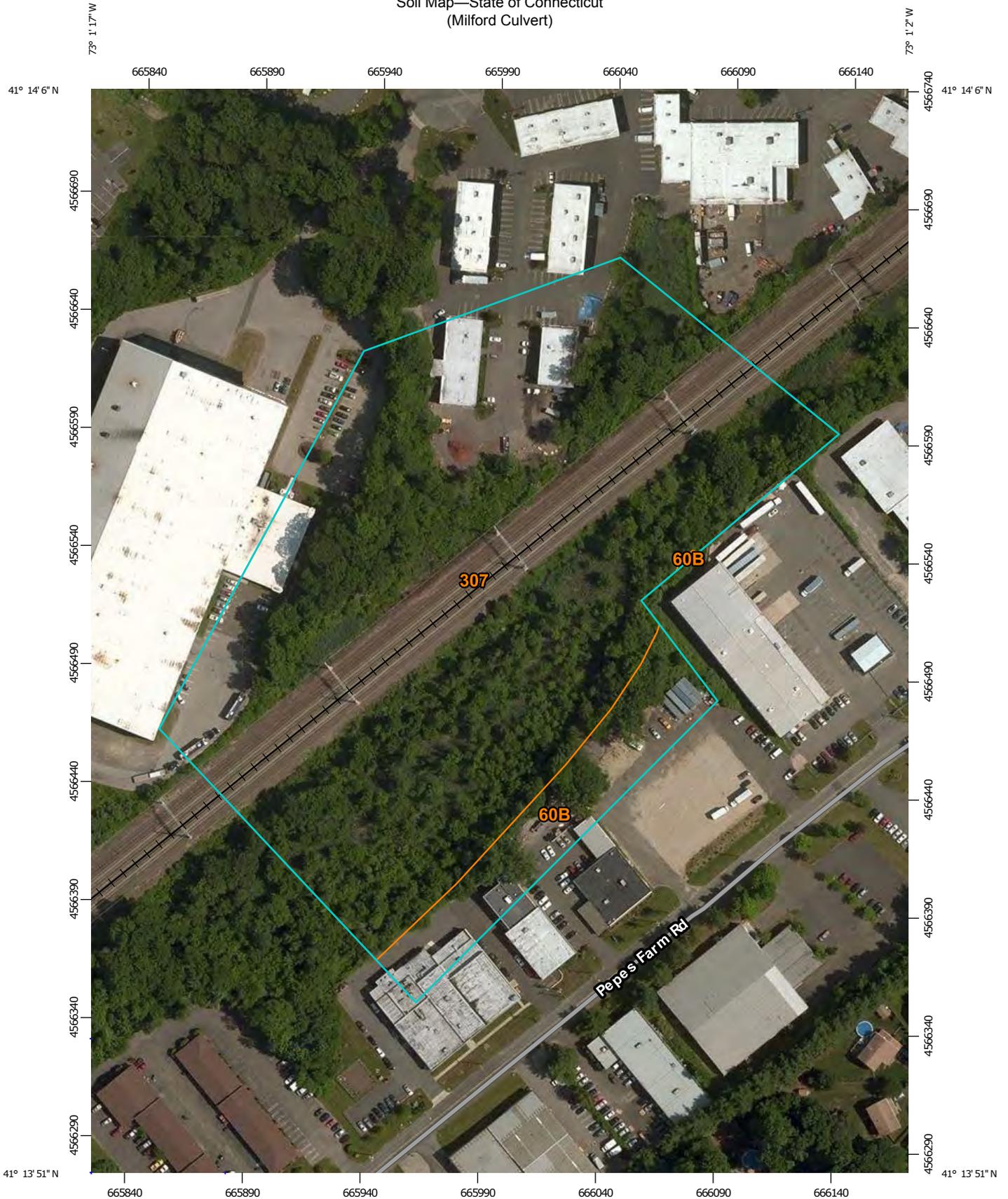
Connecticut Ecosystems LLC



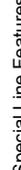
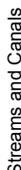
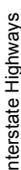
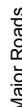
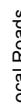
Edward M. Pawlak
Registered Soil Scientist
Certified Professional Wetland Scientist

File c:\soils2015\15-10.doc

Soil Map—State of Connecticut
(Milford Culvert)



MAP LEGEND

| | |
|--|---|
|  Area of Interest (AOI) |  Spoil Area |
|  Soil Map Unit Polygons |  Stony Spot |
|  Soil Map Unit Lines |  Very Stony Spot |
|  Soil Map Unit Points |  Wet Spot |
|  Special Point Features |  Other |
|  Blowout |  Special Line Features |
|  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: <http://websoilsurvey.nrcs.usda.gov>
 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 14, Sep 22, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 27, 2014—Jul 22, 2014

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

| State of Connecticut (CT600) | | | |
|------------------------------------|--|--------------|----------------|
| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
| 60B | Canton and Charlton soils, 3 to 8 percent slopes | 1.2 | 10.3% |
| 307 | Urban land | 10.7 | 89.7% |
| Totals for Area of Interest | | 11.9 | 100.0% |

Connecticut Ecosystems LLC

- Wetland Delineation
- Wetland & Aquatic Evaluation
- Mitigation
- Natural Resource Inventory
- Permit Assistance
- Expert Testimony



APPENDIX 3. ARMY CORPS DATA SHEETS

38 Westland Avenue • West Hartford, CT 06107
Phone (860) 561-8598 • Fax (860) 561-0223 • email ecosys@comcast.net

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region (DRAFT)

Project/Site: New Haven Mainline Culvert City/County: Milford Sampling Date: 10/20/15
 Applicant/Owner: _____ State: CT Sampling Point: 1W
 Investigator(s): EM Pawlak, PWS Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____
 Slope (%): _____ Lat: 41° 13.955' N Long: 73° 1.136' W Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (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.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
|--|------------------|-------------------|------------------|--|
| 1. <i>Fraxinus pennsylvanica</i> | 38 | Y | FACW | |
| 2. <i>Acer rubrum</i> | 10.5 | Y | FAC | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| <u>48.5</u> = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size: <u>15'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <i>Clethra alnifolia</i> | 63 | Y | FAC | |
| 2. <i>Fraxinus pennsylvanica</i> | 3 | N | FACW | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| <u>66</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>5'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <i>Symplocos foetida</i> | 10.5 | Y | OBL | |
| 2. <i>Osmonda cinnamomea</i> | 10.5 | Y | FACW | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| <u>21</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| _____ = Total Cover | | | | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0¹

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 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 (DRAFT)

Project/Site: New Haven Mainline Culvert City/County: Milwaukee Sampling Date: 10/20/15
 Applicant/Owner: _____ State: WI Sampling Point: 1U
 Investigator(s): EM Pawlak, PWS Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____
 Slope (%): _____ Lat: N 41° 13.946' Long: W 73° 1.145' Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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> ___ 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 <input checked="" type="checkbox"/> |
|---|---|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
|--|------------------|-------------------|------------------|-------------------------|
| 1. <u>Acer saccharum</u> | <u>38</u> | <u>Y</u> | <u>FACU</u> | |
| 2. <u>Nyssa sylvatica</u> | <u>10.5</u> | <u>N</u> | <u>FAC</u> | |
| 3. <u>Fagus grandifolia</u> | <u>10.5</u> | <u>N</u> | <u>FACU</u> | |
| 4. <u>Quercus rubra</u> | <u>38</u> | <u>Y</u> | <u>FACU</u> | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| | | | | <u>97</u> = Total Cover |
| Sapling/Shrub Stratum (Plot size: <u>15'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u>Carpinus caroliniana</u> | <u>20.5</u> | <u>Y</u> | <u>FAC</u> | |
| 2. <u>Fagus grandifolia</u> | <u>10.5</u> | <u>Y</u> | <u>FACU</u> | |
| 3. <u>Acer rubrum</u> | <u>10.5</u> | <u>Y</u> | <u>FAC</u> | |
| 4. <u>Coryc sp.</u> | <u>10.5</u> | <u>Y</u> | <u>FACU</u> | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| | | | | <u>52</u> = Total Cover |
| Herb Stratum (Plot size: <u>5'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u>Osmunda cinnamomea</u> | <u>3</u> | <u>Y</u> | <u>FACW</u> | |
| 2. _____ | | | | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| 12. _____ | | | | |
| | | | | <u>3</u> = Total Cover |
| Woody Vine Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. _____ | | | | |
| 2. _____ | | | | |
| 3. _____ | | | | |
| | | | | _____ = 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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: $\frac{3}{7} = 43\%$ (A/B)

Prevalence Index worksheet:

| | |
|----------------------|---------------------|
| Total % Cover of: | Multiply by: |
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ | (A) _____ (B) _____ |

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is $\leq 3.0^1$

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 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.)

Connecticut Ecosystems LLC

- Wetland Delineation • Wetland & Aquatic Evaluation • Mitigation
- Natural Resource Inventory • Permit Assistance • Expert Testimony



APPENDIX 4. CLASSIFICATION OF WETLANDS & DEEPWATER HABITATS OF THE UNITED STATES (COWARDIN ET AL 1979)

38 Westland Avenue • West Hartford, CT 06107
Phone (860) 561-8598 • Fax (860) 561-0223 • email ecosys@comcast.net

THE COWARDIN SYSTEM OF WETLAND CLASSIFICATION (1979) AND THE NATIONAL WETLANDS INVENTORY (NWI)

In 1979, the U.S. Fish & Wildlife Service (USFWS) published a classification of wetlands and deepwater habitats (Cowardin et al.). This serves as the national standard for wetland classification and was used to classify wetlands identified on the National Wetlands Inventory (NWI) maps. Note that the NWI maps were based on 1985 infrared aerial photograph interpretation, and some wetland classes will have changed over time, e.g. as a result of beaver activity, etc.

Visit the [USFWS National Wetlands Inventory](http://www.fws.gov/wetlands/) website for more detailed information. For a complete explanation of the classification system, reference the original publication, [Classification of Wetlands and Deepwater Habitats of the US](#).

In the Cowardin classification system, wetlands and deepwater habitats are defined as follows:

WETLANDS:

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water less than 6.6 ft deep. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (wetland plants); (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season.

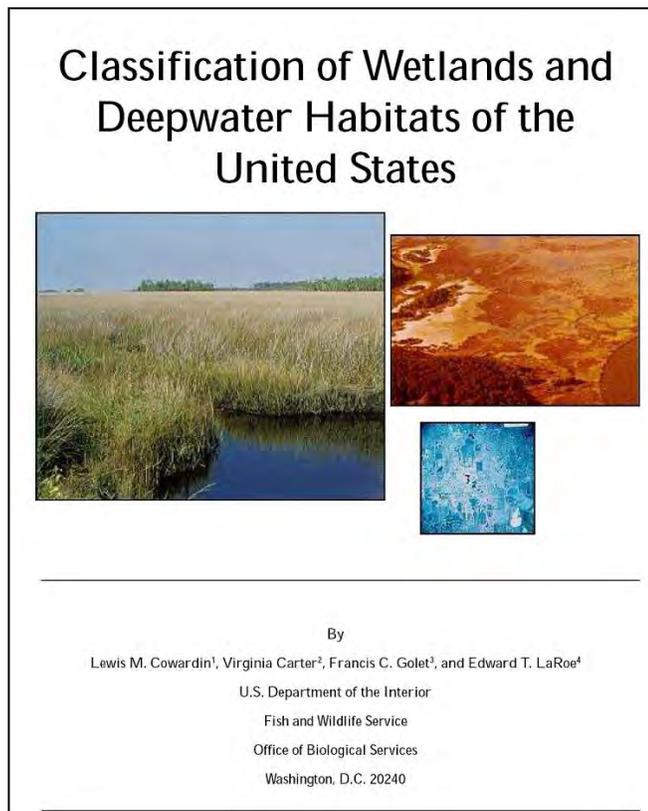
DEEPWATER HABITATS:

Includes permanently flooded deepwater areas that are deeper than 6.6 feet. Shallower waters that are often vegetated with emergent plants are regarded as wetlands rather than deepwater habitats.

The structure of the classification scheme is hierarchical, with systems forming the highest level of the classification hierarchy (Figure C-1), followed by subsystems, classes, subclasses and modifiers (water regime, water chemistry, soil and special modifiers such as beaver activity). Wetland codes and a code interpreter is located at: <http://www.fws.gov/wetlands/Data/WetlandCodes.html>. This also includes a link to the diagram of the Wetlands and Deepwater Habitats Classification Hierarchy as show in Figure C-1. <http://www.fws.gov/wetlands/documents/gNSDI/WetlandsDeepwaterHabitatsClassification.pdf>

Of the five major systems, three are of interest in inland watersheds:

1. **Riverine System** – All fresh water rivers and their tributaries are included in this system.
2. **Lacustrine System** – Includes areas of open water greater than 20 acres or more that 6.6 feet in depth.
3. **Palustrine System** – All nontidal wetlands dominated by trees, shrubs, and persistent emergent herbaceous plants (see explanation below).



PALUSTRINE SYSTEM

The Palustrine System includes all freshwater wetlands (such as marshes, bogs, and swamps) dominated by trees, shrubs, emergent herbaceous plants, floating leaved and submergent plants, and mosses and lichens. It also includes wetlands lacking such vegetation, but with all of the following characteristics:

- (1) area <20 acres
- (2) maximum water depth, 6.6 feet
- (3) salinity <0.5‰

Palustrine wetlands may be situated shoreward of lakes or river channels, on floodplains, isolated from water bodies, or on slopes. The Palustrine System is subdivided into a several wetland classes, the most common of which are:

Unconsolidated Bottom: Areas of water with at least 25% cover of particles smaller than stones (less than 6-7 cm), and a vegetative cover less than 30%.

Aquatic Bed: Areas of water dominated by plants that grow principally on or below the surface of water for most of the growing season, e.g. floating-leaved plants, pondweeds, waterlilies, and submergent plants such as bladderwort.

Emergent: Wetland characterized by rooted herbaceous and grasslike plants which stand erect above the water or ground surface (excluding mosses or lichens). Vegetation is present for most of the growing season in most years. Emergent wetlands include marshes, meadows, and fens.

Persistent: Plant species that normally remain standing until the beginning of the next growing season in most years, e.g. cattails, bulrushes, reeds.

Non-persistent: Plant species that fall below the surface of the water at the end of the growing season so that at certain seasons of the year there is no obvious sign of emergent vegetation, e.g. pickerel weed, arrowheads, ferns.

Scrub-Shrub: Wetland dominated by woody vegetation less than 20 feet tall. Plant species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. Scrub-Shrub wetlands include shrub swamps and bogs:

Broad-leaved deciduous: e.g. buttonbush, alders, willows, dogwoods, and saplings (e.g. red maple).

Needle-leaved deciduous: e.g. young or stunted trees, such as tamarack or cypress

Broad-leaved evergreen: e.g. bog rosemary, bog laurel, leatherleaf

Needle-leaved evergreen: e.g. young or stunted trees such as white pine, spruce

Forested: Wetland dominated by woody vegetation 20 feet or taller. Forested wetlands, e.g. forested swamps, generally include an overstory of trees, an understory of young trees and shrubs, and a herbaceous layer.

Broad-leaved deciduous: e.g. red maple, American elm

Needle-leaved deciduous: e.g. tamarack, cypress

Broad-leaved evergreen: e.g. red bay, holly

Needle-leaved evergreen: e.g. black spruce, Atlantic White Cedar

A NOTE on the use of the Cowardin System of Wetland Classification:

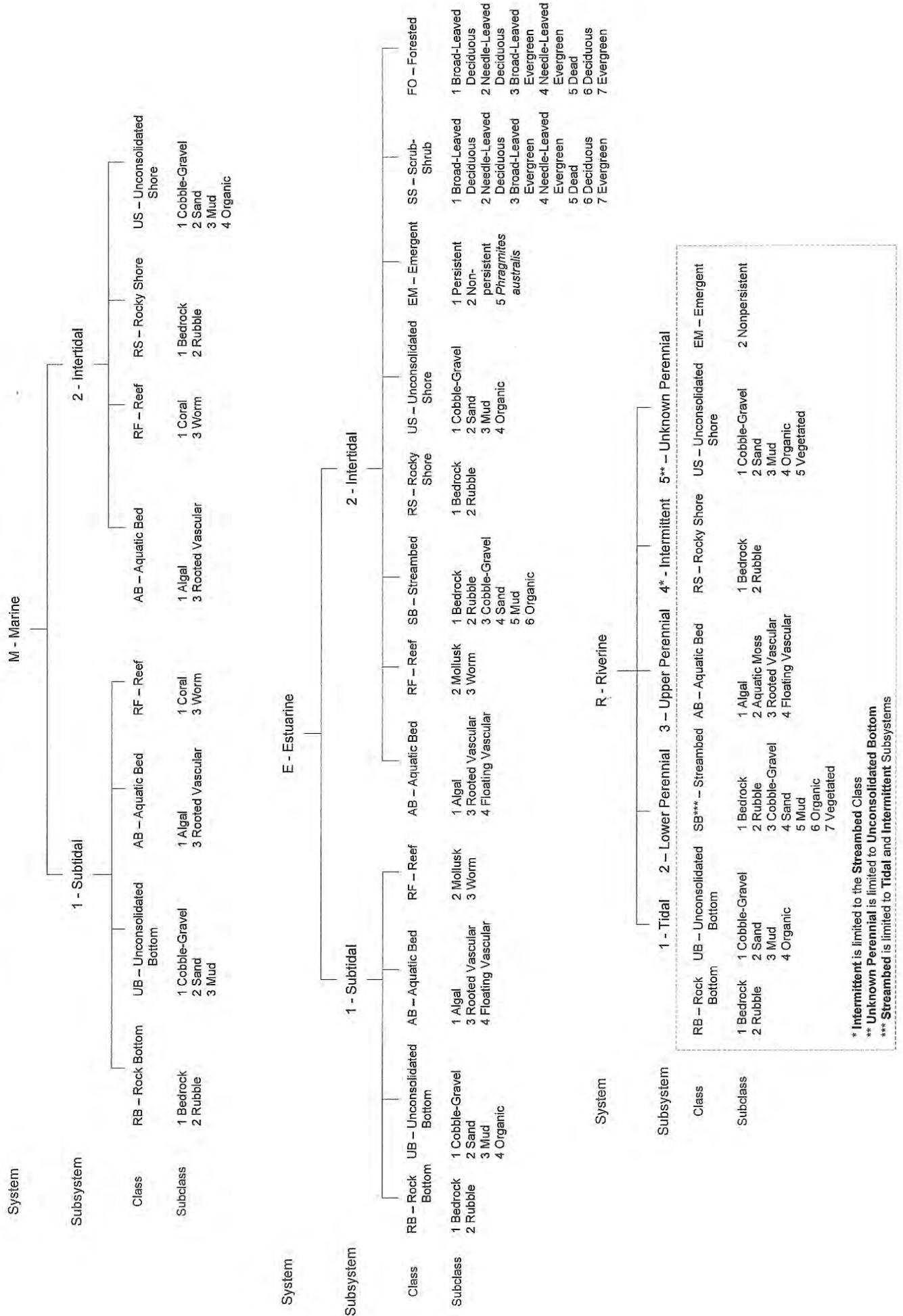
The general rule of thumb when classifying wetlands according to their cover class is the '5-30 rule', that is, a wetland type must have a minimum of 5% cover in order to be mapped, and if uppermost vegetative stratum exceeds 30% it becomes the dominant cover class. For example, if a wetland has 10% scrub-shrub cover and 30% forest cover, it gets mapped as a forested wetland (i.e. PFO). However, if neither cover class appears to exceed 30%, or if two classes appear to be co-dominant, then a combination of classes is written – e.g. PFO/SS or PSS/EM. Usually the uppermost layer gets noted first (e.g. PEM/AB) but occasionally the slightly more dominant class takes precedence (e.g. PSS/FO). The same goes for the numerical subscripts that modify the cover classes, e.g. PFO1/4E for a palustrine forested wetland that has slightly more deciduous trees than evergreen trees. See the examples of NWI classifications for wetlands below.

EXAMPLES OF NWI CLASSIFICATIONS FOR THE PALUSTRINE SYSTEM:

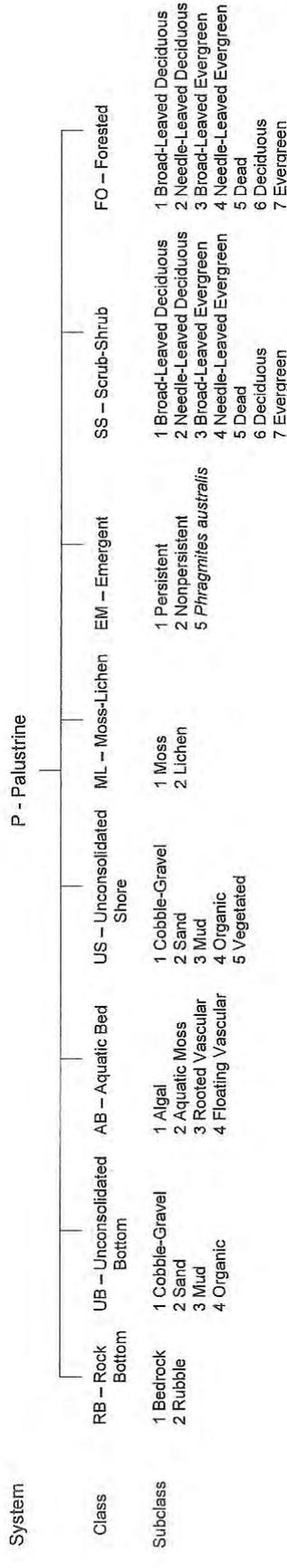
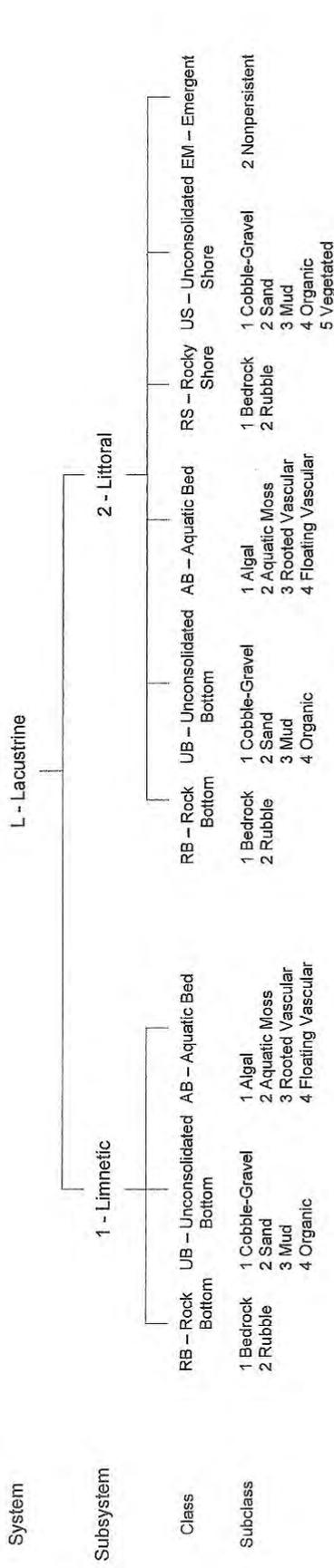
- PEM1Eb** Palustrine, **EM**ergent, persistent (**1**), seasonally flooded/saturated (**E**), beaver activity (**b**)
- PSS1Fh** Palustrine, **Scrub-Shrub**, broadleaved deciduous (**1**), semipermanently flooded (**F**), impounded/diked (**h**)
- PFO1E** Palustrine, **FO**rested, broadleaved deciduous (**1**), seasonally flooded/saturated (**E**)
- PFO5** Palustrine, **FO**rested, Dead (**5**)
- PSS1/EM1** Palustrine, dominantly **Scrub-Shrub**, broadleaved deciduous (**1**), mixed with **EM**ergent, persistent (**1**)
- PEM1/SS1** Palustrine, dominantly **EM**ergent, persistent (**1**), mixed with **Scrub-Shrub**, broadleaved deciduous (**1**)
- PFO4/SS4** Palustrine, dominantly **FO**rested, needle-leaved evergreen (**4**), mixed with **Scrub-Shrub**, needle-leaved evergreen (**4**)
- PSS1/FO4** Palustrine, dominantly **Scrub-Shrub**, broadleaved deciduous (**1**), mixed with **FO**rested needle-leaved evergreen (**4**)
- U** = Island or areas of upland within a wetland

Figure F-1

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



| | | Water Regime | | Special Modifiers | Water Chemistry | | Soil | | | | | | |
|---|------------------------------|-----------------|---------------------|-------------------|------------------------|--------|-----------------------|----------|-------------|-------------------------------|---------------|---|---------|
| | | Saltwater Tidal | Freshwater Tidal | | Coastal | Inland | | Salinity | pH | Modifiers for all Fresh Water | | | |
| A | Temporarily Flooded | L | Subtidal | b | Beaver | 1 | Hyperhaline | 7 | Hypersaline | a | Acid | g | Organic |
| B | Saturated | M | Irregularly Exposed | d | Partly Drained/Ditched | 2 | Euhaline | 8 | Eusaline | t | Circumneutral | n | Mineral |
| C | Seasonally Flooded | N | Regularly Flooded | f | Farmed | 3 | Mixohaline (Brackish) | 9 | Mixosaline | l | Alkaline | | |
| E | Seasonally Flooded/Saturated | P | Irregularly Flooded | h | Diked/Impounded | 4 | Polyhaline | 0 | Fresh | | | | |
| F | Semipermanently Flooded | | | r | Artificial | 5 | Mesohaline | | | | | | |
| G | Intermittently Exposed | | | s | Spoil | 6 | Oligohaline | | | | | | |
| H | Permanently Flooded | | | x | Excavated | 0 | Fresh | | | | | | |
| J | Intermittently Flooded | | | | | | | | | | | | |
| K | Artificially Flooded | | | | | | | | | | | | |

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Attachment D: NDDB Map

Connecticut Addendum ACOE General Permit State of Connecticut (CT GP)

Applicant: State of Connecticut, Department of Transportation

Project No: 301-175

Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

List of Attachments

- NDDB Map
Dated: December 2017

Natural Diversity Data Base Areas

MILFORD, CT

December 2017

-  State and Federal Listed Species & Significant Natural Communities
-  Town Boundary

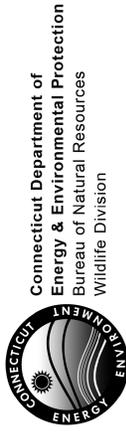
NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources. Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review Form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

www.ct.gov/deep/nddbrequest

Use the CTECO Interactive Map Viewers at www.cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St., Hartford CT 06106
Phone (860) 424-3011



Attachment E: Aerial extent of inundation

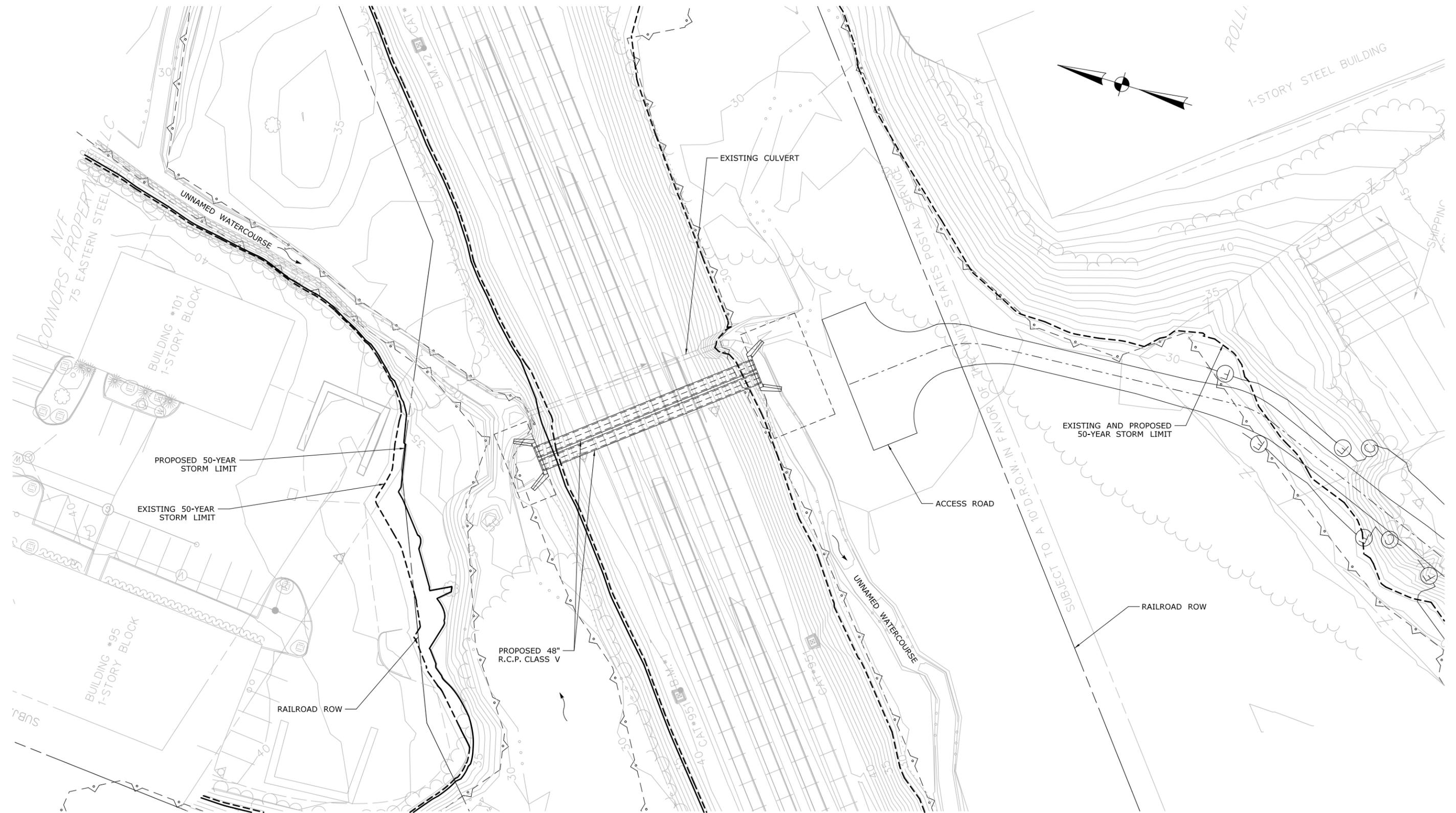
Connecticut Addendum ACOE General Permit State of Connecticut (CT GP)

Applicant: State of Connecticut, Department of Transportation

Project No: 301-175

Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

| Page No. | Description |
|-----------------|-------------------------|
| 1 | 2-Year Inundation Map |
| 2 | 10-Year Inundation Map |
| 3 | 25-Year Inundation Map |
| 4 | 50-Year Inundation Map |
| 5 | 100-Year Inundation Map |



50-YEAR INUNDATION MAP
SCALE: 1" = 40'-0"

| | | | |
|------|------|----------------------|-----------|
| 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: 3/22/2018

DESIGNER/DRAFTER: D.M.
CHECKED BY: R.B.
SCALE AS NOTED


STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...\\SB_MSH_MP65.60_0301_0175_2-YR Inundation Map.dgn

LOCHNER
 H.W. LOCHNER, INC.
 55 Hardand Street
 East Hartford, CT 06108
 APPROVED BY: _____ DATE: _____

PROJECT TITLE:
REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM

TOWN: **MILFORD**
DRAWING TITLE: **INUNDATION MAP**

PROJECT NO. **301-175**
DRAWING NO. **M-4**
SHEET NO.

Attachment F: FEMA Map

Connecticut Addendum ACOE General Permit State of Connecticut (CT GP)

Applicant: State of Connecticut, Department of Transportation

Project No: 301-175

Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

List of Attachments

FEMA Flood Insurance Rate Map

Panel Number: 09009C0532J

Date: July 8, 2013



MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0532J

FIRM FLOOD INSURANCE RATE MAP NEW HAVEN COUNTY, CONNECTICUT (ALL JURISDICTIONS)

PANEL 532 OF 635
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|----------------------|--------|-------|--------|
| MILFORD, CITY OF | 090082 | 0532 | J |
| ORANGE, TOWN OF | 090087 | 0532 | J |
| WOODMONT, BOROUGH OF | 090168 | 0532 | J |

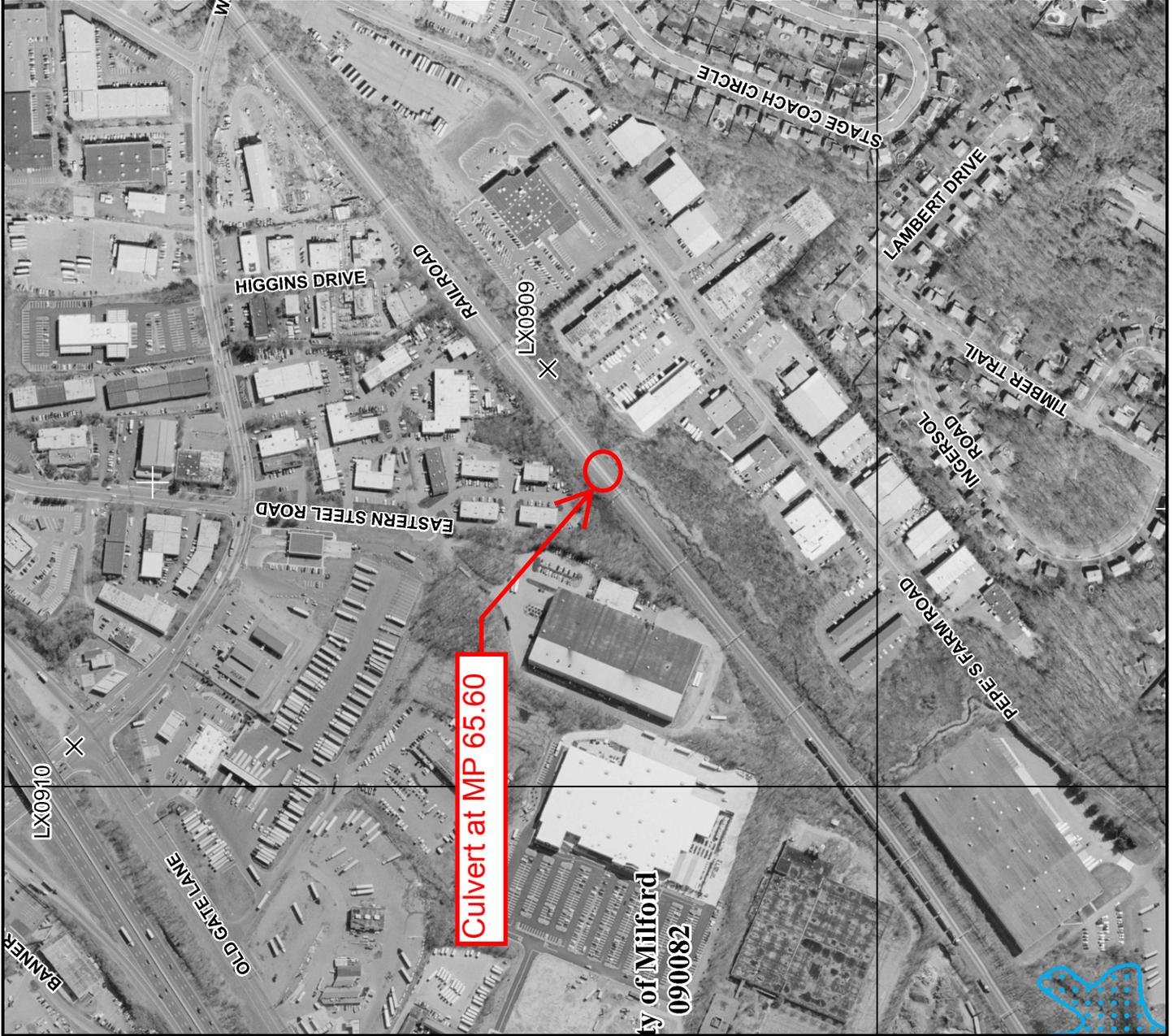
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



Federal Emergency Management Agency

MAP NUMBER
09009C0532J
MAP REVISED
JULY 8, 2013

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps, check the FEMA Flood Map Store at www.msc.fema.gov



Attachment G: Fisheries Sign-Off

Connecticut Addendum ACOE General Permit State of Connecticut (CT GP)

Applicant: State of Connecticut, Department of Transportation

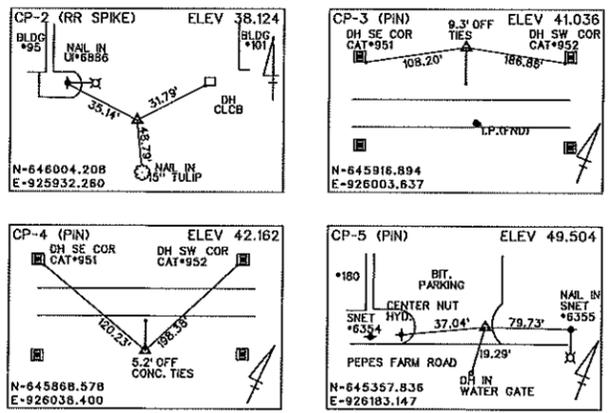
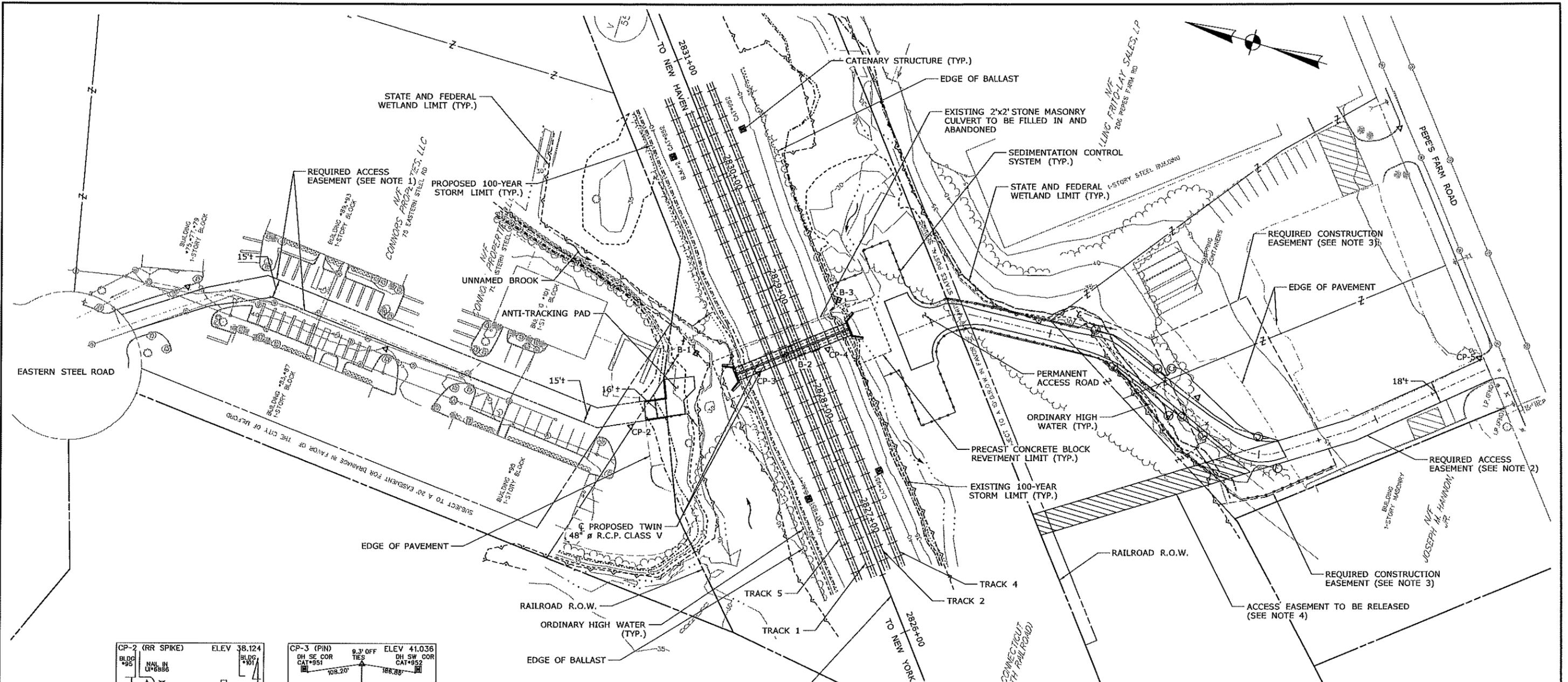
Project No: 301-175

Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

List of Attachments

Inland Fisheries sign-off from Steve Gephard to OEP

Date: May 15, 2018

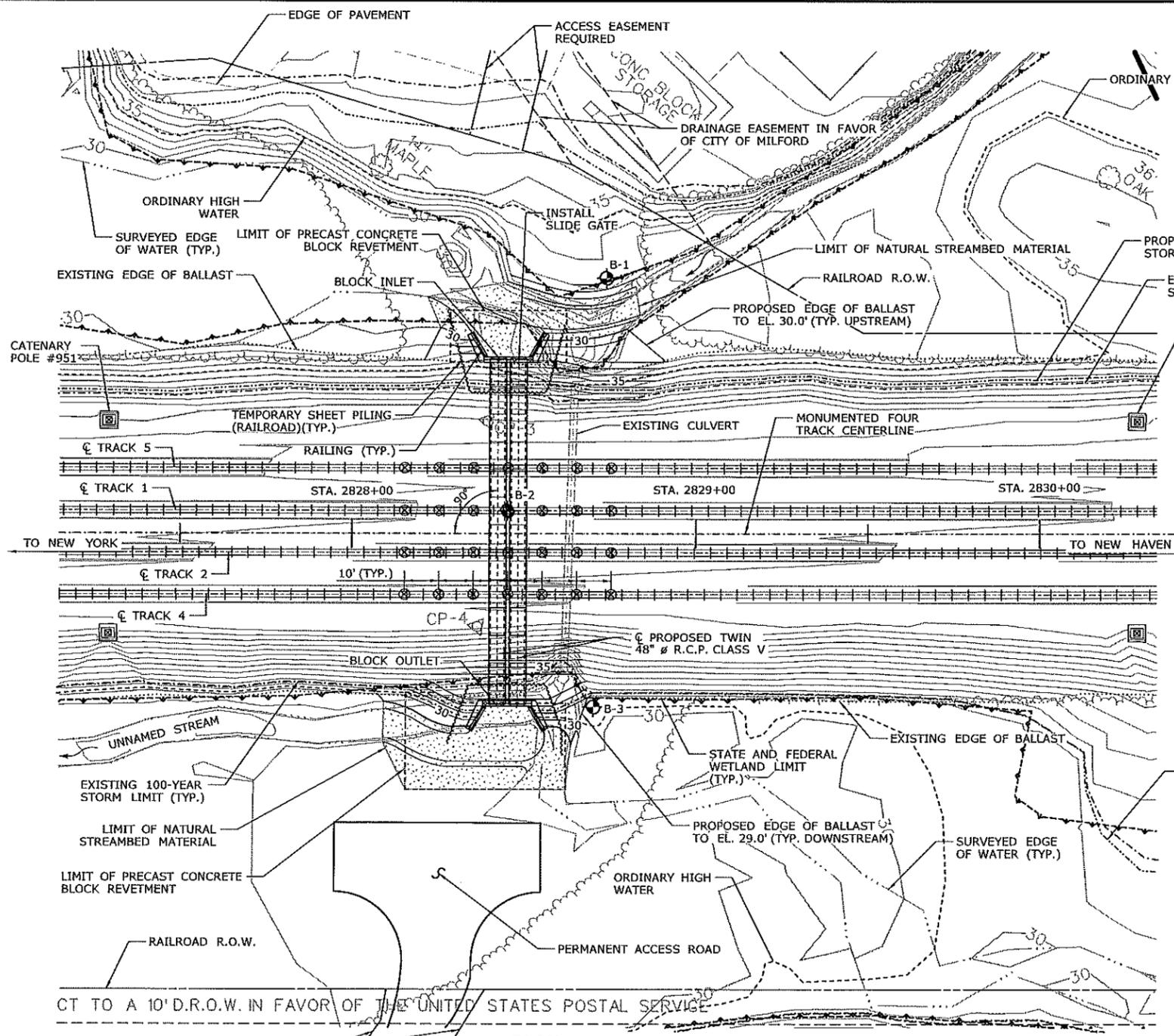


SITE PLAN
 SCALE: 1" = 40'-0"

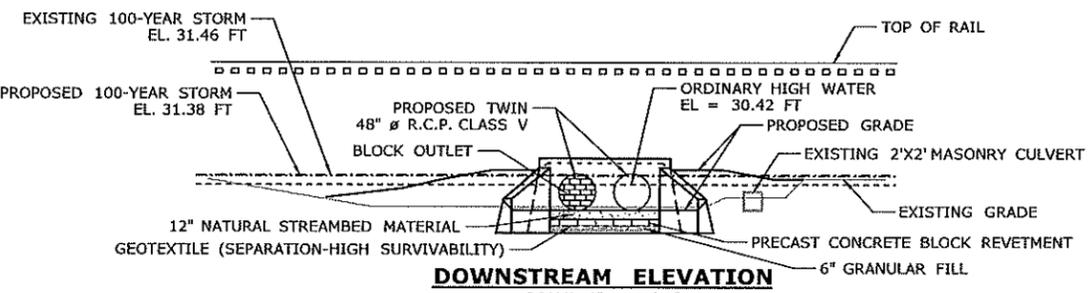
- NOTES:**
- EASEMENT FOR ACCESS TO RAILROAD RIGHT-OF-WAY REQUIRED. USE OF THE EASEMENT AREA TAKEN UNDER THIS PARAGRAPH IS LIMITED TO TRAVEL PURPOSES ONLY AND WILL NOT IMPEDE USE OF THE AREA BY OTHERS.
 - EASEMENT FOR ACCESS TO RAILROAD RIGHT-OF-WAY REQUIRED. USE OF THE EASEMENT AREA TAKEN UNDER THIS PARAGRAPH INCLUDES THE RIGHT TO REMOVE TREES AND GRADE A PATH SUITABLE FOR CONSTRUCTION VEHICLES. ONCE THE PATH HAS BEEN CREATED, IT WILL THEN BE LIMITED TO TRAVEL PURPOSES ONLY AND WILL NOT IMPEDE USE OF THE AREA BY OTHERS.
 - CONSTRUCTION EASEMENT FOR THE PURPOSE OF PARKING AND EQUIPMENT STORAGE DURING CULVERT REPLACEMENT ON THE NEW HAVEN MAINLINE, MP 65.60 REQUIRED. CONSTRUCTION EASEMENT TAKEN UNDER THIS PARAGRAPH WILL BE RESTORED BY REGRADING AND REPLACING BITUMINOUS PAVEMENT AND GRAVEL IN ANY DISTURBED AREAS. SAID EASEMENT WILL BE EXTINGUISHED UPON COMPLETION OF THE PROJECT, UNLESS SOONER EXTINGUISHED BY THE STATE.
 - THE HATCHED PORTION OF THE ACCESS EASEMENT SHALL BE RELEASED AND WILL NOT BE AVAILABLE TO THE CONTRACTOR TO ACCESS THE SITE.
 - THE CONTRACTOR SHALL PERFORM A PRESITE SURVEY TO DOCUMENT THE EXISTING CONDITIONS WITHIN THE EASEMENT LIMITS. IF AFTER CONSTRUCTION IS COMPLETE THE ENGINEER DETERMINES THAT PAVEMENT WITHIN THE EASEMENT LIMITS NEEDS TO BE REPAIRED OR REPLACED THAT WORK AND ALL ASSOCIATED MATERIALS SHALL BE INCLUDED UNDER THE ITEM "CONSTRUCTION ACCESS".

SURVEY TIES
 NOT TO SCALE

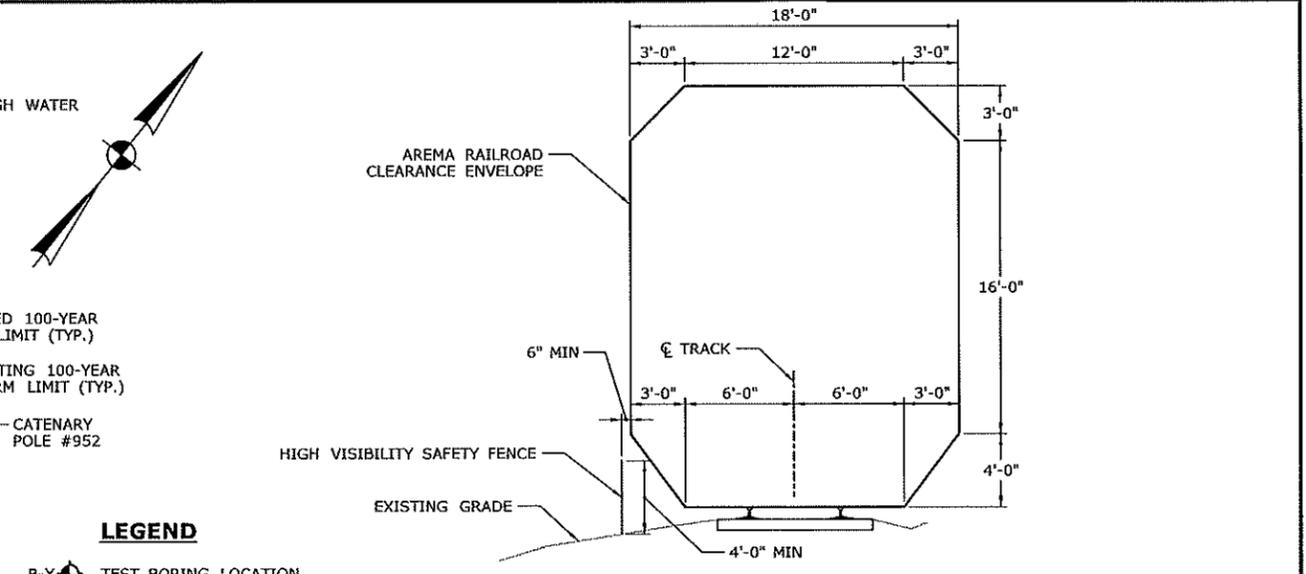
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|------|------|----------------------|-----------|--------------------|--------------------------------|---------------------|----------------|---|---|---|--|------------------------------|-------------------------------|
| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | DESIGNER/DRAFTER: D.M./C.R. | CHECKED BY: R.B. | SCALE AS NOTED | <p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> | <p>LOCHNER H.W. LOCHNER, INC. 55 Harland Street, Suite 401 East Hartford, CT 06108</p> | <p>STATE OF CONNECTICUT PROFESSIONAL ENGINEER LICENSE NO. 10285</p> | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| | | | | | | | | | | | DRAWING TITLE: SITE PLAN | DRAWING NO. ENV-03 | |
| | | | | | | | | | | | | SHEET NO. 3 OF 10 | |



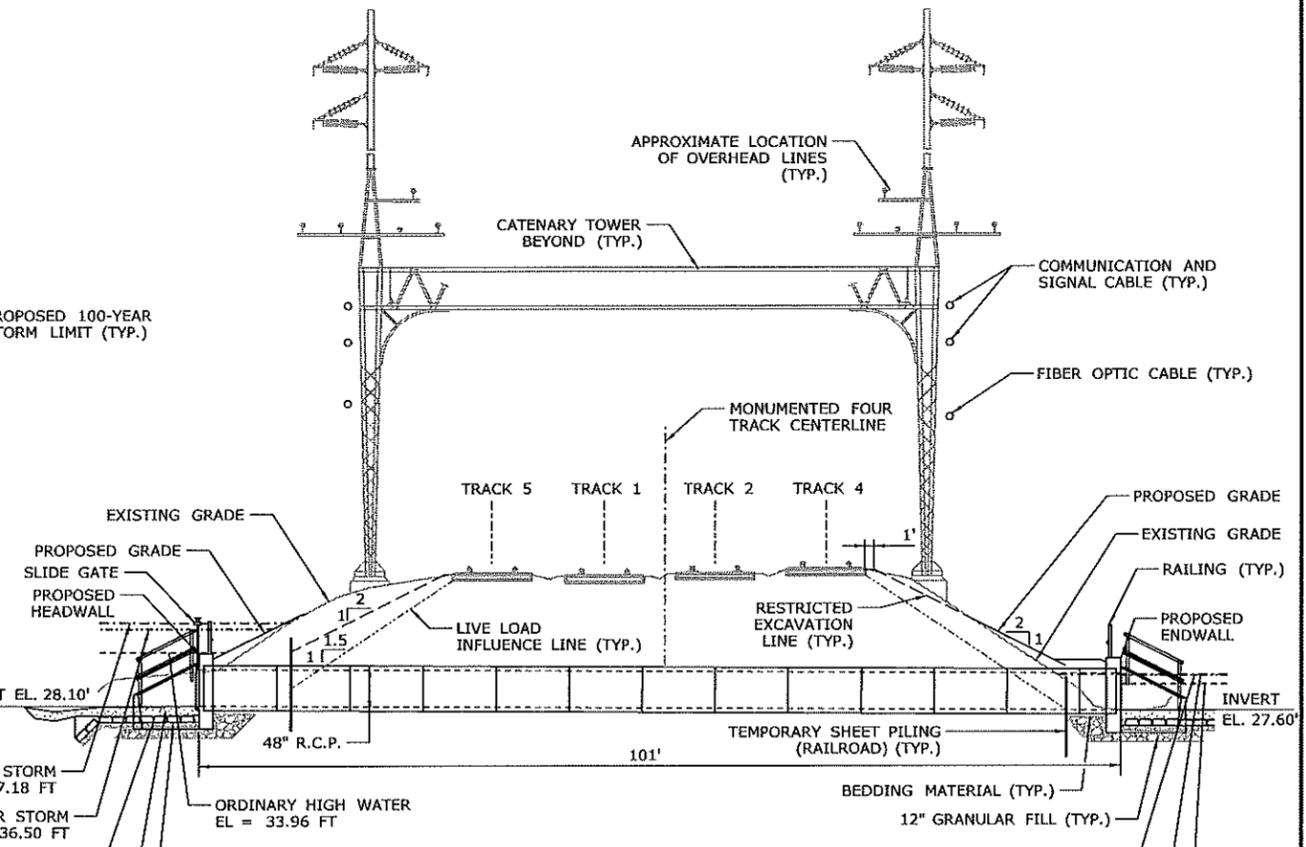
PLAN
SCALE: 1" = 20'-0"



DOWNSTREAM ELEVATION
SCALE: 1" = 10'-0"



TRACK CLEARANCE DIAGRAM
SCALE: 1" = 5'-0"



LONGITUDINAL SECTION
SCALE: 1" = 10'-0"

- LEGEND**
- B-X ⊕ TEST BORING LOCATION
 - ⊗ SETTLEMENT MONITORING POINT
 - ▨ NATURAL STREAMBED MATERIAL

| 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:
D.M./C.R.

CHECKED BY:
R.B.

SCALE AS NOTED

FILENAME: ...\\SR.MSH.MP65.60.0301.0175.3.3 GenPlan.dgn

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street, Suite 401
East Hartford, CT 06108

APPROVED BY: R.B. DATE: 3-23-18

PROJECT TITLE:
**REPLACEMENT OF CULVERT AT
MP 65.60 NEW HAVEN MAINLINE
OVER UNNAMED STREAM**

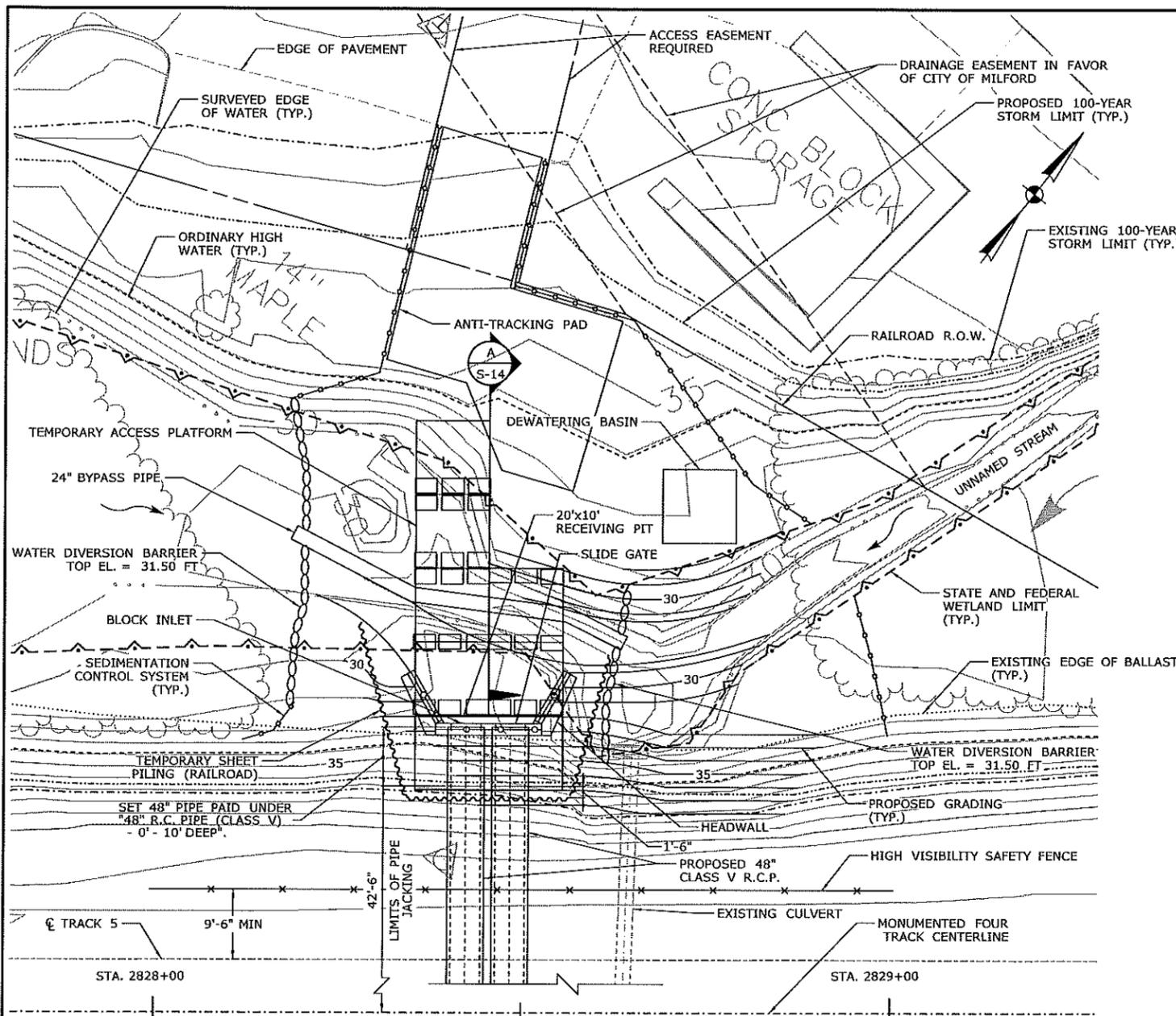
TOWN:
MILFORD

DRAWING TITLE:
GENERAL PLAN

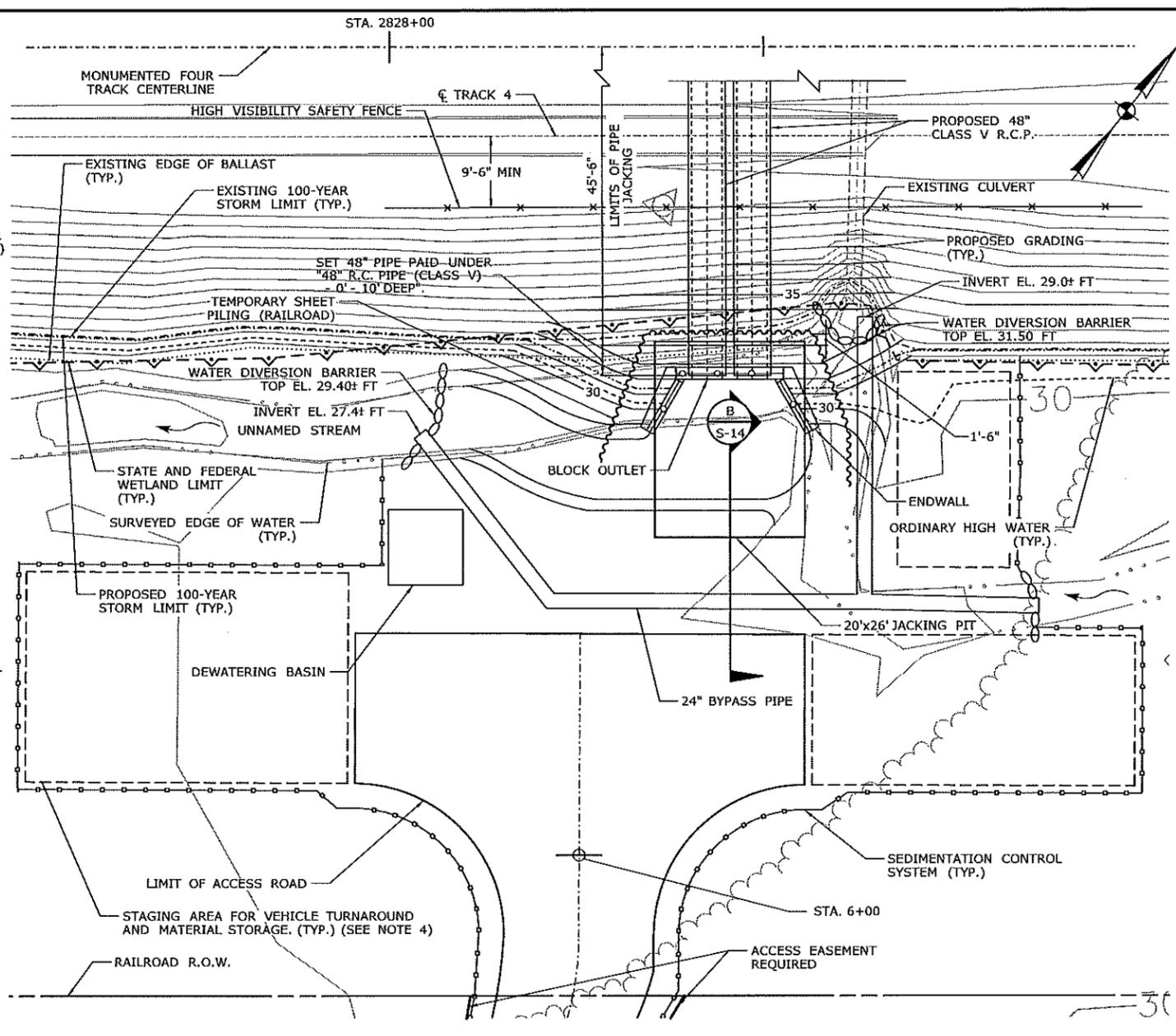
PROJECT NO.
301-175

DRAWING NO.
ENV-04

SHEET NO.
4 OF 10



PLAN AT INLET
SCALE: 1" = 10'-0"



PLAN AT OUTLET
SCALE: 1" = 10'-0"

SEQUENCE OF CONSTRUCTION NOTES STAGE - 1

1. INSTALL SEDIMENTATION CONTROL SYSTEM AND HIGH VISIBILITY SAFETY FENCE.
2. CONSTRUCT ANTI-TRACKING PADS AND ACCESS ROAD.
3. INSTALL WATER HANDLING SYSTEM
4. ESTABLISH SETTLEMENT MONITORING POINTS AT APPROVED LOCATIONS AND BEGIN TAKING MEASUREMENTS AS REQUIRED.
5. EXCAVATE EXISTING CHANNEL BOTTOM MATERIAL AND STORE AT APPROVED LOCATION.
6. INSTALL TEMPORARY SHEET PILING (RAILROAD), EXCAVATE AND INSTALL JACKING AND RECEIVING PITS.
7. JACK PIPES 1 AND 2 THROUGH THE RAILROAD EMBANKMENT
8. PLACE BEDDING MATERIAL AND SET REMAINING SECTIONS OF PIPE
9. CONSTRUCT HEADWALL AND ENDWALL.
10. INSTALL RAILING, SLIDE GATE AND BLOCK OFF PIPE 2.
11. INSTALL PRECAST CONCRETE BLOCK REVETMENT.

GENERAL NOTES:

1. THE SIZE OF THE JACKING AND RECEIVING PITS IS APPROXIMATE AND IS SHOWN HERE ONLY AS A REFERENCE. THE CONTRACTOR SHALL DETERMINE THE ACTUAL SIZE REQUIRED TO COMPLETE THE JACKING OPERATION. THE COST OF JACKING AND RECEIVING PITS SHALL BE PAID UNDER THE ITEM "JACKING 48" R.C. PIPE (CLASS V) - 0' - 20' DEEP".
2. THE COST OF FURNISHING AND INSTALLING THE BYPASS PIPES, WATER DIVERSION BARRIERS AND NECESSARY INCIDENTAL APPURTENANCES REQUIRED FOR BYPASSING THE STREAM AROUND THE SITE SHALL BE INCLUDED IN THE COST OF THE ITEM "HANDLING WATER".
3. ALL WATER PUMPED FROM CONSTRUCTION AREAS ISOLATED BY THE WATER DIVERSION BARRIER IS TO BE HANDLED THROUGH THE TEMPORARY DEWATERING BASIN. COST OF TEMPORARY DEWATERING BASIN SHALL BE INCLUDED IN THE COST OF THE ITEM "HANDLING WATER".
4. STAGING AREAS USED FOR CONSTRUCTION ACTIVITIES SHALL USE MATS TO SUPPORT ANY AND ALL OF THE CONTRACTORS EQUIPMENT. THE MATS SHALL BE APPROVED BY THE ENGINEER AND REMOVED UPON COMPLETION OF THE WORK. COST OF MATS TO BE INCLUDED IN THE PRICE OF THE ITEM "CONSTRUCTION ACCESS".

5. CONSTRUCTION MATS SHALL BE THOROUGHLY CLEANED BEFORE USE TO PREVENT THE SPREAD OF INVASIVE SPECIES.
6. THE ENDWALLS AND 48" R.C.P. SHALL BE FOUNDED ON GRANULAR FILL OR BEDDING MATERIAL AS SHOWN ON THE DETAIL DRAWINGS. IF THE OVERLYING ORGANIC CLAYEY SILT LAYER EXTENDS BELOW THE BOTTOM OF THE GRANULAR FILL OR BEDDING MATERIAL AT THESE LOCATIONS IT SHALL BE REMOVED AND REPLACED WITH THE BEARING MATERIAL SPECIFIED AT THAT LOCATION.
7. SUBGRADE PREPARATION SHALL BE CONDUCTED IN A WAY TO MINIMIZE DISTURBANCE. THE FINAL 6" OF EXCAVATION SHALL BE MADE WITH A SMOOTH-EDGE BLADE OR HAND SHOVELED.
8. NATURAL STREAMBED MATERIAL SHALL BE PAID FOR UNDER ITEM "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL".

TEMPORARY HYDRAULIC DATA - UNNAMED STREAM

| | |
|--|-----------------|
| AVERAGE DAILY FLOW | 0.2 CFS |
| AVERAGE SPRING FLOW | 0.4 CFS |
| 2-YEAR FREQUENCY DISCHARGE | 111 CFS |
| TEMPORARY DESIGN DISCHARGE | 4 CFS |
| TEMPORARY DESIGN FREQUENCY | 10X SPRING FLOW |
| TEMPORARY WATER SURFACE ELEVATION UPSTREAM | 30.94 FT |
| TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM | 27.53 FT |

| 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:
D.M./C.R.
CHECKED BY:
R.B.
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...SB.HSH.MP65.60.0301.0175.3.7 STGL.dgn

LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street, Suite 401
East Hartford, CT 06108

APPROVED BY: R.B. DATE: 3-23-18

PROJECT TITLE:
**REPLACEMENT OF CULVERT AT
MP 65.60 NEW HAVEN MAINLINE
OVER UNNAMED STREAM**

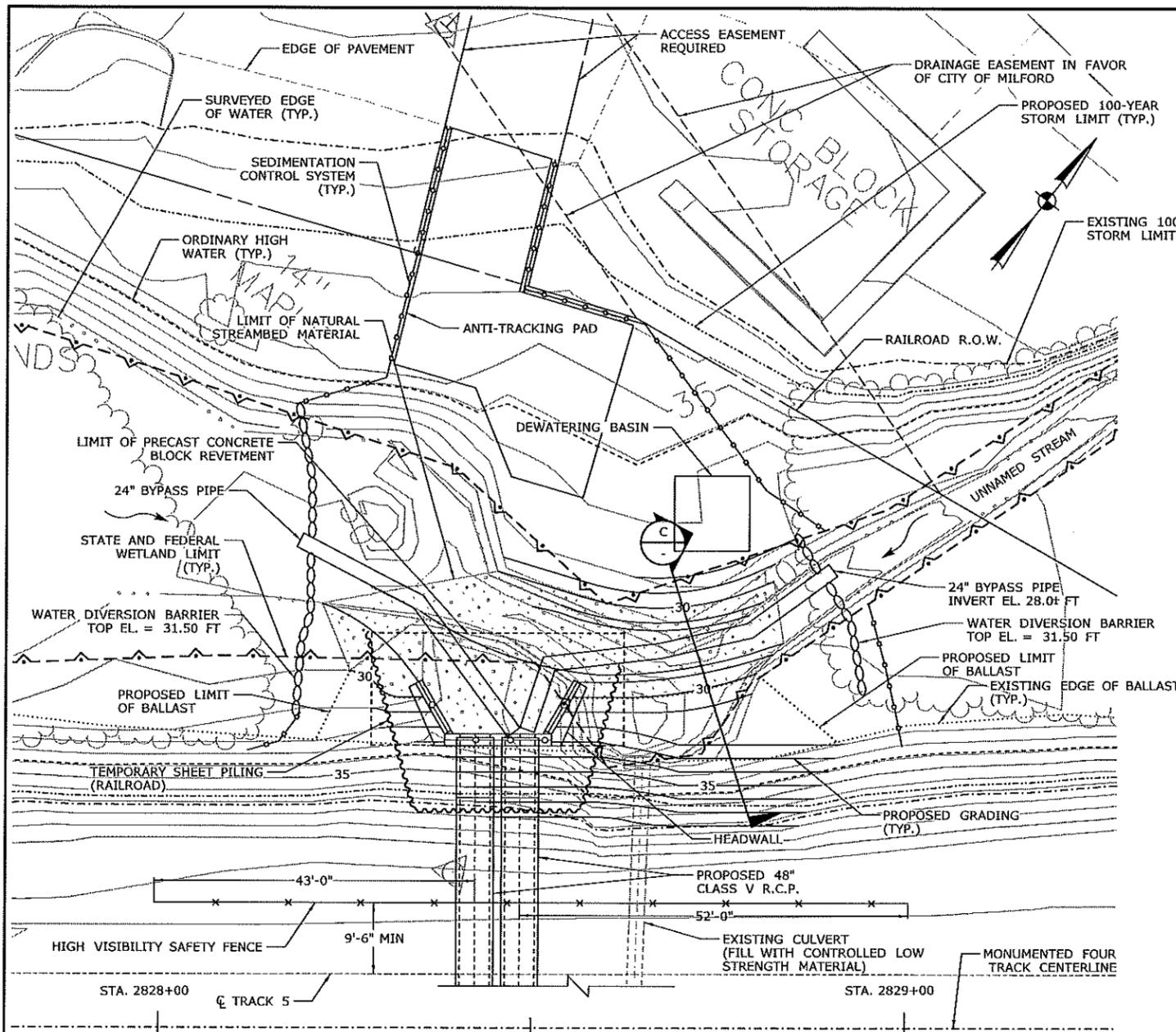
TOWN:
MILFORD

DRAWING TITLE:
CONSTRUCTION STAGE-1

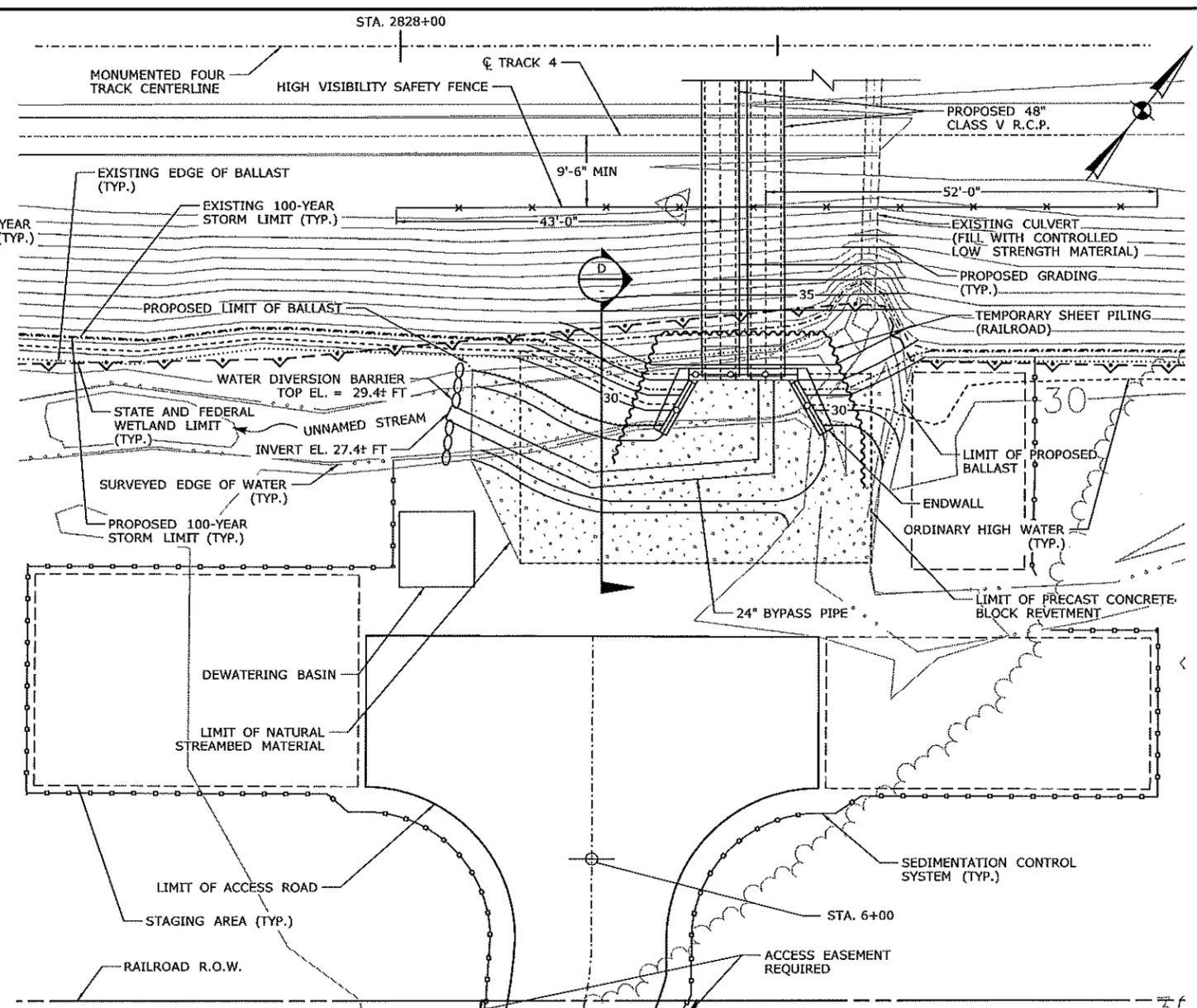
PROJECT NO.
301-175

DRAWING NO.
ENV-05

SHEET NO.
5 OF 10



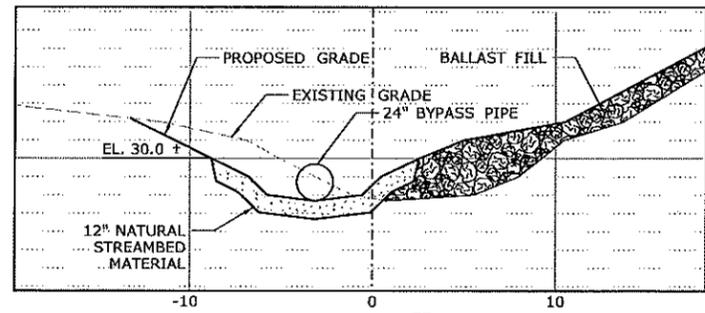
PLAN AT INLET
SCALE: 1" = 10'-0"



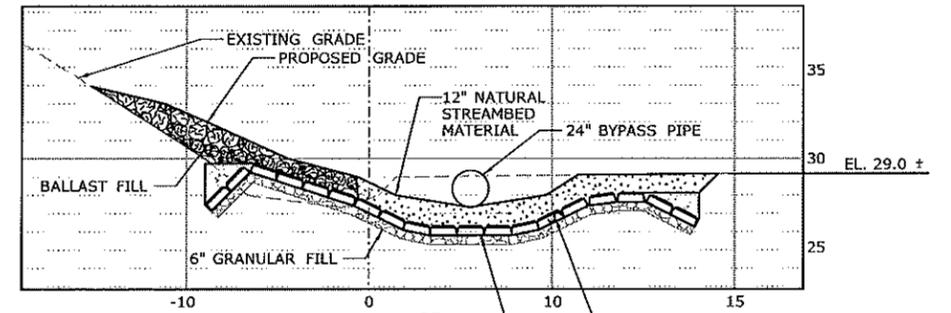
PLAN AT OUTLET
SCALE: 1" = 10'-0"

SEQUENCE OF CONSTRUCTION NOTES STAGE - 2

1. MODIFY WATER HANDLING TO ROUTE WATER THROUGH THE PROPOSED PIPE.
2. PLACE NATURAL STREAMBED MATERIAL. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL.
3. REGRADE RAILROAD EMBANKMENT SLOPES.
4. REMOVE WATER HANDLING SYSTEM, CONSTRUCTION MATS AND MATERIALS USED TO ACCESS THE SITE.
5. PLACE WETLAND SEED MIX ON DISTURBED AREAS WITHIN THE WETLAND LIMITS. WETLAND SEED MIX SHALL NOT BE PLACED OVER NATURAL STREAMBED MATERIAL, BALLAST OR THE PERMANENT ACCESS ROAD. TO BE PAID FOR UNDER ITEM "WETLAND GRASS ESTABLISHMENT".
6. PLACE TOPSOIL AND CONSERVATION SEEDING FOR SLOPES ON DISTURBED EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLAND LIMITS.

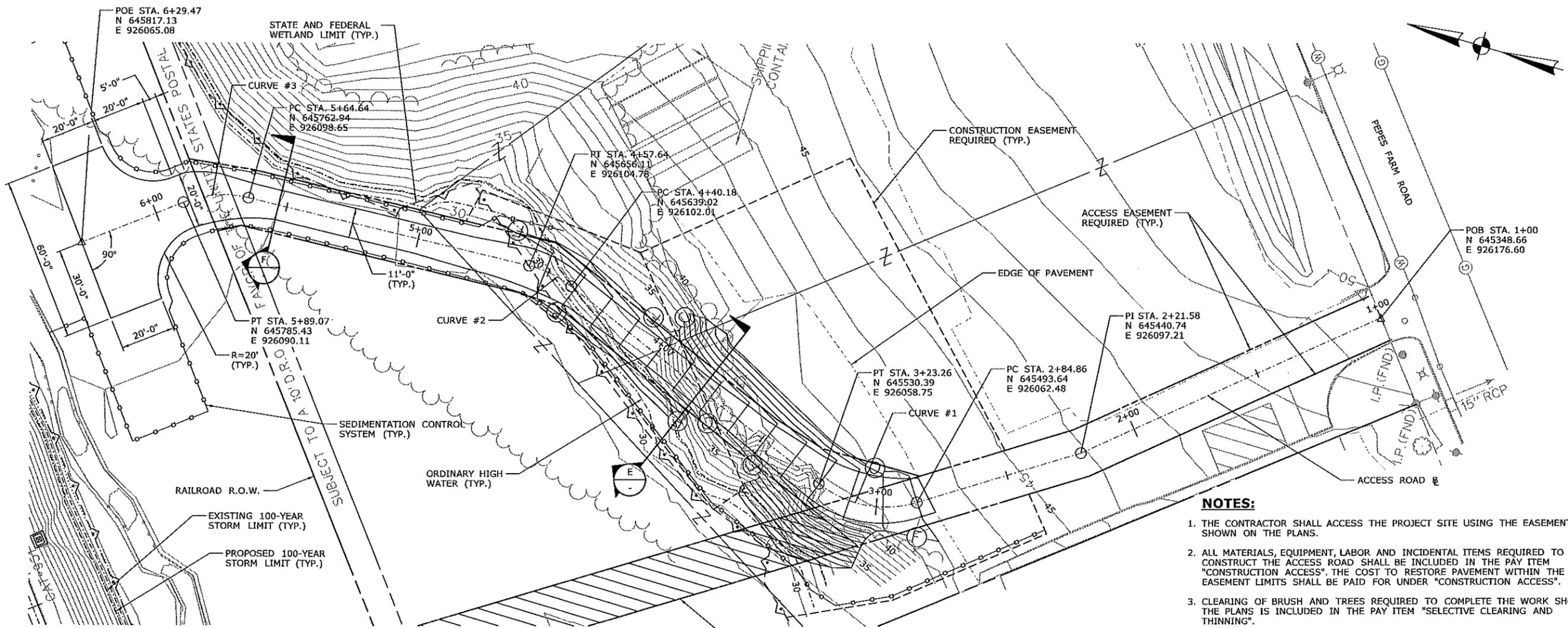


SECTION C
TYPICAL CHANNEL SECTION UPSTREAM
SCALE: 1" = 5'-0"



SECTION D
TYPICAL CHANNEL SECTION DOWNSTREAM
SCALE: 1" = 5'-0"

| | | | | | | | | |
|---|----------------------|---|--|--|--|-------------------------|--|--|
| 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: D.M./C.R. CHECKED BY: R.B. SCALE AS NOTED | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION FILENAME: ...SB.MSH.MP65.60_0301-0175.3.8 STG2.dgn | LOCHNER H.W. LOCHNER, INC. 55 Hartland Street, Suite 401 East Hartford, CT 06108 APPROVED BY: R.B. DATE: 3-23-18 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 DRAWING NO. ENV-06 SHEET NO. 6 OF 10 | |
| REV. DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 4/6/2018 | | | | | |



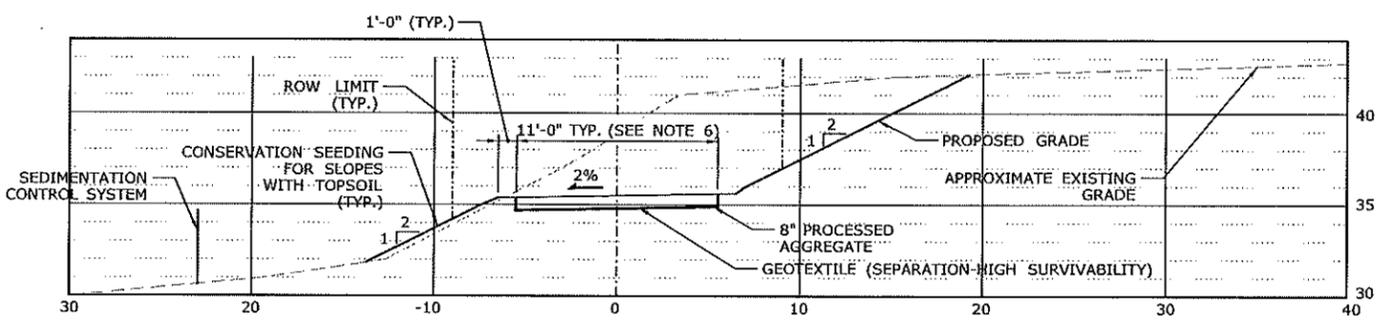
- NOTES:**
1. THE CONTRACTOR SHALL ACCESS THE PROJECT SITE USING THE EASEMENTS SHOWN ON THE PLANS.
 2. ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTAL ITEMS REQUIRED TO CONSTRUCT THE ACCESS ROAD SHALL BE INCLUDED IN THE PAY ITEM "CONSTRUCTION EASEMENT". THE COST TO RESTORE PAVEMENT WITHIN THE EASEMENT LIMITS SHALL BE PAID FOR UNDER "CONSTRUCTION ACCESS".
 3. CLEARING OF BRUSH AND TREES REQUIRED TO COMPLETE THE WORK SHOWN ON THE PLANS IS INCLUDED IN THE PAY ITEM "SELECTIVE CLEARING AND THINNING".
 4. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS UPON THE COMPLETION OF THE GRADING WORK. WETLAND SEED MIX SHALL BE USED WITHIN THE WETLAND LIMITS. THE RAILROAD EMBANKMENT ABOVE THE LIMIT OF BALLAST, AREAS OF NATURAL STREAMBED MATERIAL AND THE ACCESS ROAD SHALL NOT BE SEED. CONSERVATION SEED MIX SHALL BE USED ON EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLANDS.
 5. TOPSOIL SHALL BE PLACED ON EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLAND LIMITS.
 6. THE WIDTH OF THE ACCESS ROAD IN THE CURVES SHALL BE INCREASED AS NECESSARY TO PROVIDE SUFFICIENT ROOM FOR VEHICLE MOVEMENTS.

CURVE DATA

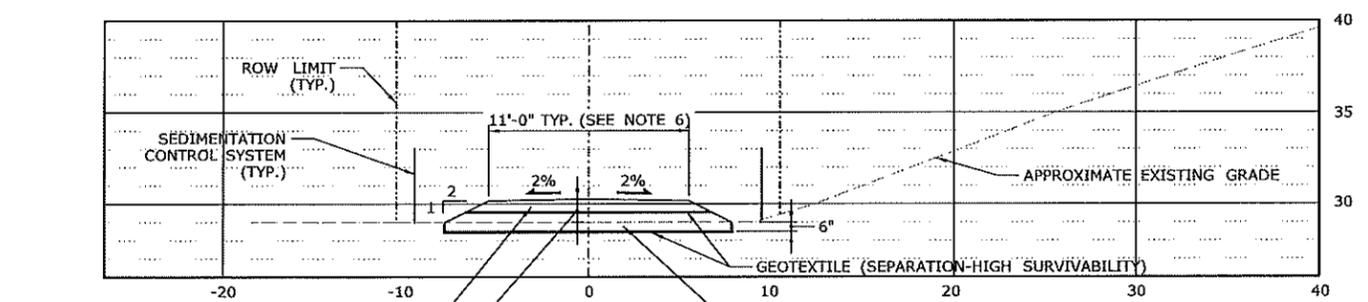
| CURVE #1 | CURVE #2 | CURVE #3 |
|---------------------|---------------------|---------------------|
| $\Delta = 55^\circ$ | $\Delta = 25^\circ$ | $\Delta = 35^\circ$ |
| $T = 20.82'$ | $T = 8.87'$ | $T = 12.61'$ |
| $L = 38.40'$ | $L = 17.45'$ | $L = 24.43'$ |
| $R = 40'$ | $R = 40'$ | $R = 40'$ |
| PI N = 645511.05 | PI N = 645647.26 | PI N = 645775.53 |
| PI E = 926051.05 | PI E = 926105.29 | PI E = 926097.92 |

ACCESS ROAD PLAN

SCALE: 1" = 20'-0"

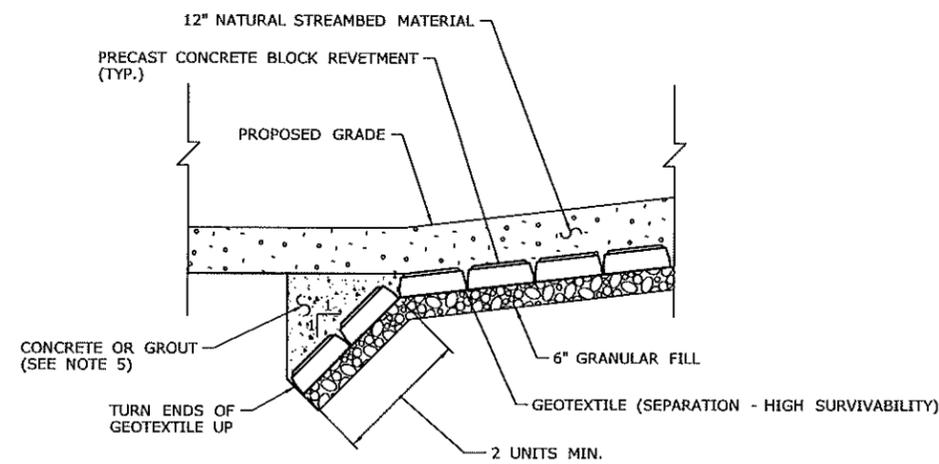


SECTION E
TYPICAL SLOPE SECTION
SCALE: 1" = 5'-0"



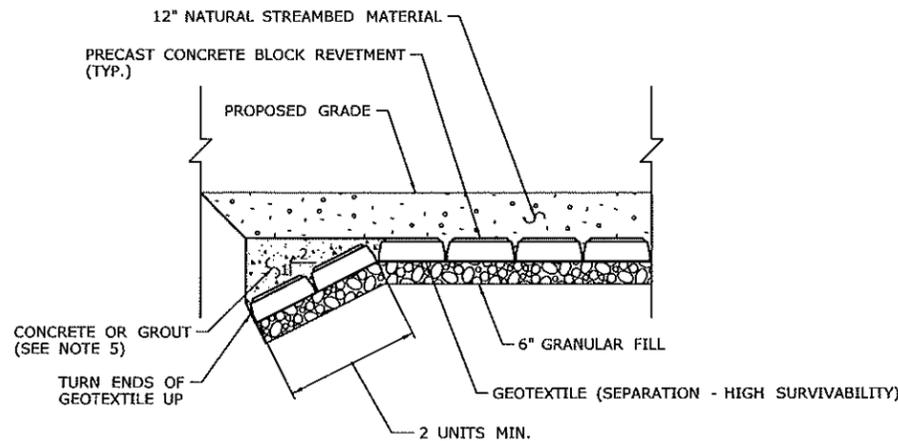
SECTION F
TYPICAL WETLAND SECTION
SCALE: 1" = 5'-0"

| | | | | |
|--------------------------------|--|--|--|--|
| DESIGNER/DRAFTER: D.M./C.R. | <p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| CHECKED BY: R.B. | | <p>LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108</p> | DRAWING TITLE: ACCESS ROAD DETAILS | DRAWING NO. ENV-07 |
| SCALE AS NOTED | APPROVED BY: R.B. | DATE: 3-23-18 | SHEET NO. 7 OF 10 | |
| REV. DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.9_AccessPlan.dgn |



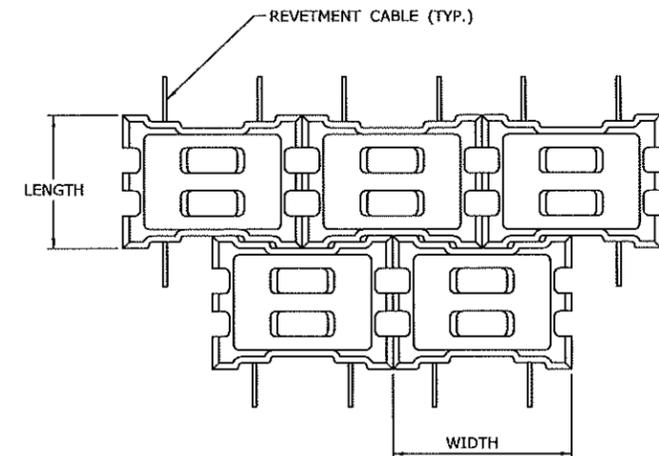
TOE TERMINATION DETAIL

N.T.S.



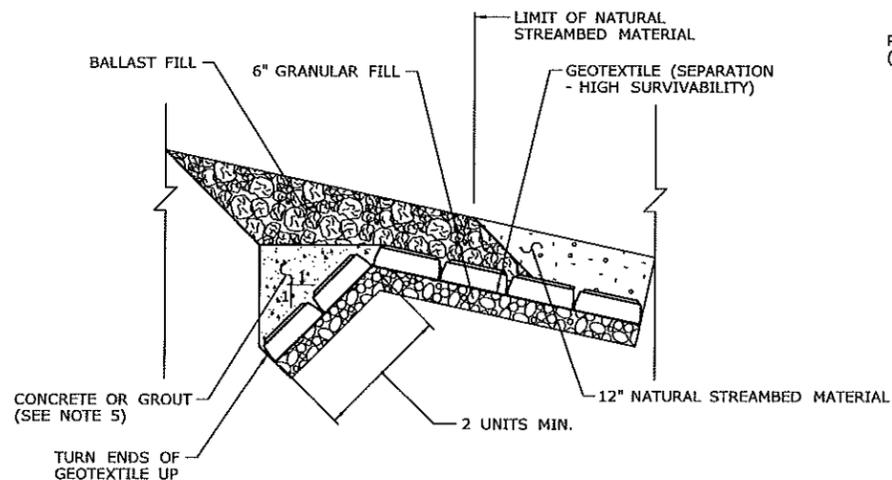
FLANK TERMINATION DETAIL

N.T.S.



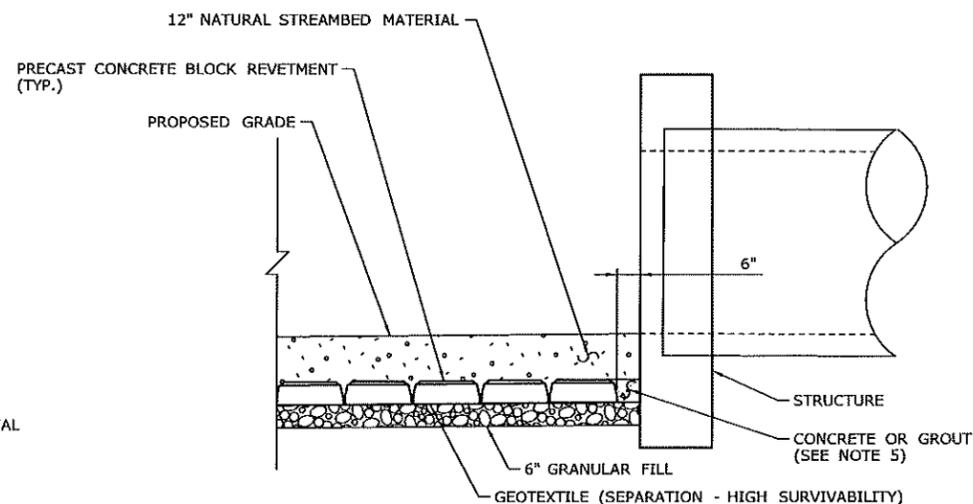
PRECAST CONCRETE BLOCK DETAIL

N.T.S.



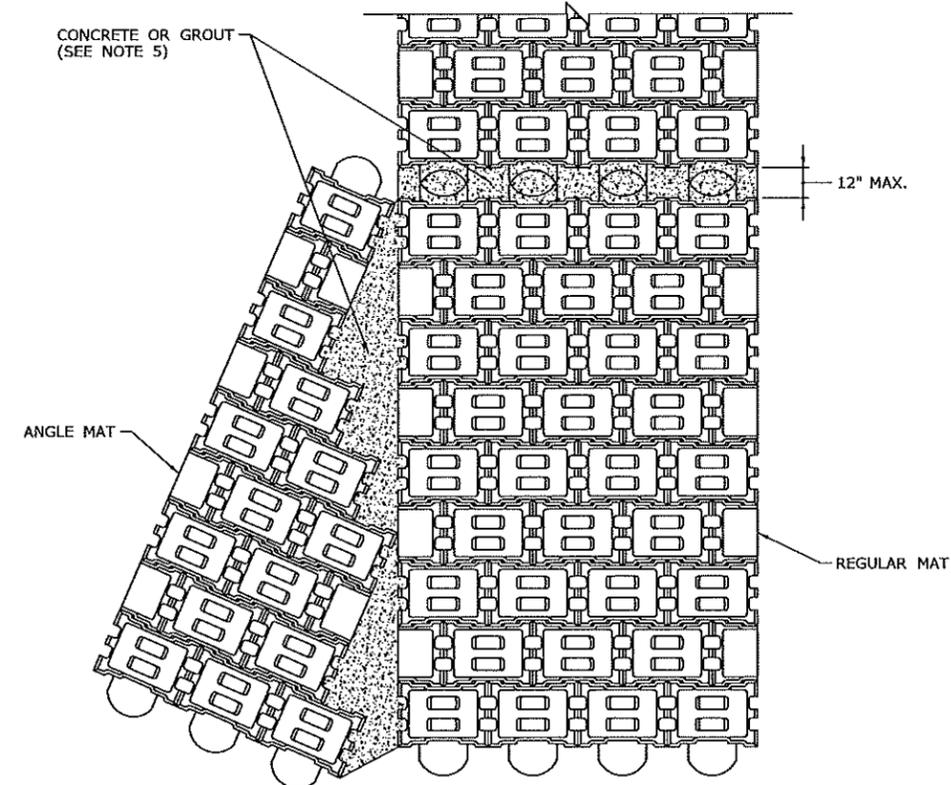
TOP TERMINATION DETAIL

N.T.S.



TERMINATION AT STRUCTURE DETAIL

N.T.S.



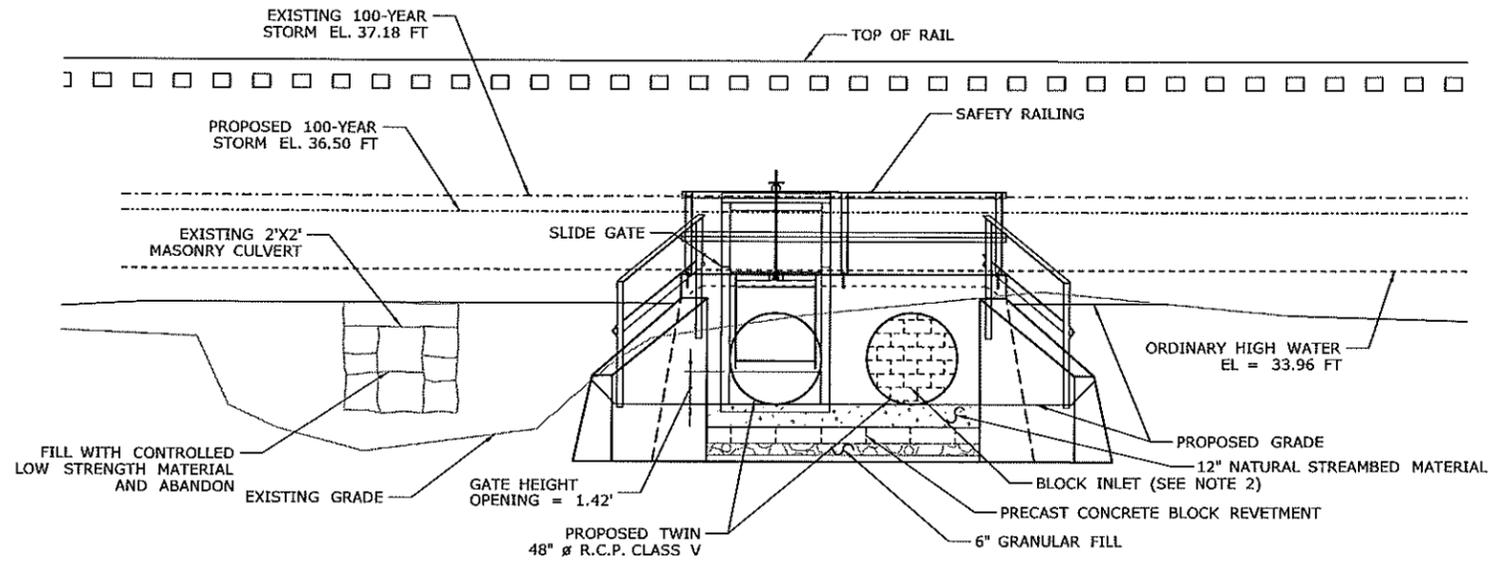
INSTALLATION DETAIL

N.T.S.

PRECAST CONCRETE BLOCK REVETMENT NOTES:

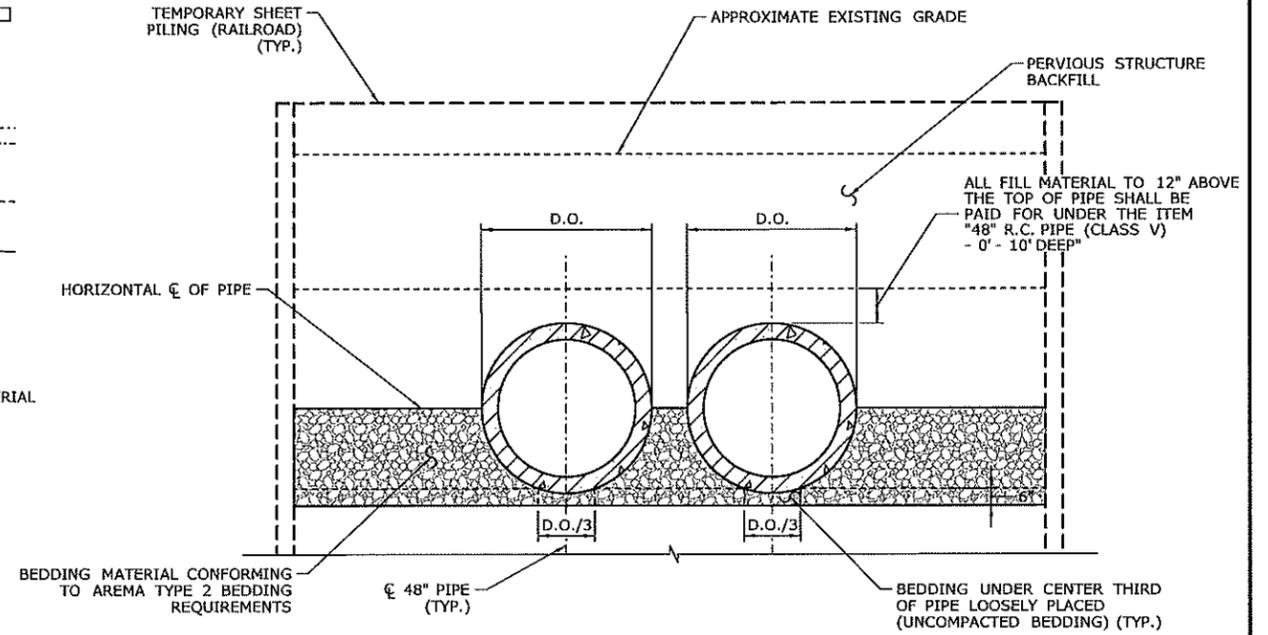
- BLOCKS MUST BE OPEN CELL AND NON-TAPERED.
- THE INSTALLATION OF THE PRECAST CONCRETE BLOCK REVETMENT SYSTEM SHALL BE IN ACCORDANCE WITH ASTM D6884 AND THE MANUFACTURER'S RECOMMENDATIONS.
- THE 6" LAYER OF GRANULAR FILL, GEOTEXTILE (SEPARATION - HIGH SURVIVABILITY), GROUT OR CONCRETE AND PRECAST CONCRETE BLOCKS SHALL BE PAID FOR UNDER ITEM "PRECAST CONCRETE BLOCK REVETMENT".
- IF PRECAST CONCRETE BLOCK MATS ARE USED THEY SHALL BE MATCHED UP TO THE GREATEST EXTENT POSSIBLE. GAPS GREATER THAN ONE BLOCK SIZE SHALL BE FILLED WITH A BLOCK. NO OVERLAPPING OF MATS WILL BE ACCEPTED.
- 4,000 PSI NON SHRINK GROUT OR CONCRETE SHALL BE USED WHERE THE LOOP ENDS OF THE MATS MEET, AT TERMINATION ENDS AS SHOWN AND WHEREVER THERE IS GREATER THAN A 2 INCH GAP BETWEEN ADJACENT MATS OR STRUCTURES.
- BACKFILLING OF THE REVETMENT SYSTEM WITH NATURAL STREAMBED MATERIAL SHALL BE COMPLETED AS SOON AS PRACTICABLE AFTER THE REVETMENT HAS BEEN INSTALLED.

| | | | | | | | | | | | | | |
|------|------|----------------------|-----------|--------------------|---------------------------|---------------------|----------------|--|--|---|--|-------------------------|-------------------------------|
| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | DESIGNER/DRAFTER: D.M. | CHECKED BY: R.B. | SCALE AS NOTED | <p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> | <p>LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108</p> | <p>STATE OF CONNECTICUT RICHARD W. LOCHNER LICENSED PROFESSIONAL ENGINEER No. 16825</p> | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| | | | | | | | | | | | DRAWING NO. ENV-08 | | |
| | | | | | | | | | | | DRAWING TITLE: PRECAST CONCRETE BLOCK REVETMENT DETAILS | | |
| | | | | | | | | | | | SHEET NO. 8 OF 10 | | |



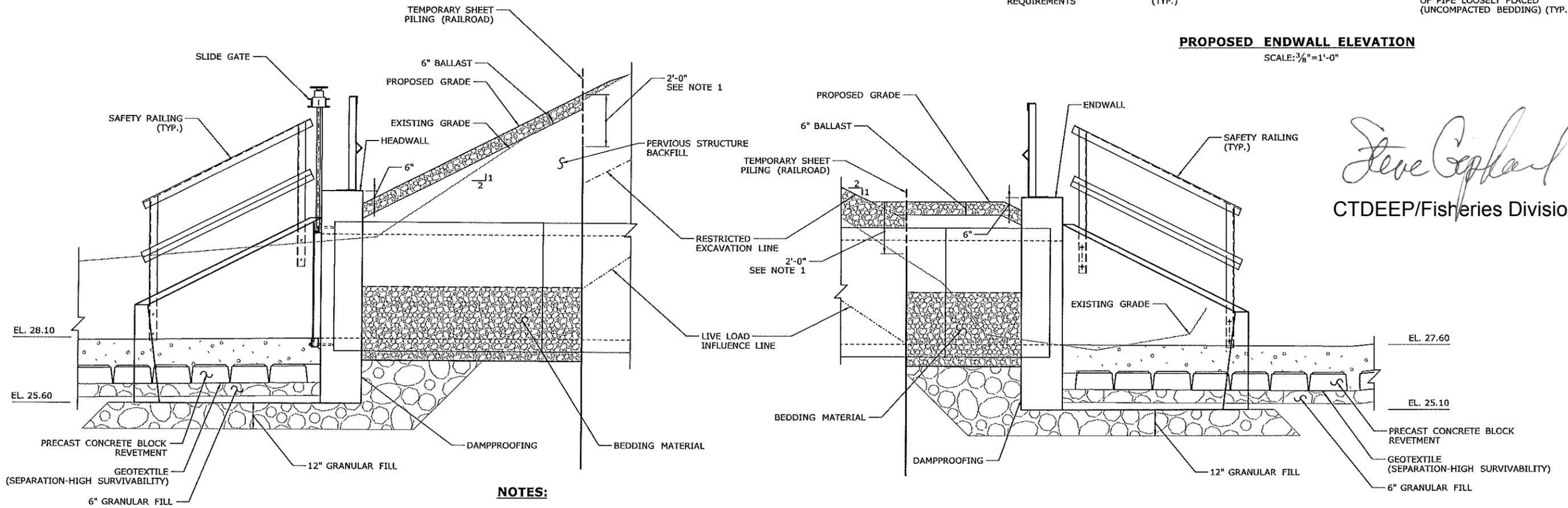
UPSTREAM ELEVATION

SCALE: 1/4"=1'-0"



PROPOSED ENDWALL ELEVATION

SCALE: 3/8"=1'-0"



PROPOSED HEADWALL ELEVATION

SCALE: 1/2"=1'-0"

PROPOSED ENDWALL ELEVATION

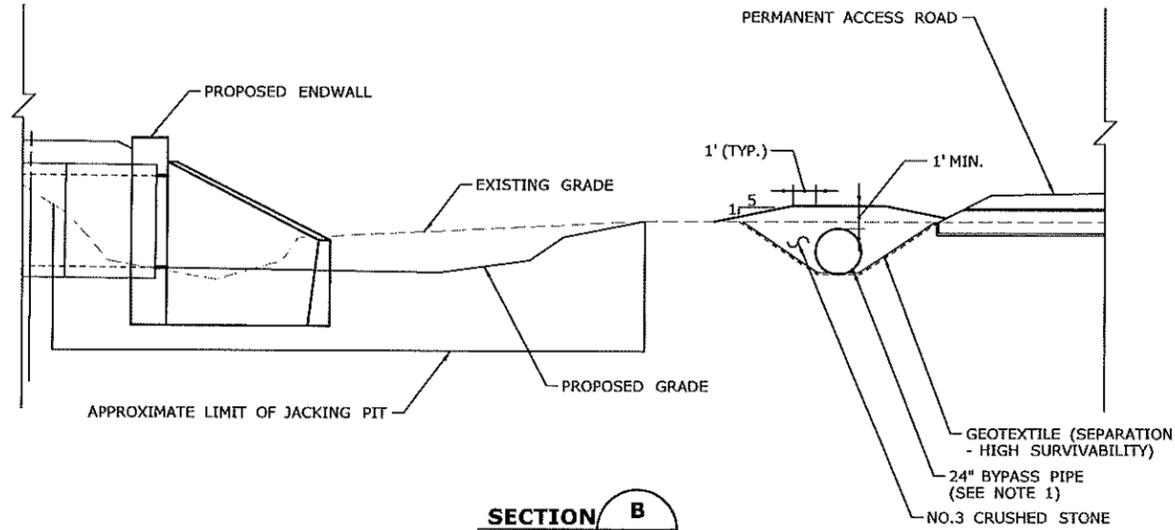
SCALE: 1/2"=1'-0"

NOTES:

1. REMOVE TEMPORARY SHEET PILING (RAILROAD) 2'-0" BELOW THE PROPOSED GRADE AS SHOWN. THE REST OF THE TEMPORARY SHEET PILING (RAILROAD) SHALL REMAIN IN PLACE.
2. THE INLET AND OUTLET OF THE SUPPLEMENTAL (WESTERN) CULVERT SHALL BE BLOCKED OFF. THE MEANS FOR BLOCKING THE PIPE SHALL BE A MASONRY WALL OR OTHER SYSTEM SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER SUITABLE FOR BLOCKING OFF FLOW FROM THE CULVERT, CAPABLE OF WITHSTANDING PROLONGED EXPOSURE TO WATER AND CAPABLE OF BEING REMOVED WITH NEGLIGIBLE IMPACT ON THE HEADWALL/ENDWALL. THE COST OF BLOCKING OF THE PIPE SHALL BE INCLUDED IN THE ITEM "CLASS "A" CONCRETE".

Steve Cephal
CTDEEP/Fisheries Division

| | | | | | | |
|--|------|--|---|--|---|--|
| 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: D.M./C.R. CHECKED BY: R.B. SCALE IN FEET SCALE 1"=40' SCALE AS NOTED | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108 APPROVED BY: R.B. DATE: 3-23-18 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD DRAWING TITLE: MISCELLANEOUS DETAILS - 1 | PROJECT NO. 301-175 DRAWING NO. ENV-09 SHEET NO. 9 OF 10 |
| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | FILENAME: ...\\SB-MSH-MP65.60-0301-0175-3.13 Misc Det 1.dgn | |

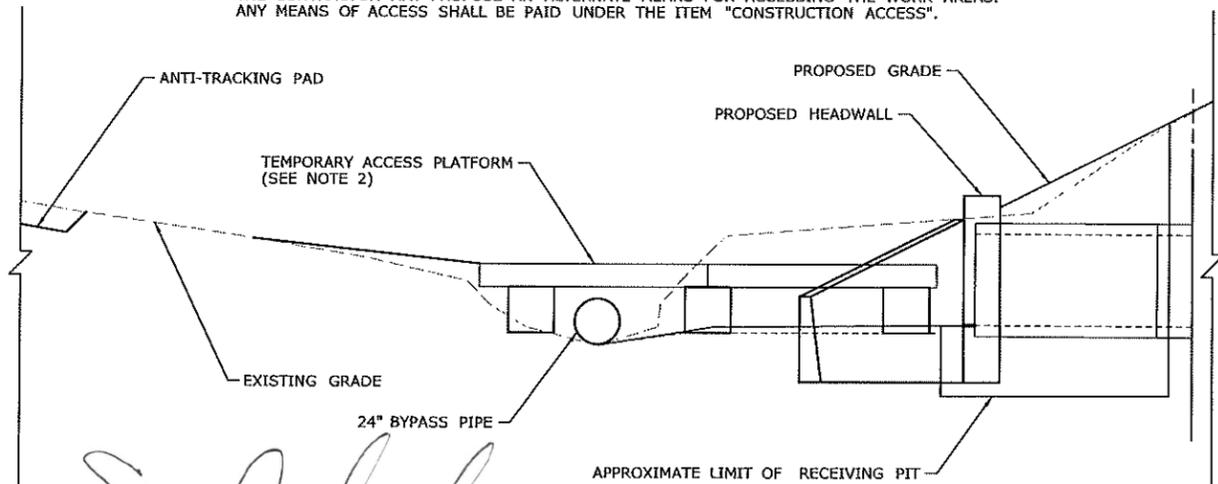


CONSTRUCTION STAGING ENDWALL ELEVATION

SCALE: 1/4"=1'-0"

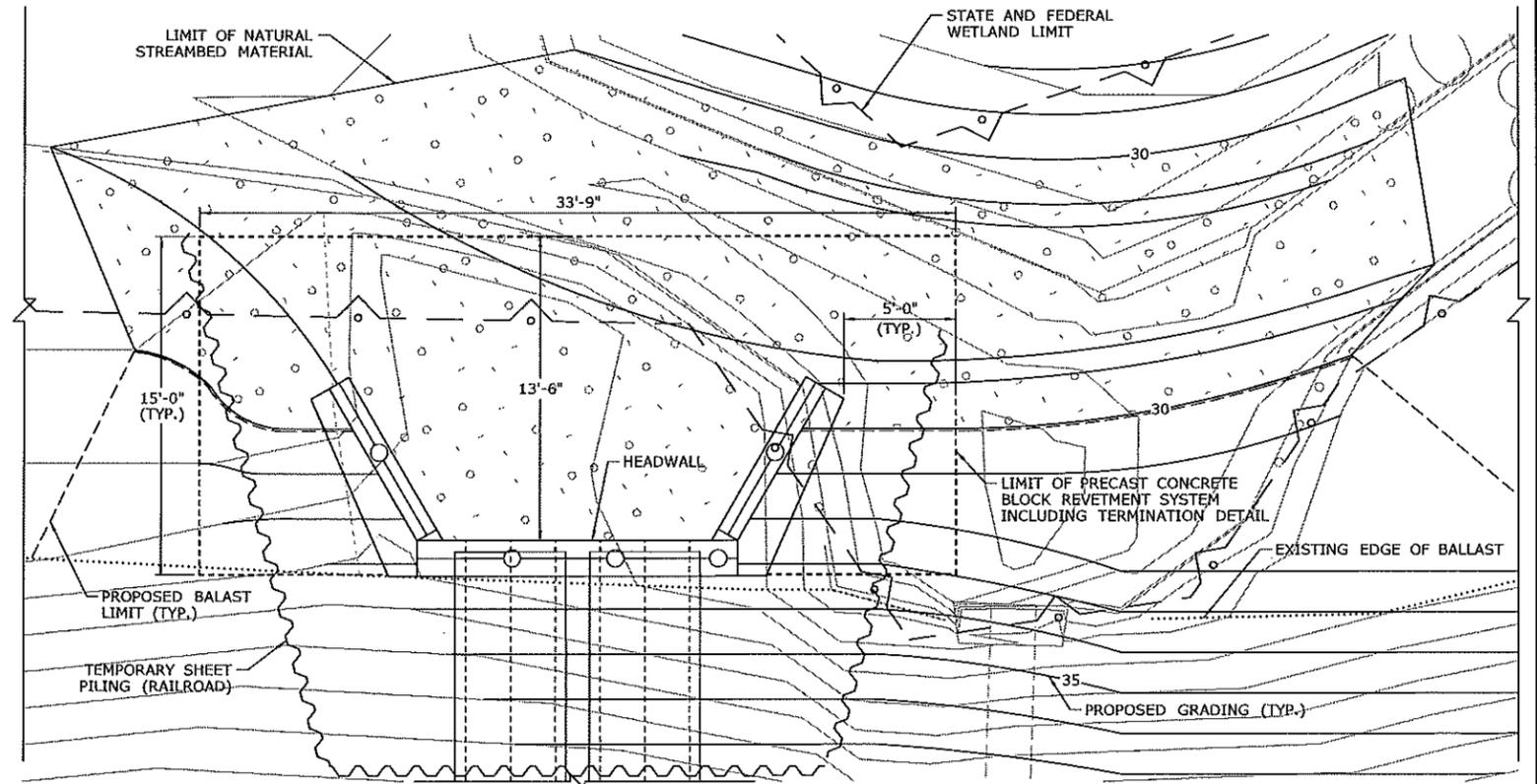
NOTES:

1. THE TEMPORARY BYPASS PIPE IS PROPOSED TO BE BURIED ON THE DOWNSTREAM SIDE TO PROVIDE WORK ACCESS AND A CONSTANT DOWN GRADIENT. THE FILL (CRUSHED STONE) AND GEOTEXTILE ASSOCIATED WITH THIS SHALL BE INCLUDED IN THE ITEM "HANDLING WATER". THE CONTRACTOR MAY PROPOSE AN ALTERNATE MEANS FOR THE BYPASS PIPE LAYOUT.
2. THE TEMPORARY ACCESS PLATFORM SHOWN IS A POSSIBLE MEANS OF ACCESSING THE SITE. THE CONTRACTOR MAY PROPOSE AN ALTERNATE MEANS FOR ACCESSING THE WORK AREAS. ANY MEANS OF ACCESS SHALL BE PAID UNDER THE ITEM "CONSTRUCTION ACCESS".



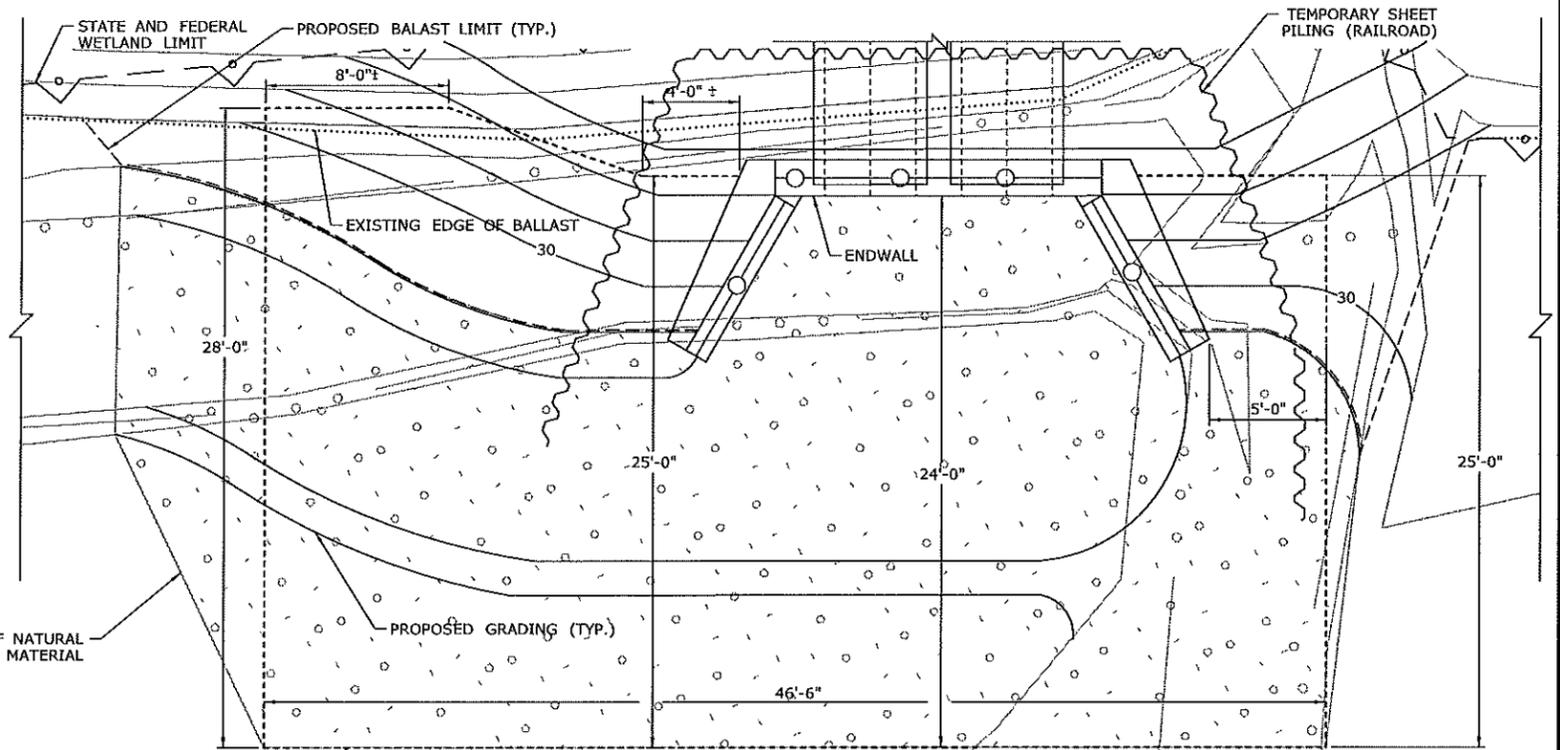
CONSTRUCTION STAGING HEADWALL ELEVATION

SCALE: 1/4"=1'-0"



UPSTREAM IN CHANNEL WORK LIMITS

SCALE: 1/4"=1'-0"



DOWNSTREAM IN CHANNEL WORK LIMITS

SCALE: 1/4"=1'-0"

Steve Cephal
 CTDEEP/Fisheries Division

SECTION A S-07

| REV. | DATE | REVISION DESCRIPTION | SHEET NO. |
|------|------|----------------------|-----------|
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DESIGNER/DRAFTER:
D.M./C.R.
 CHECKED BY:
R.B.
 SCALE AS NOTED

STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION

LOCHNER
 H.W. LOCHNER, INC.
 55 Hartland Street
 East Hartford, CT 06109

APPROVED BY: R.B. DATE: 3-23-18

PROJECT TITLE:
REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM

TOWN:
MILFORD

DRAWING TITLE:
MISCELLANEOUS DETAILS - 2

PROJECT NO.
301-175

DRAWING NO.
ENV-10

SHEET NO.
10 OF 10

PLOTTED: 3/23/2018

FILENAME: ...\\SB-MSH-\\MP65.60-0301-0175-3.14 Misc Det 2.dgn



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546
Phone: (860) 594-2931

May 11, 2018

Ms. Susan Lee
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Subject: State Project No. 301-175
New Haven Mainline MP 65.60 o/Unnamed Watercourse
Town of Milford

Dear Ms. Lee:

Enclosed please find the Section 404 permit application for your review and approval. The Department is submitting this PCN permit application under GP 19 (Stream, River & Brook Crossings). An application for PGP CT Addendum was submitted to the Connecticut Department of Energy and Environmental Protection under a separate cover letter for processing.

The project has received funding from FHWA, and as such has been submitted to the USFWS under the Final 4(d) rule for the Federally Threatened Northern Long-eared Bat on April 9, 2018. There are no documented hibernacula within Milford or in the vicinity of the project.

It was agreed at the DOT Interagency Meeting that in-lieu fee will be used as mitigation for impacts. It was agreed that in-lieu will be calculated on 100% of the permanent impacts and 15% of the temporary impacts. Total permanent impacts are 6420sf at a rate of \$7.45/sf (South Central Coast) which amounts to \$47,829.00. Temporary impacts are 9330sf. 15% of the temporary impacts are 1399.5sf at a rate of \$7.45/sf amounts to \$10,426.28. Total in-lieu fee to be provided is \$58,255.28.

Any questions pertaining to this application may be directed to Mr. Andrew H. Davis, Transportation Supervising Planner at 860-594-2157.

Very truly yours,

Kimberly C. Lesay
Transportation Assistant Planning Director
Bureau of Policy and Planning

Attachments
Amanda M. Saul/ams
cc: Nathan Margason – USEPA

bcc: Andrew H. Davis – Amanda M. Saul
Jayantha Mather – Jay D. Young

CONNECTICUT IN-LIEU FEE (ILF) PROJECT IMPACT WORKSHEET

1. Date: May 11, 2018
2. Corps file number: NAE-
3. Corps project manager: Susan K. Lee
4. Applicant(s): Connecticut Department of Transportation
5. ILF amount: \$ 58,255.28
6. Project address: New Haven Mainline Rail, Milepost 65.60 over Unnamed
Watercourse State Project 301-175.
7. Service area: Southcentral Coastal
8. Lat/long of impact¹: -41-14'-0.46" N, 73-1'-8.10" W
9. 8-Digit Hydrologic Unit Code: 01100006
10. Impact area subject to compensation (in SF or LF): 7819.5 SF (100% of Perm, 15% of
Temp)
11. Resources impacted:

| Resource Type (list all that apply) | Functions (for wetland impacts - by resource type) | Type of Impact (by resource type) | SF of Aquatic Resources Impacted (by resource type) | Linear Feet of Streams Impacted |
|--|---|--------------------------------------|--|---------------------------------------|
| PEM | GWR, FF, STR, PE, FSH, WH | Fill | 6420sf Permanent 9330sf Temporary | 260lf |
| | | | | |
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| | | | | |
| | | | | |
| | | | | |
| Total Impacts: | | | 15,750 | 260 |

Resource Type: Wetlands by NWI type (PFO, PSS, PEM, M1, M2, E2, etc.), vernal pool (VP), VP critical terrestrial habitat (CTH), and/or river, stream, or brook (R).

Wetland Functions: Groundwater recharge/discharge (GWR); floodflow alteration (FF); fish & shellfish habitat (FSH); sediment toxicant retention (STR); nutrient removal (NR); production export (PE); sediment/shoreline stabilization (SS); wildlife habitat (WH).

Type of impact: May include one or more of the following: fill, conversion (e.g., forested to shrub/scrub), excavation with associated discharge, etc.

¹ If the project is linear, choose the midpoint within each service area.

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 whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. 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.

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: <http://dpcl.dod.mil/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx>

(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)

| | |
|--|---|
| <p>5. APPLICANT'S NAME</p> <p>First - Kimberly Middle - C Last - Lesay</p> <p>Company - Connecticut Department of Transportation</p> <p>E-mail Address - kimberly.lesay@ct.gov</p> | <p>8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)</p> <p>First - Middle - Last -</p> <p>Company -</p> <p>E-mail Address -</p> |
| <p>6. APPLICANT'S ADDRESS:</p> <p>Address- 2800 Berlin Turnpike</p> <p>City - Newington State - CT Zip - 06111 Country - USA</p> | <p>9. AGENT'S ADDRESS:</p> <p>Address-</p> <p>City - State - Zip - Country -</p> |
| <p>7. APPLICANT'S PHONE NOs. w/AREA CODE</p> <p>a. Residence b. Business c. Fax</p> <p>N/A 860-594-2931 860-594-3028</p> | <p>10. AGENTS PHONE NOs. w/AREA CODE</p> <p>a. Residence b. Business c. Fax</p> |

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

| | |
|--|--|
| <p>12. PROJECT NAME OR TITLE (see instructions)</p> <p>State Project No. 301-175, New Haven Mainline (MP 65.60) over unnamed watercourse</p> | |
| <p>13. NAME OF WATERBODY, IF KNOWN (if applicable)</p> <p>tributary to Indian River</p> | <p>14. PROJECT STREET ADDRESS (if applicable)</p> <p>Address N/A</p> |
| <p>15. LOCATION OF PROJECT</p> <p>Latitude: °N 41° - 14' - 0.46" Longitude: °W 73° - 1' - 8.10"</p> | <p>City - Milford State- CT Zip- 06460</p> |
| <p>16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)</p> <p>State Tax Parcel ID Municipality</p> <p>Section - Township - Range -</p> | |

17. DIRECTIONS TO THE SITE

Take I-90 westbound to I-84 westbound to I-91 southbound to I-95 southbound. Take exit 40 from I-95 southbound. Take a left at the end of the ramp onto Woodmont Road. Take a right onto Eastern Steel Road and take it all the way to the cul-de-sac. Take the center driveway in the cul-de-sac and go to the end of the corporate complex.

18. Nature of Activity (Description of project, include all features)

See Permit Application Supplement

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

See Permit Application Supplement

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

See Permit Application Supplement

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 Permit Application Supplement

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Total Impacts = 15,750 sq. ft. or 0.362 acres (See Permit Supplement for a more detailed breakdown)
or
Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See Permit Application Supplement

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- Connors Properties, LLC, 95 and 101 Eastern Steel Road

City - Milford State - CT Zip - 06460

b. Address- Rolling Frito-Lay Sales, LP, 206 Pepes Farm Road

City - Milford State - CT Zip - 06460

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 |
|---------|------------------|-----------------------|--------------|---------------|-------------|
| CT DEEP | GP-WRCA | TBD | | | |
| CT DEEP | CT DEEP Addendum | TBD | concurrent | | |
| | | | | | |
| | | | | | |

* 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 5-14-2018
 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.

State Project: 301-175
New Haven Mainline (MP 65.60) over unnamed watercourse
Milford, CT

TABLE OF CONTENTS

| | |
|---------------------|---|
| Attachment A | Supplemental Permit Information <ul style="list-style-type: none">- Block 18- Block 19- Block 20- Block 21- Block 22- Block 23 |
| Attachment B | Plan Sheets and Drawings <ul style="list-style-type: none">- Title Sheet- Wetland Impact Plan- Site Plan- General Plan- Construction Stage - 1- Construction Stage - 2- Access Road Details- Precast Concrete Block Revetment Details- Miscellaneous Details - 1- Miscellaneous Details - 2 |
| Attachment C | Wetland and Soils Report |
| Attachment D | Photographs |
| Attachment E | SHPO/THPO Documentation |

Attachment A: Supplemental Permit Information

Applicant: State of Connecticut, Department of Transportation
Project No: 301-175
Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

18. Nature of Activity

This project consists of the replacement of a masonry culvert that carries the New Haven Mainline over an unnamed watercourse. The existing culvert is approximately 89 feet long and has an opening that is approximately two feet high by two feet wide. There is ten feet of embankment material between the top of the culvert and the bottom of the railroad ties. The culvert carries four tracks of the New Haven Mainline at mile post 65.60. The New Haven Mainline is a critical rail corridor with service from Metro-North Railroad, Amtrak and a moderate volume of freight traffic. The watershed for the unnamed watercourse is very developed. The measured drainage area is 67.14 acres or 0.10 square miles. Discharge from the culvert flows southwest parallel with the railroad and eventually feeds into the Indian River.

The proposed replacement consists of twin 48 inch diameter class V reinforced concrete pipes (RCP). The total structure length is 101 feet. Endwalls with flared wings will be installed up and downstream. The endwalls will be set on a foot of granular fill. An earth retaining system will be installed parallel to the railroad embankment on both sides of the pipes to provide room for the jacking and receiving pits. The replacement pipes will be jacked through the railroad embankment adjacent to the existing culvert. This will allow the existing structure to be used for water handling during construction. The high volume of traffic and the depth of embankment make conventional cut and cover construction impractical, therefore jacking will be used. The existing culvert will be filled in with controlled low strength material and abandoned in the final condition. A requirement for this project is that no drainage easements be acquired up or downstream of the crossing. Based on this, the proposed structure opening must match the existing in order not to increase discharges and flood limits downstream. To accomplish this, a slide gate will be installed at the inlet of the primary culvert to limit its effective opening. CTDOT policy is to size structures to be hydraulically adequate for the design storm event. In order to meet this criteria a supplemental culvert will be installed adjacent to the primary culvert. The combined structure is sized to be hydraulically adequate. The supplemental culvert will be blocked off until the downstream crossings are improved sometime in the future. This methodology satisfies the CTDOT's direction of not impacting downstream properties, not acquiring flood easements and having a structure that has potential to meet hydraulic requirements. The proposed replacement will provide an improved hydraulic structure, improve safety for railroad operations, reduce maintenance costs and limit the impact to railroad traffic during construction.

The proposed structure will be jacked through the railroad embankment with live traffic allowed on all tracks. A monitoring system will be set up to check on the status of the tracks over the pipes during the jacking operation. During construction water will be handled by a combination of bypass pipes and cofferdams so all in water activities can be performed in the dry. All water from within excavated areas will be routed to a sedimentation basin.

19. Project Purpose

The inlet and the outlet of the existing structure have partially collapsed. In addition sediment and debris have accumulated within the culvert. As a result the hydraulic capacity of the structure has been reduced. The low lying developed areas immediately upstream of the culvert have a history of flooding. The frequency of flooding has increased due to the reduced capacity of the structure. The partial collapse of the culvert at the outlet has resulted in a localized steepening of the embankment slope. This has created a maintenance concern which has the potential to become a safety concern for Track No. 4. Due to the deteriorated condition of the existing masonry culvert, the increased risk of flooding and ongoing maintenance concerns the structure has been recommended for replacement.

The proposed replacement consists of twin 48 inch diameter Class V RCP. The new pipes are hydraulically adequate for the site, meet railroad operational requirements and improve the safety for Railroad operations. Precast flared endwalls will be used up and downstream to retain the railroad embankment. Precast concrete block revetment will be installed upstream and downstream to stabilize the channel. The revetment will be covered by one foot of natural streambed material.

There is currently no access to the downstream side of the culvert. Therefore an access road will be built on the downstream side to provide access during construction. Metro-North Railroad has requested that this access road be made permanent so that future maintenance can be performed on the structure. The location of the road minimizes disturbance to the wetlands. The width of the access road and the area of the turnaround have been set to the minimum required for safe passage.

The proposed construction is anticipated to begin in the spring of 2019 and be completed in the fall of 2019.

20. Reason(s) for Discharge

The proposed class V RCP's will replace the failing existing structure. Additionally the pipes will increase the hydraulic capacity at the site. The overall length of the structure is set to minimize encroachment onto the wetlands while at the same time providing a safe and functional railroad embankment. The endwalls are flared to minimize the length of pipe and to tie into the exiting railroad embankment. The channel banks adjacent to the structure will be regraded to provide long term stability. The precast concrete block revetment limits are set to the minimum area required to appropriately stabilize the channel. The revetment will be covered with one foot of natural streambed material to provide a natural channel during low flow conditions. Since there is no access to the downstream side of the culvert an access road will be constructed to provide the contractor with access to the downstream end of the structure. The layout of the road minimizes impact to the wetlands. The road will be made permanent to provide access to maintenance forces. Timber or swamp mats will be used to access the site beyond the limits of the access road. Temporary structures such as cofferdams, bypass pipes, and sedimentation basins are required to handle water during construction.

21. Type(s) of material being discharged and the amount of each

Existing Channel Bottom Material – 75 CY
Granular Fill – 25 CY
Ballast – 160 CY
Pervious Structure Backfill - 44 CY
Controlled Low Strength Material - 17 CY
Concrete – 24 CY
Bedding Material – 25 CY
Precast Concrete Block Revetment - 72 CY
Processed Aggregate – 121 CY
Crushed Stone – 174 CY

22. Surface Area in Acres of Wetlands or Other Waters Filled

Due to the location of the project between highly developed industrial areas and the rail line embankments, the ordinary high water (OHW) line has been determined to be either nearly coincident with the wetland limits (outlet) or just above the wetland limit (inlet). At the inlet in particular, localized frequent inundation occurs above the wetland line, however, due to the fact that waters pond on disturbed surfaces, no wetland conditions develop. The 'total impacts' as presented in the permit represent the footprint out-to-out, to the OHW limits; the 'wetland' impacts reported are the portion within the total that are strictly vegetated wetlands.

Temporary and permanent waterway impacts are 2,165 sf (0.050 ac) and 815 sf (0.018 ac), respectively. The result is a total waterway impact area of 2,980 sf (0.068 ac).

Temporary and permanent wetland impacts are 7,165 sf (0.164 ac) and 5,605 sf (0.129 ac), respectively. The result is a total wetland impact area of 12,770 sf (0.293 ac).

The sum of waterway and wetland impacts is 15,750 sf (0.362 ac).

Permanent impacts are the result of the proposed 48 inch concrete pipes, concrete endwalls, precast concrete block revetment and access road.

Temporary impacts are the result of temporary water handling measures required during construction, necessary sedimentation controls, staging areas and jacking/receiving pits. Water handling measures include bypass pipes, cofferdams and dewatering basins.

23. Description of Avoidance, Minimization and Compensation

Water quality will be maintained and protected via the use of erosion and sedimentation prevention measures and the use of best management practices for construction activities within wetlands and aquatic habitats. No dredging is required. Examples of how impacts have been minimized include but are not limited to the following:

- The installation, use and maintenance of combined silt fencing and hay bale erosion and sedimentation control around work areas.
- Construction materials and other potentially hazardous materials shall be stored outside the wetlands and flood-prone areas.
- Work in the waterway shall take place behind temporary cofferdams, thus minimizing the impact to the waterway.
- Dewatering basins shall be used during dewatering operations to minimize the discharge of silts into the waterway.
- Placement of natural streambed material on the precast concrete block revetment.
- Revegetation with a wetland seed mix
- The access road will not bisect the wetland by extending all the way to the structure.
- The footprint of the access road and turnaround have been reduced to the minimum required for construction and maintenance equipment.
- The pipe jacking method will reduce the total impact area as compared to an open cut construction method.
- Designed in conformance with the 2002 Guidelines for Soil Erosion and Sediment Control and the 2004 Stormwater Quality Manual
- Conforms with Form 817, Section 1.10
- An in lieu fee will be paid as part of the project based on 100% of the permanent impact area and 15% of the temporary impact area

Attachment B: Plan Sheets & Drawings

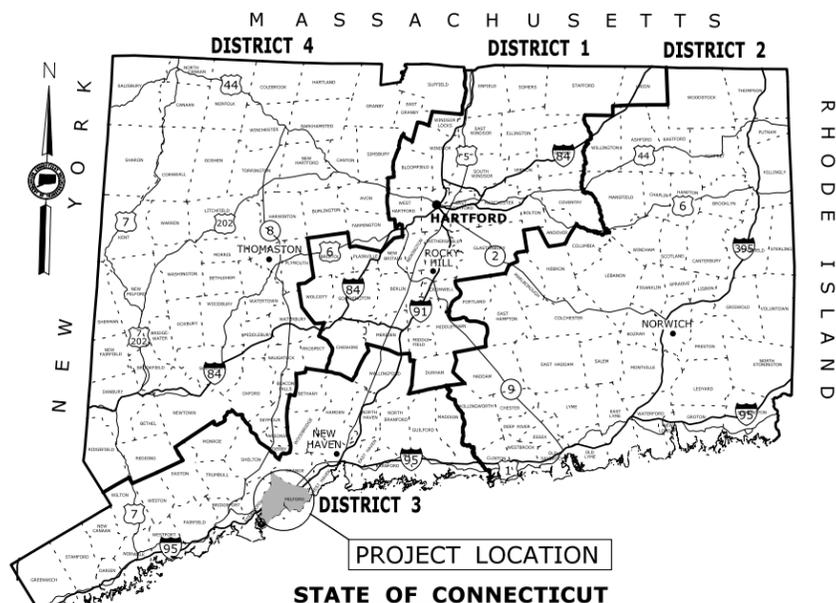
Applicant: State of Connecticut, Department of Transportation
Project No: 301-175
Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

| Sheet | Description | Page |
|-------|--|---------|
| 01 | Title Sheet | Page 8 |
| 02 | Wetland Impact Plan | Page 9 |
| 03 | Site Plan | Page 10 |
| 04 | General Plan | Page 11 |
| 05 | Construction Stage - 1 | Page 12 |
| 06 | Construction Stage - 2 | Page 13 |
| 07 | Access Road Details | Page 14 |
| 07 | Precast Concrete Block Revetment Details | Page 15 |
| 09 | Miscellaneous Details - 1 | Page 16 |
| 10 | Miscellaneous Details - 2 | Page 17 |

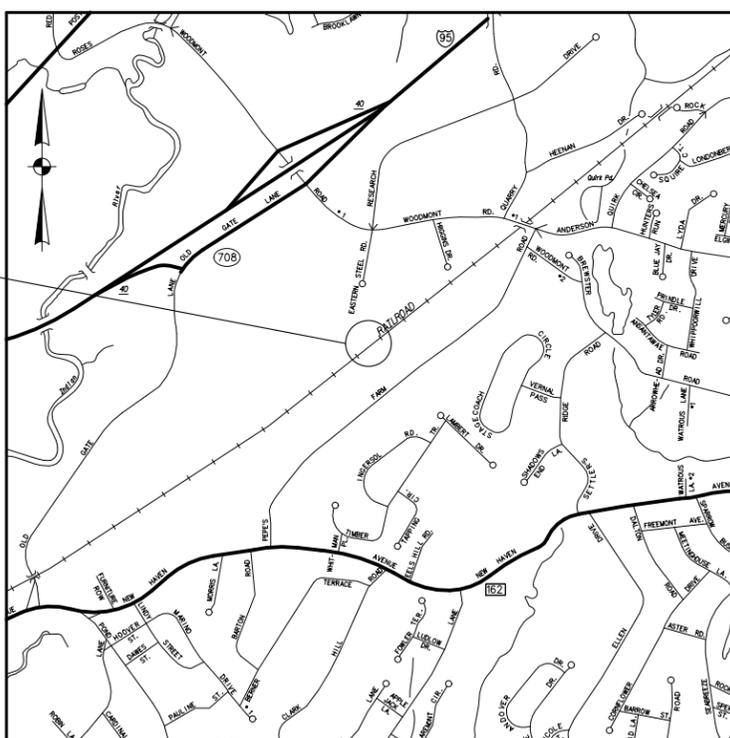
ENVIRONMENTAL PERMIT PLANS STATE PROJECT NO. 301-175 REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM

Town of
MILFORD

| INDEX OF DRAWINGS | |
|--|-------------|
| TITLE | DRAWING NO. |
| TITLE SHEET | ENV-01 |
| WETLAND IMPACT PLAN | ENV-02 |
| SITE PLAN | ENV-03 |
| GENERAL PLAN | ENV-04 |
| CONSTRUCTION STAGE - 1 | ENV-05 |
| CONSTRUCTION STAGE - 2 | ENV-06 |
| ACCESS ROAD DETAILS | ENV-07 |
| PRECAST CONCRETE BLOCK REVETMENT DETAILS | ENV-08 |
| MISCELLANEOUS DETAILS - 1 | ENV-09 |
| MISCELLANEOUS DETAILS - 2 | ENV-10 |

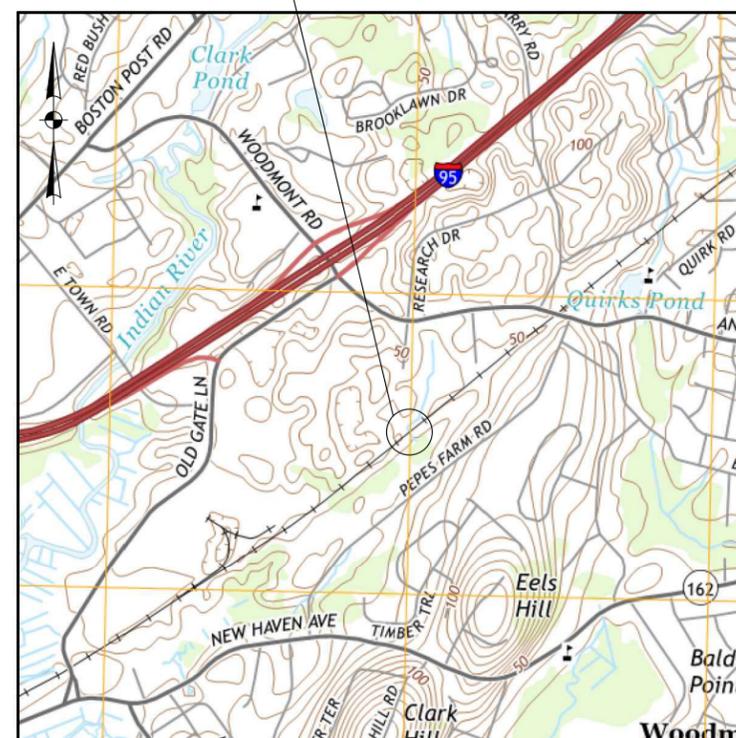


PROJECT LOCATION



LOCATION MAP
SCALE 1" = 1000'

PROJECT LOCATION

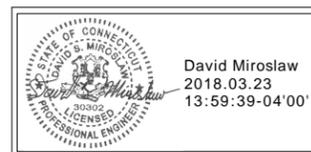


USGS QUADRANGLE TOPOGRAPHIC MAP
MILFORD QUADRANGLE
7.5 MINUTE SERIES
SCALE 1" = 1000'

GENERAL NOTES

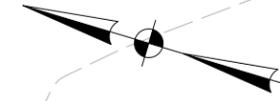
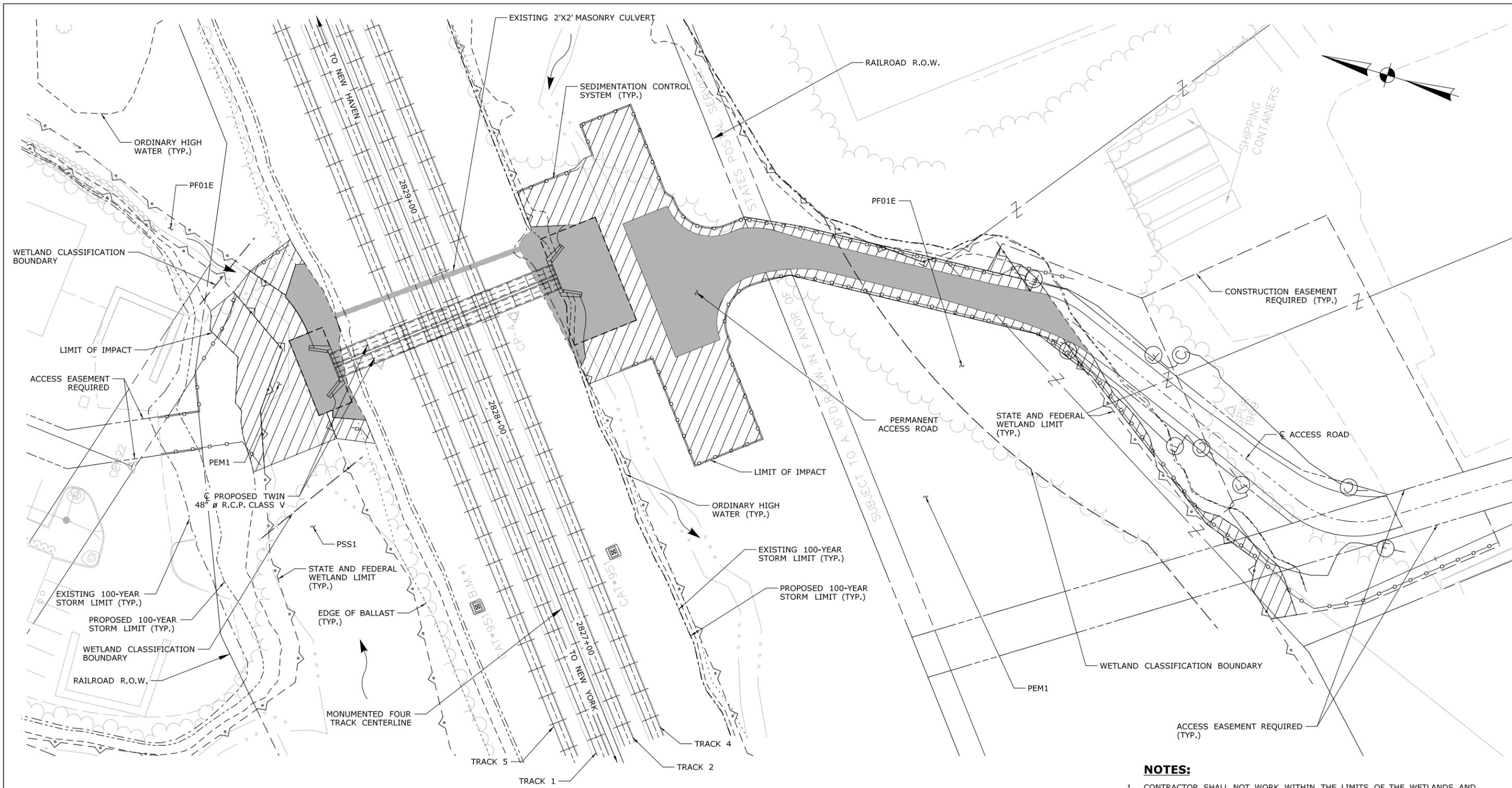
1. THESE PLANS ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS AND WETLAND SOILS SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
3. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENT'S STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, 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 MAUAL.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NAVD 1988.
5. WETLANDS DELINEATED BY CONNECTICUT ECOSYSTEMS LLC ON OCTOBER 20, 2015.

DESIGNED BY:
LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street, Suite 401
East Hartford, CT 06108



David Miroslaw
2018.03.23
13:59:39-04'00"

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|------|------|----------------------|-----------|--------------------|--------------------------------|---------------------|----------------|--|--|--------------------|------------------|--|--------------------------------------|-------------------------------|
| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | DESIGNER/DRAFTER: D.M./C.R. | CHECKED BY: R.B. | SCALE AS NOTED | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION | LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108 | APPROVED BY: RB | DATE: 3-23-18 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| | | | | | | | | | | | | | DRAWING TITLE: TITLE SHEET | DRAWING NO. ENV-01 |
| | | | | | | | | | | | | | | SHEET NO. 1 OF 10 |



| WETLAND IMPACT TABLE | | | | |
|----------------------|------------------|------------------------|-------------------------|-------------------------|
| | WETLAND SITE NO. | WATERWAY IMPACTS | WETLAND IMPACTS | TOTAL |
| PERMANENT IMPACTS | 1 | 815 S.F. (0.018 AC.) | 5,605 S.F. (0.129 AC.) | 6,420 S.F. (0.148 AC.) |
| TEMPORARY IMPACTS | 1 | 2,165 S.F. (0.050 AC.) | 7,165 S.F. (0.164 AC.) | 9,330 S.F. (0.214 AC.) |
| TOTAL IMPACTS | | 2,980 S.F. (0.068 AC.) | 12,770 S.F. (0.293 AC.) | 15,750 S.F. (0.362 AC.) |

WETLAND IMPACT PLAN
SCALE: 1" = 20'-0"

LEGEND

- PERMANENT IMPACT
- TEMPORARY IMPACT
- SEDIMENTATION CONTROL SYSTEM

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. ALL DISTURBED AREAS SHALL BE RESTORED.
- DUE TO THE LOCATION OF THE PROJECT BETWEEN HIGHLY DEVELOPED INDUSTRIAL AREAS AND THE RAIL LINE EMBANKMENTS, THE ORDINARY HIGH WATER (OHW) LINE HAS BEEN DETERMINED TO BE EITHER NEARLY COINCIDENT WITH THE WETLAND LIMITS (OUTLET) OR JUST ABOVE THE WETLAND LIMIT (INLET). AT THE INLET IN PARTICULAR, LOCALIZED FREQUENT INUNDATION OCCURS ABOVE THE WETLAND LINE, HOWEVER, DUE TO THE FACT THAT WATERS POND ON DISTURBED SURFACES, NO WETLAND CONDITIONS DEVELOP. THE 'TOTAL IMPACTS' AS PRESENTED IN THE PERMIT REPRESENT THE FOOTPRINT OUT-TO-OUT, TO THE OHW LIMITS; THE 'WETLAND' IMPACTS REPORTED ARE THE PORTION WITHIN THE TOTAL THAT ARE STRICTLY VEGETATED WETLANDS.

| REV. | DATE | REVISION DESCRIPTION | SHEET NO. |
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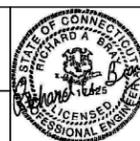
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

DESIGNER/DRAFTER:
D.M. / C.R.
CHECKED BY:
R.B.
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...\\SB_MSH_MP65.60_0301_0175_4.1 Wetland.dgn

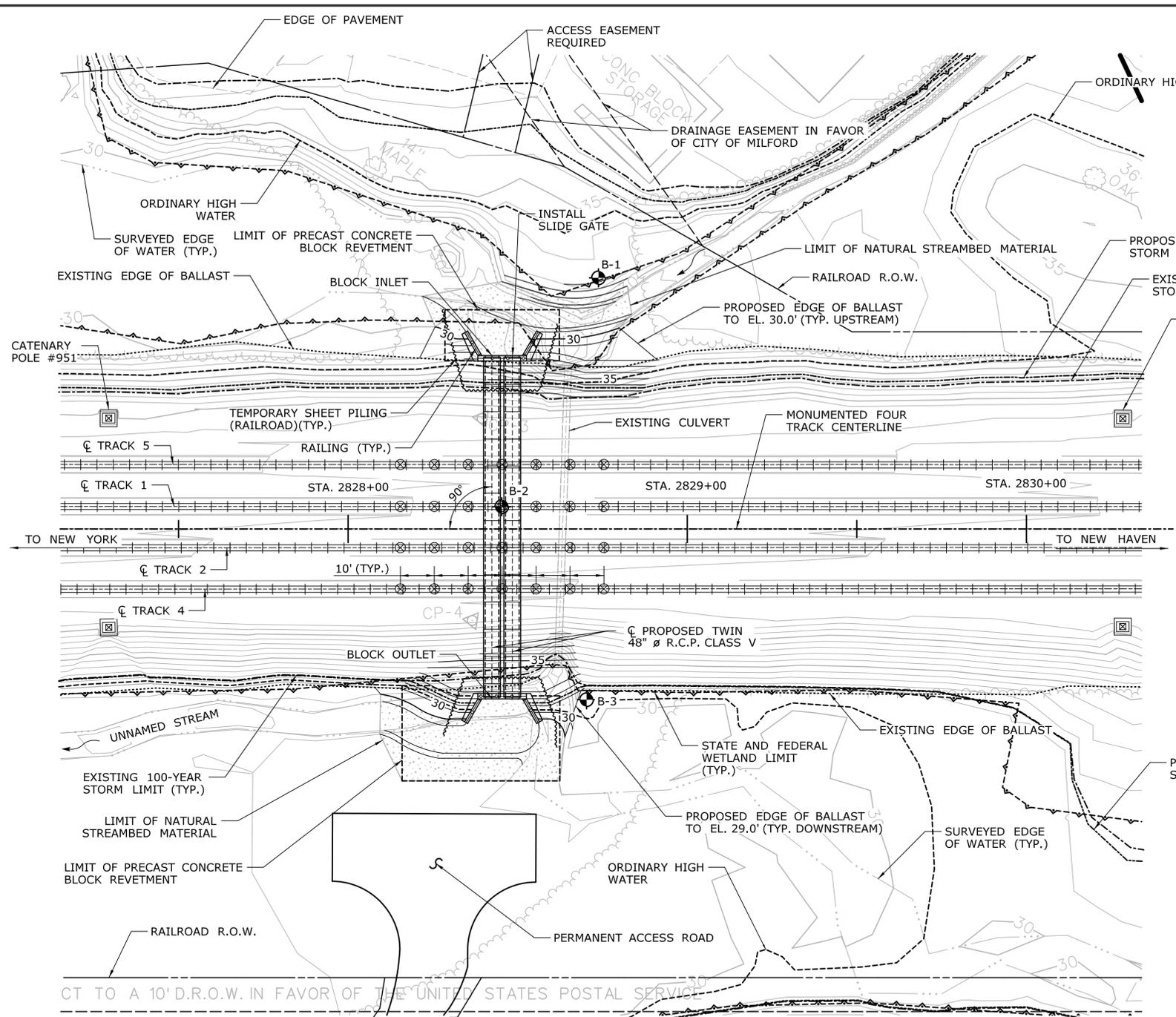
LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street
East Hartford, CT 06108
APPROVED BY: R.B. DATE: 3-23-18



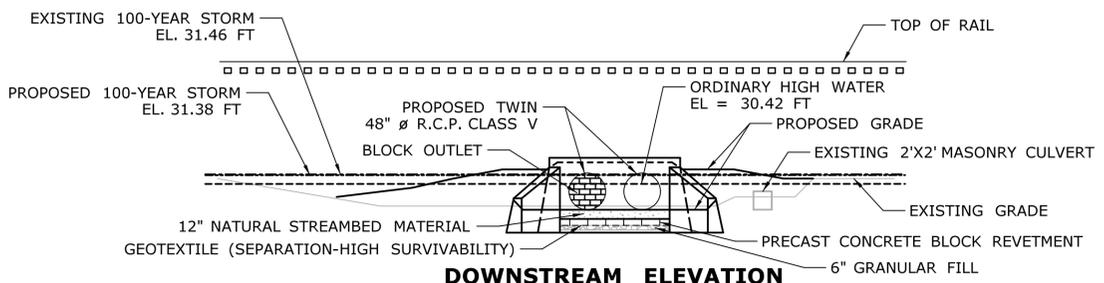
PROJECT TITLE:
**REPLACEMENT OF CULVERT AT
MP 65.60 NEW HAVEN MAINLINE
OVER UNNAMED STREAM**

TOWN:
MILFORD
DRAWING TITLE:
WETLAND IMPACT PLAN

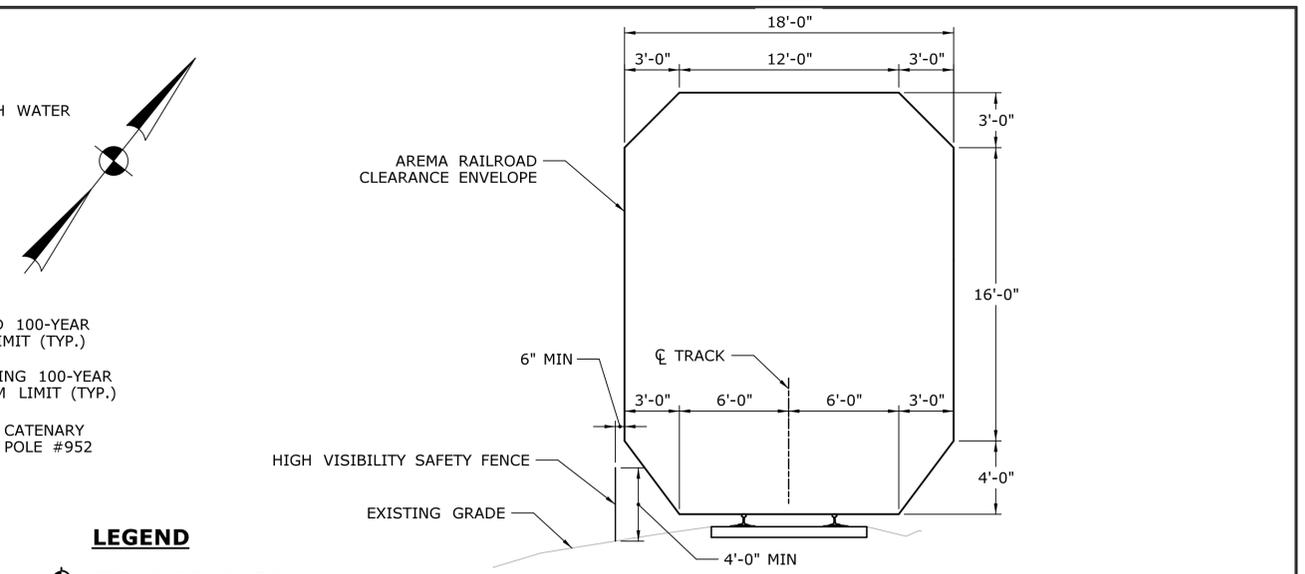
PROJECT NO.
301-175
DRAWING NO.
ENV-02
SHEET NO.
2 OF 10



PLAN
SCALE: 1" = 20'-0"

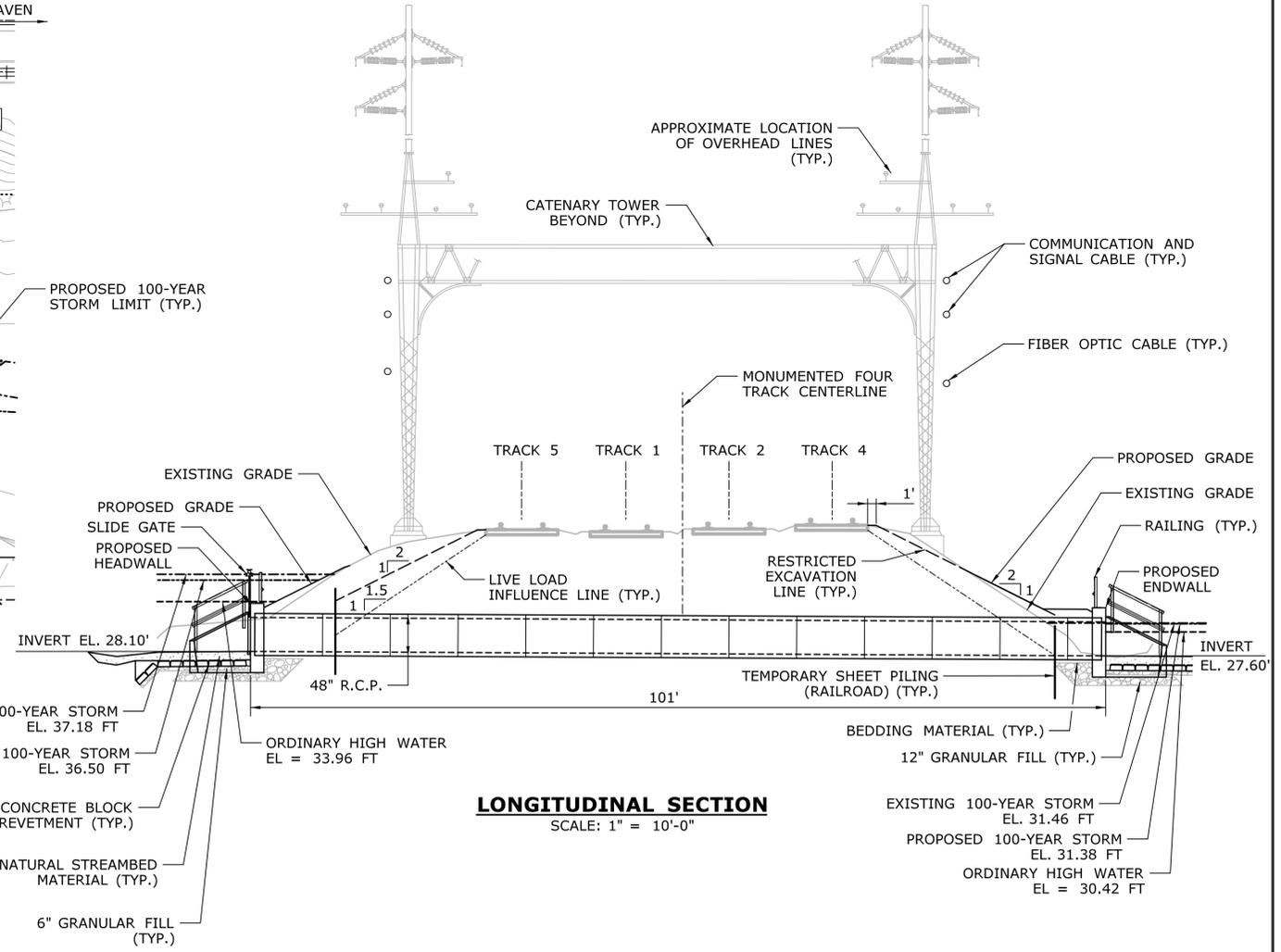


DOWNSTREAM ELEVATION
SCALE: 1" = 10'-0"



TRACK CLEARANCE DIAGRAM
SCALE: 1" = 5'-0"

- LEGEND**
- B-X ⊕ TEST BORING LOCATION
 - ⊗ SETTLEMENT MONITORING POINT
 - [Hatched Box] NATURAL STREAMBED MATERIAL



LONGITUDINAL SECTION
SCALE: 1" = 10'-0"

| REV. | DATE | REVISION DESCRIPTION | SHEET NO. |
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DESIGNER/DRAFTER:
D.M./C.R.

CHECKED BY:
R.B.

SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.3_GenPlan.dgn

LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street, Suite 401
East Hartford, CT 06108

APPROVED BY: **R.B.** DATE: **3-23-18**

PROJECT TITLE:
**REPLACEMENT OF CULVERT AT
MP 65.60 NEW HAVEN MAINLINE
OVER UNNAMED STREAM**

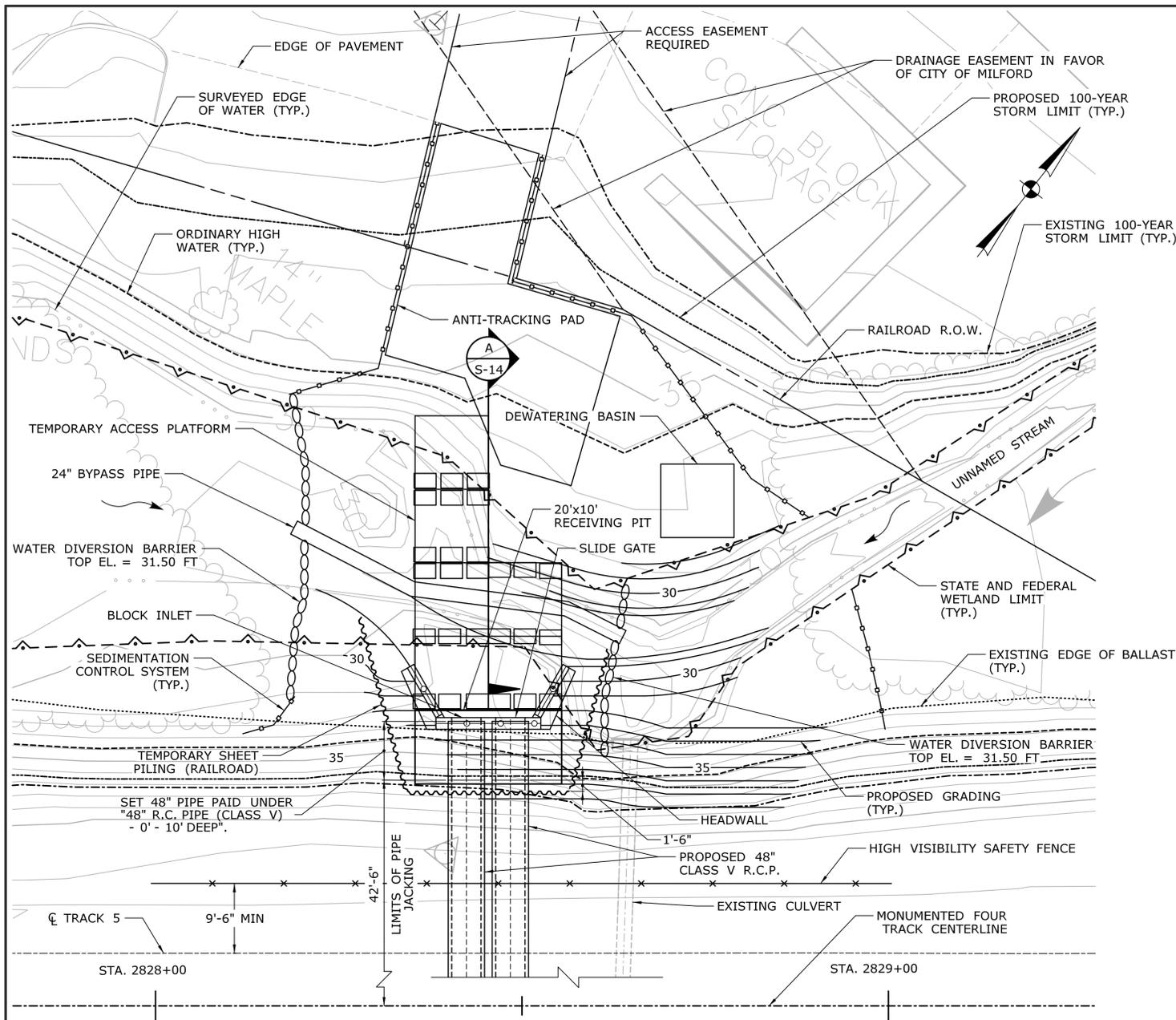
TOWN:
MILFORD

DRAWING TITLE:
GENERAL PLAN

PROJECT NO.
301-175

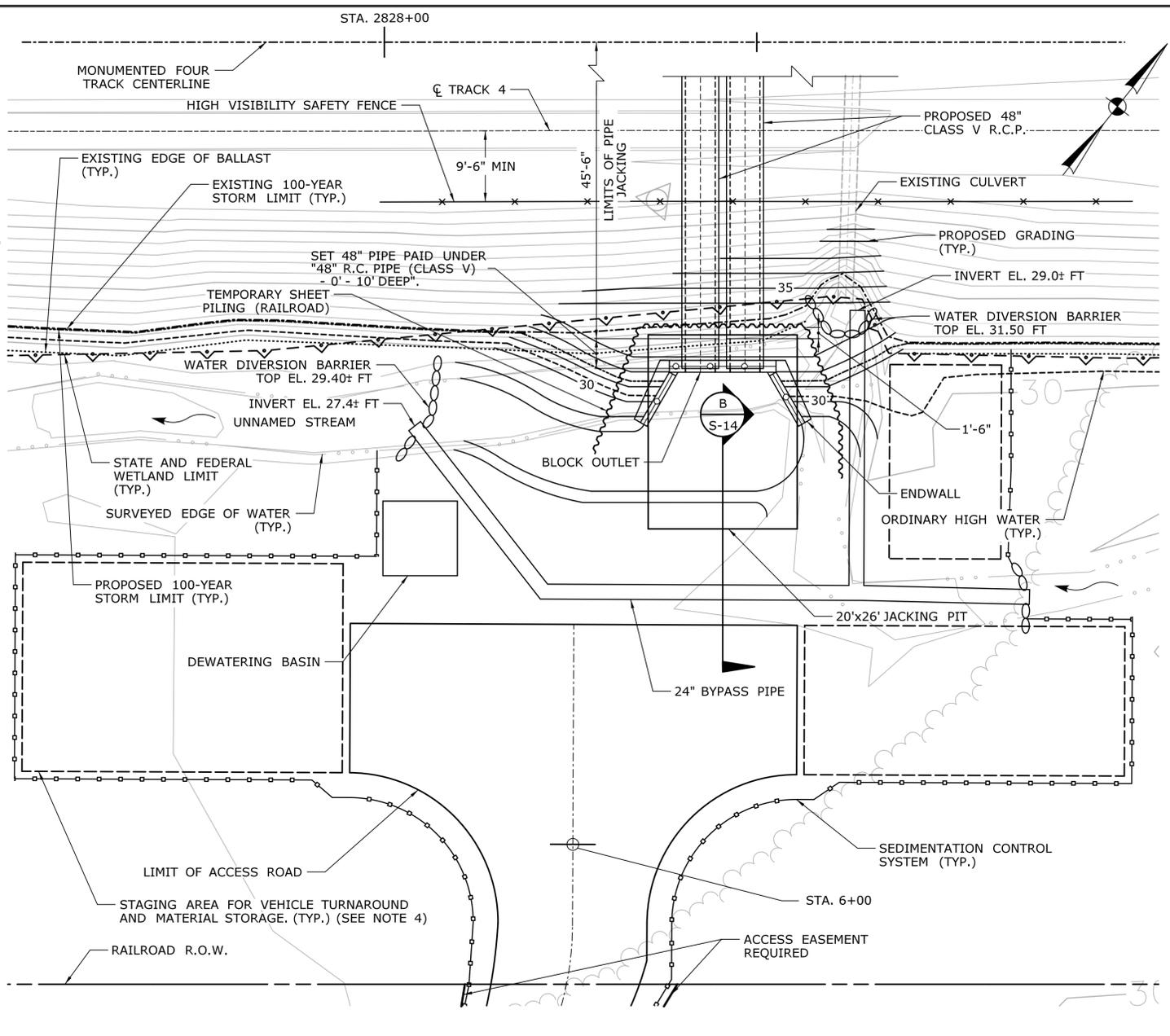
DRAWING NO.
ENV-04

SHEET NO.
4 OF 10



PLAN AT INLET

SCALE: 1" = 10'-0"



PLAN AT OUTLET

SCALE: 1" = 10'-0"

SEQUENCE OF CONSTRUCTION NOTES STAGE - 1

1. INSTALL SEDIMENTATION CONTROL SYSTEM AND HIGH VISIBILITY SAFETY FENCE.
2. CONSTRUCT ANTI-TRACKING PADS AND ACCESS ROAD.
3. INSTALL WATER HANDLING SYSTEM
4. ESTABLISH SETTLEMENT MONITORING POINTS AT APPROVED LOCATIONS AND BEGIN TAKING MEASUREMENTS AS REQUIRED.
5. EXCAVATE EXISTING CHANNEL BOTTOM MATERIAL AND STORE AT APPROVED LOCATION.
6. INSTALL TEMPORARY SHEET PILING (RAILROAD), EXCAVATE AND INSTALL JACKING AND RECEIVING PITS.
7. JACK PIPES 1 AND 2 THROUGH THE RAILROAD EMBANKMENT
8. PLACE BEDDING MATERIAL AND SET REMAINING SECTIONS OF PIPE
9. CONSTRUCT HEADWALL AND ENDWALL.
10. INSTALL RAILING, SLIDE GATE AND BLOCK OFF PIPE 2.
11. INSTALL PRECAST CONCRETE BLOCK REVETMENT.

GENERAL NOTES:

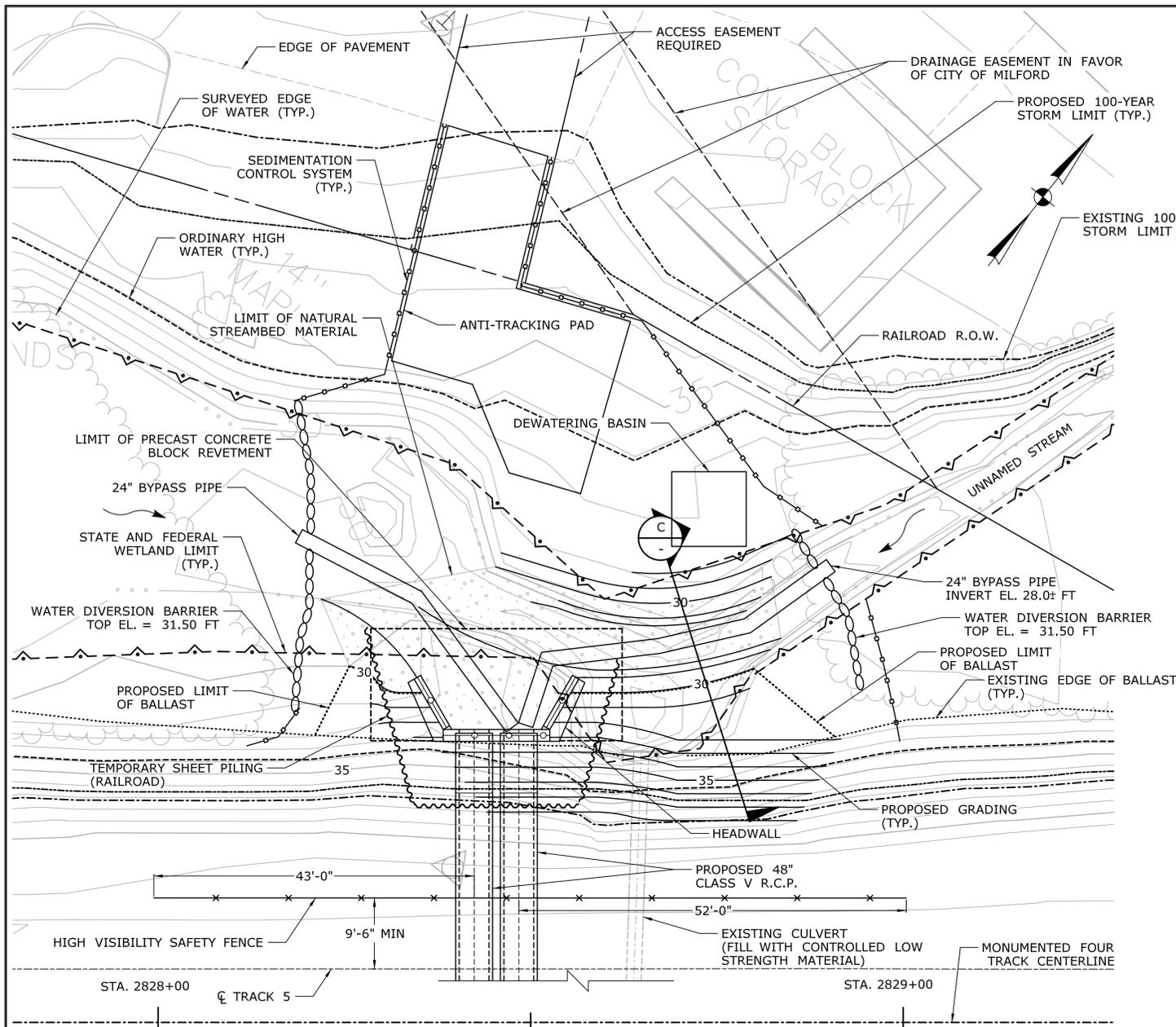
1. THE SIZE OF THE JACKING AND RECEIVING PITS IS APPROXIMATE AND IS SHOWN HERE ONLY AS A REFERENCE. THE CONTRACTOR SHALL DETERMINE THE ACTUAL SIZE REQUIRED TO COMPLETE THE JACKING OPERATION. THE COST OF JACKING AND RECEIVING PITS SHALL BE PAID UNDER THE ITEM "JACKING 48" R.C. PIPE (CLASS V) - 0' - 20' DEEP".
2. THE COST OF FURNISHING AND INSTALLING THE BYPASS PIPES, WATER DIVERSION BARRIERS AND NECESSARY INCIDENTAL APPURTENANCES REQUIRED FOR BYPASSING THE STREAM AROUND THE SITE SHALL BE INCLUDED IN THE COST OF THE ITEM "HANDLING WATER".
3. ALL WATER PUMPED FROM CONSTRUCTION AREAS ISOLATED BY THE WATER DIVERSION BARRIER IS TO BE HANDLED THROUGH THE TEMPORARY DEWATERING BASIN. COST OF TEMPORARY DEWATERING BASIN SHALL BE INCLUDED IN THE COST OF THE ITEM "HANDLING WATER".
4. STAGING AREAS USED FOR CONSTRUCTION ACTIVITIES SHALL USE MATS TO SUPPORT ANY AND ALL OF THE CONTRACTORS EQUIPMENT. THE MATS SHALL BE APPROVED BY THE ENGINEER AND REMOVED UPON COMPLETION OF THE WORK. COST OF MATS TO BE INCLUDED IN THE PRICE OF THE ITEM "CONSTRUCTION ACCESS".

5. CONSTRUCTION MATS SHALL BE THOROUGHLY CLEANED BEFORE USE TO PREVENT THE SPREAD OF INVASIVE SPECIES.
6. THE ENDWALLS AND 48" R.C.P. SHALL BE FOUNDED ON GRANULAR FILL OR BEDDING MATERIAL AS SHOWN ON THE DETAIL DRAWINGS. IF THE OVERLYING ORGANIC CLAYEY SILT LAYER EXTENDS BELOW THE BOTTOM OF THE GRANULAR FILL OR BEDDING MATERIAL AT THESE LOCATIONS IT SHALL BE REMOVED AND REPLACED WITH THE BEARING MATERIAL SPECIFIED AT THAT LOCATION.
7. SUBGRADE PREPARATION SHALL BE CONDUCTED IN A WAY TO MINIMIZE DISTURBANCE. THE FINAL 6" OF EXCAVATION SHALL BE MADE WITH A SMOOTH-EDGE BLADE OR HAND SHOVELED.
8. NATURAL STREAMBED MATERIAL SHALL BE PAID FOR UNDER ITEM "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL".

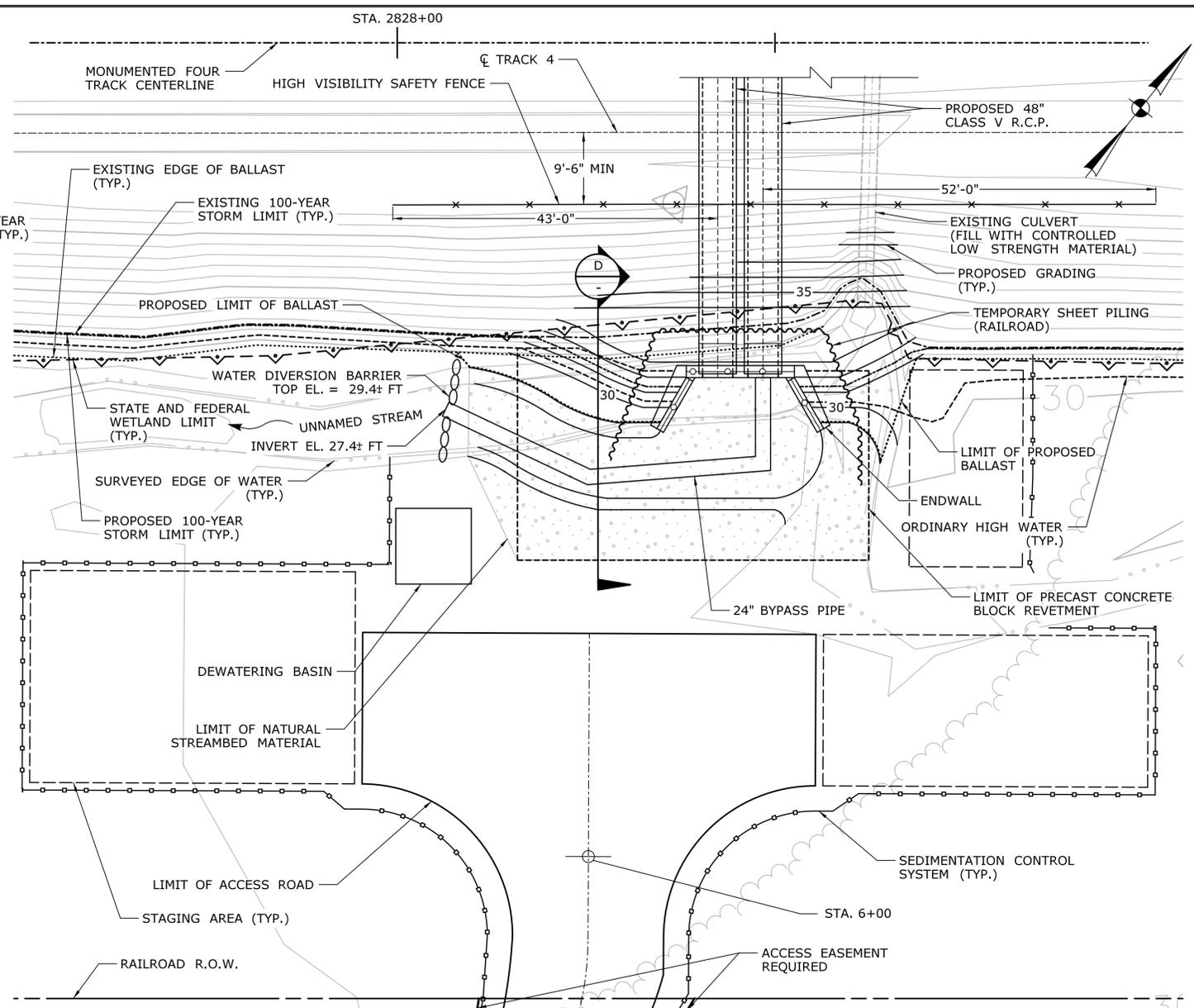
TEMPORARY HYDRAULIC DATA - UNNAMED STREAM

| | |
|--|-----------------|
| AVERAGE DAILY FLOW | 0.2 CFS |
| AVERAGE SPRING FLOW | 0.4 CFS |
| 2-YEAR FREQUENCY DISCHARGE | 111 CFS |
| TEMPORARY DESIGN DISCHARGE | 4 CFS |
| TEMPORARY DESIGN FREQUENCY | 10X SPRING FLOW |
| TEMPORARY WATER SURFACE ELEVATION UPSTREAM | 30.94 FT |
| TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM | 27.53 FT |

| | | | | | | | |
|--|--|---|--|---|--|---|--|
| 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: D.M./C.R. CHECKED BY: R.B. SCALE AS NOTED | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION | LOCHNER H.W. LOCHNER, INC. 55 Hartland Street, Suite 401 East Hartford, CT 06108 APPROVED BY: R.B. DATE: 3-23-18 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD DRAWING TITLE: CONSTRUCTION STAGE-1 | PROJECT NO.: 301-175 DRAWING NO.: ENV-05 SHEET NO.: 5 OF 10 |
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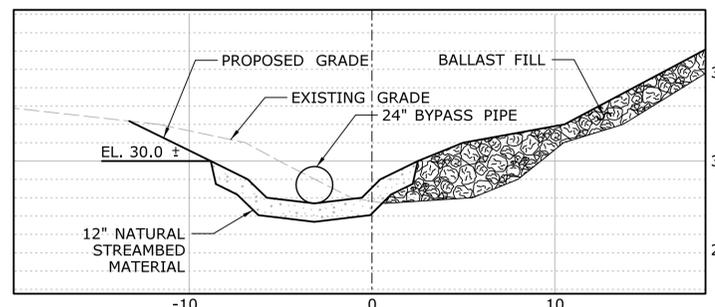
PLAN AT INLET
SCALE: 1" = 10'-0"



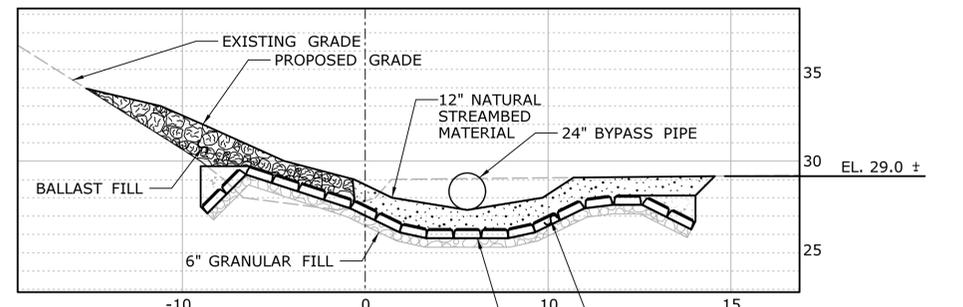
PLAN AT OUTLET
SCALE: 1" = 10'-0"

SEQUENCE OF CONSTRUCTION NOTES STAGE - 2

1. MODIFY WATER HANDLING TO ROUTE WATER THROUGH THE PROPOSED PIPE.
2. PLACE NATURAL STREAMBED MATERIAL. FILL EXISTING CULVERT WITH CONTROLLED LOW STRENGTH MATERIAL.
3. REGRADE RAILROAD EMBANKMENT SLOPES.
4. REMOVE WATER HANDLING SYSTEM, CONSTRUCTION MATS AND MATERIALS USED TO ACCESS THE SITE.
5. PLACE WETLAND SEED MIX ON DISTURBED AREAS WITHIN THE WETLAND LIMITS. WETLAND SEED MIX SHALL NOT BE PLACED OVER NATURAL STREAMBED MATERIAL, BALLAST OR THE PERMANENT ACCESS ROAD. TO BE PAID FOR UNDER ITEM "WETLAND GRASS ESTABLISHMENT".
6. PLACE TOPSOIL AND CONSERVATION SEEDING FOR SLOPES ON DISTURBED EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLAND LIMITS.



SECTION C
TYPICAL CHANNEL SECTION UPSTREAM
SCALE: 1" = 5'-0"



SECTION D
TYPICAL CHANNEL SECTION DOWNSTREAM
SCALE: 1" = 5'-0"

| REV. | DATE | REVISION DESCRIPTION | SHEET NO. |
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DESIGNER/DRAFTER:
D.M./C.R.
CHECKED BY:
R.B.
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.8_STG2.dgn

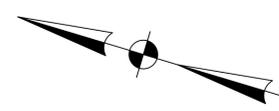
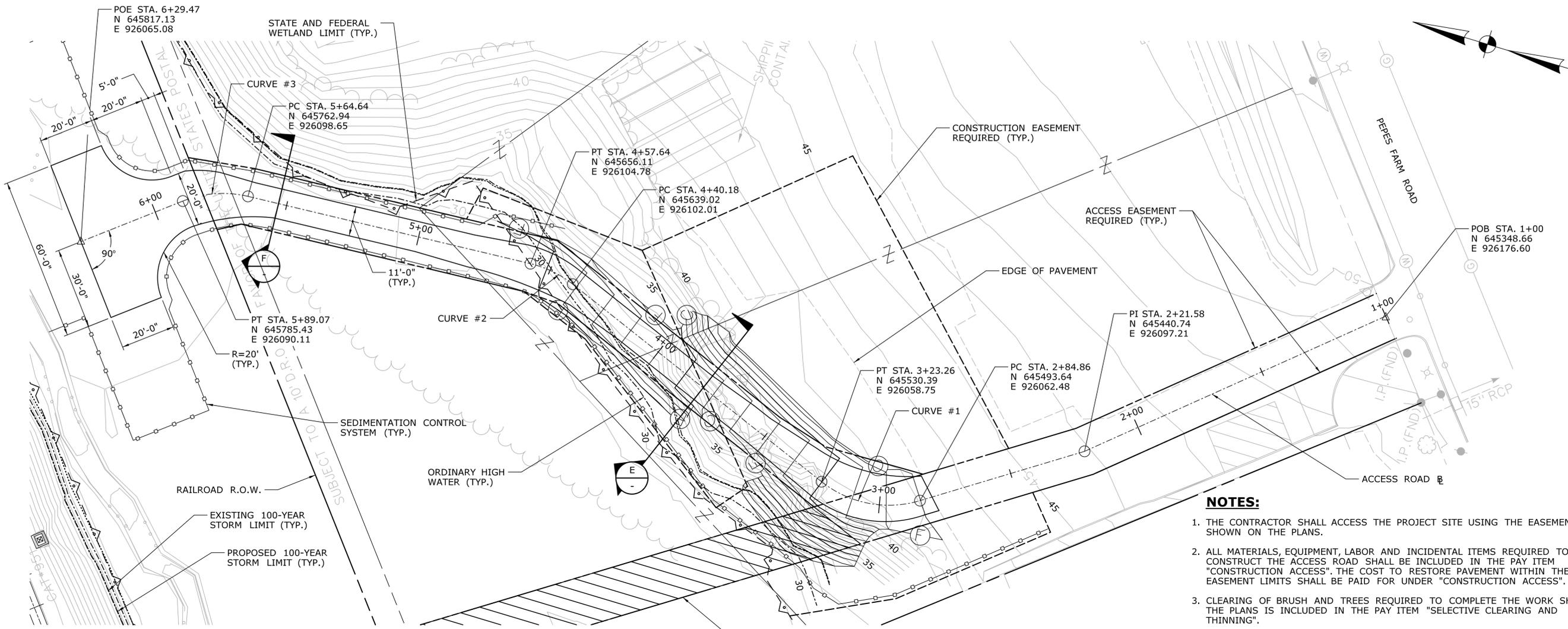
LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street, Suite 401
East Hartford, CT 06108
APPROVED BY: R.B. DATE: 3-23-18



PROJECT TITLE:
**REPLACEMENT OF CULVERT AT
MP 65.60 NEW HAVEN MAINLINE
OVER UNNAMED STREAM**

TOWN:
MILFORD
DRAWING TITLE:
CONSTRUCTION STAGE-2

PROJECT NO.:
301-175
DRAWING NO.:
ENV-06
SHEET NO.:
6 OF 10



CURVE DATA

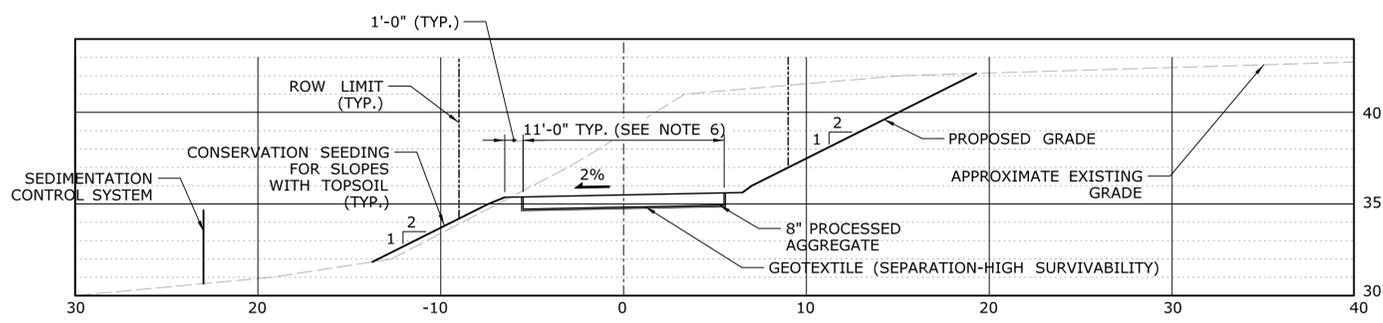
| CURVE #1 | CURVE #2 | CURVE #3 |
|------------------|------------------|------------------|
| Δ = 55° | Δ = 25° | Δ = 35° |
| T = 20.82' | T = 8.87' | T = 12.61' |
| L = 38.40' | L = 17.45' | L = 24.43' |
| R = 40' | R = 40' | R = 40' |
| PI N = 645511.05 | PI N = 645647.26 | PI N = 645775.53 |
| PI E = 926051.05 | PI E = 926105.29 | PI E = 926097.92 |

ACCESS ROAD PLAN

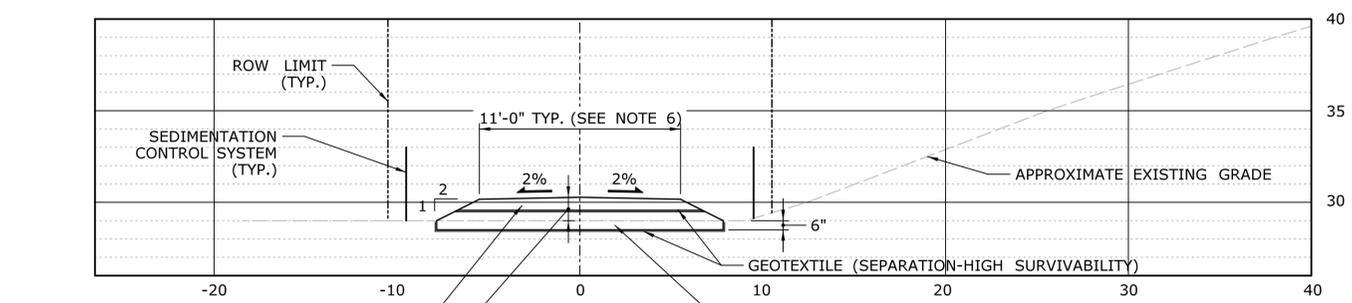
SCALE: 1" = 20'-0"

NOTES:

1. THE CONTRACTOR SHALL ACCESS THE PROJECT SITE USING THE EASEMENTS SHOWN ON THE PLANS.
2. ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTAL ITEMS REQUIRED TO CONSTRUCT THE ACCESS ROAD SHALL BE INCLUDED IN THE PAY ITEM "CONSTRUCTION ACCESS". THE COST TO RESTORE PAVEMENT WITHIN THE EASEMENT LIMITS SHALL BE PAID FOR UNDER "CONSTRUCTION ACCESS".
3. CLEARING OF BRUSH AND TREES REQUIRED TO COMPLETE THE WORK SHOWN ON THE PLANS IS INCLUDED IN THE PAY ITEM "SELECTIVE CLEARING AND THINNING".
4. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS UPON THE COMPLETION OF THE GRADING WORK. WETLAND SEED MIX SHALL BE USED WITHIN THE WETLAND LIMITS. THE RAILROAD EMBANKMENT ABOVE THE LIMIT OF BALLAST, AREAS OF NATURAL STREAMBED MATERIAL AND THE ACCESS ROAD SHALL NOT BE SEEDED. CONSERVATION SEED MIX SHALL BE USED ON EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLANDS.
5. TOPSOIL SHALL BE PLACED ON EMBANKMENT SLOPES ADJACENT TO THE ACCESS ROAD AND OUTSIDE THE WETLAND LIMITS.
6. THE WIDTH OF THE ACCESS ROAD IN THE CURVES SHALL BE INCREASED AS NECESSARY TO PROVIDE SUFFICIENT ROOM FOR VEHICLE MOVEMENTS.



SECTION E
TYPICAL SLOPE SECTION
SCALE: 1" = 5'-0"



SECTION F
TYPICAL WETLAND SECTION
SCALE: 1" = 5'-0"

| REV. | DATE | REVISION DESCRIPTION | SHEET NO. |
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PLOTTED: 3/23/2018

DESIGNER/DRAFTER:
D.M./C.R.
CHECKED BY:
R.B.
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.9_AccessPlan.dgn

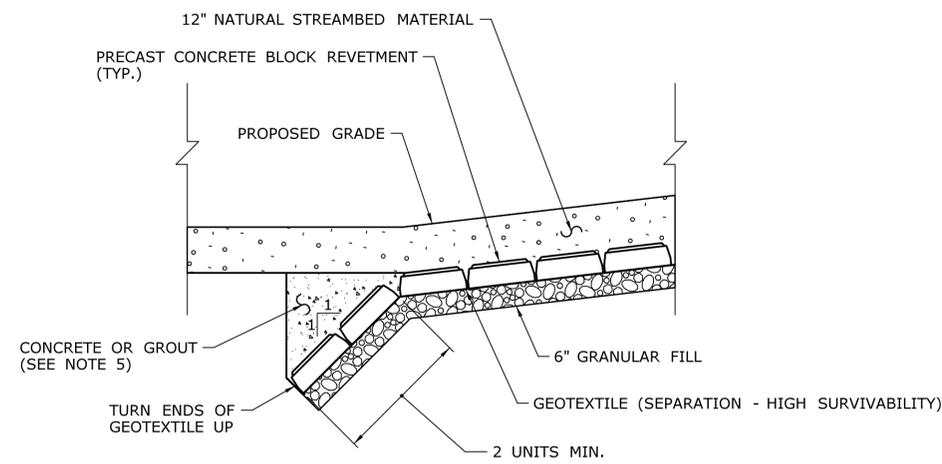
LOCHNER
H.W. LOCHNER, INC.
55 Hartland Street
East Hartford, CT 06108
APPROVED BY: R.B. DATE: 3-23-18



PROJECT TITLE:
**REPLACEMENT OF CULVERT AT
MP 65.60 NEW HAVEN MAINLINE
OVER UNNAMED STREAM**

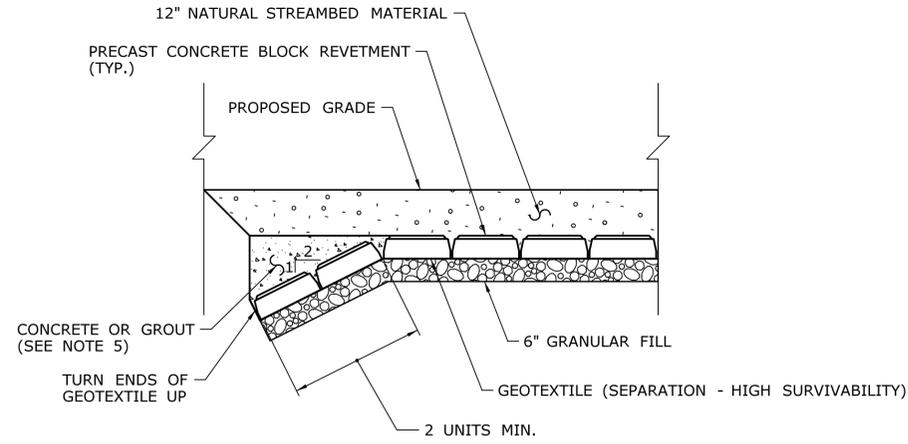
TOWN:
MILFORD
DRAWING TITLE:
ACCESS ROAD DETAILS

PROJECT NO.:
301-175
DRAWING NO.:
ENV-07
SHEET NO.:
7 OF 10



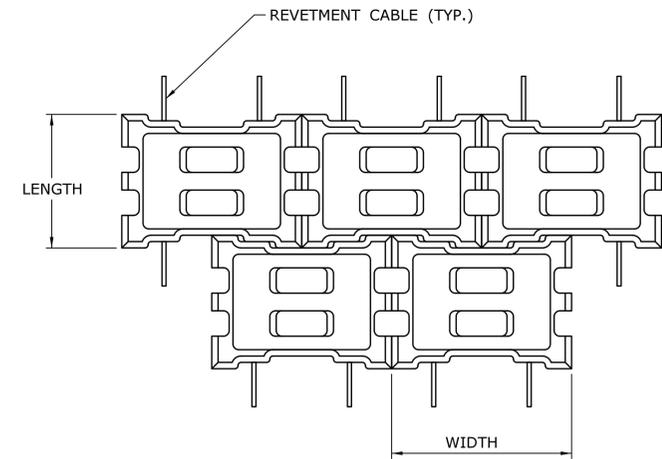
TOE TERMINATION DETAIL

N.T.S



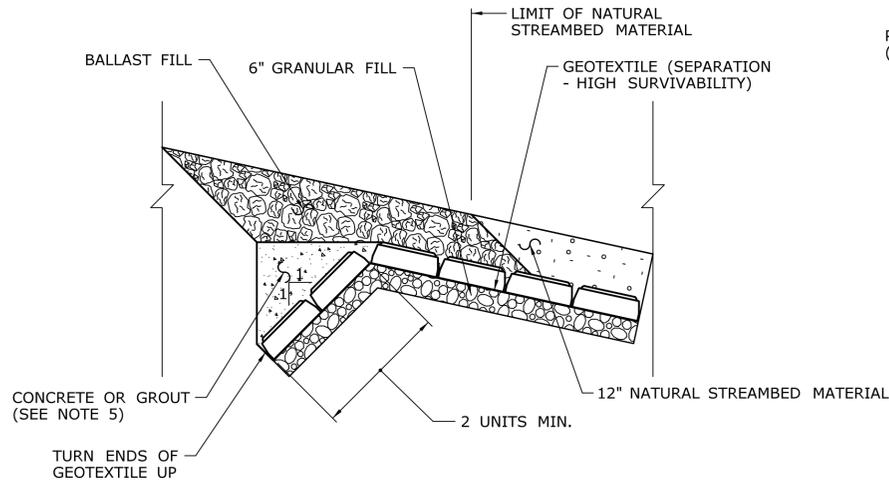
FLANK TERMINATION DETAIL

N.T.S



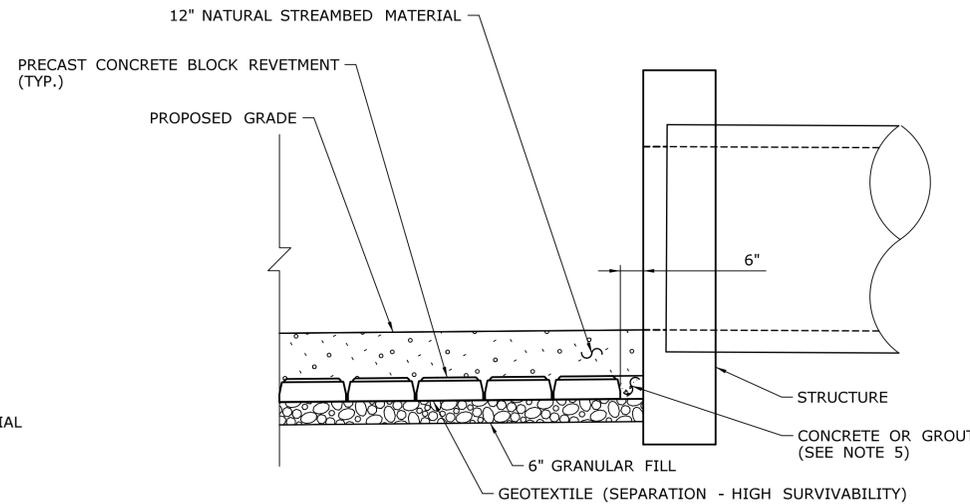
PRECAST CONCRETE BLOCK DETAIL

N.T.S



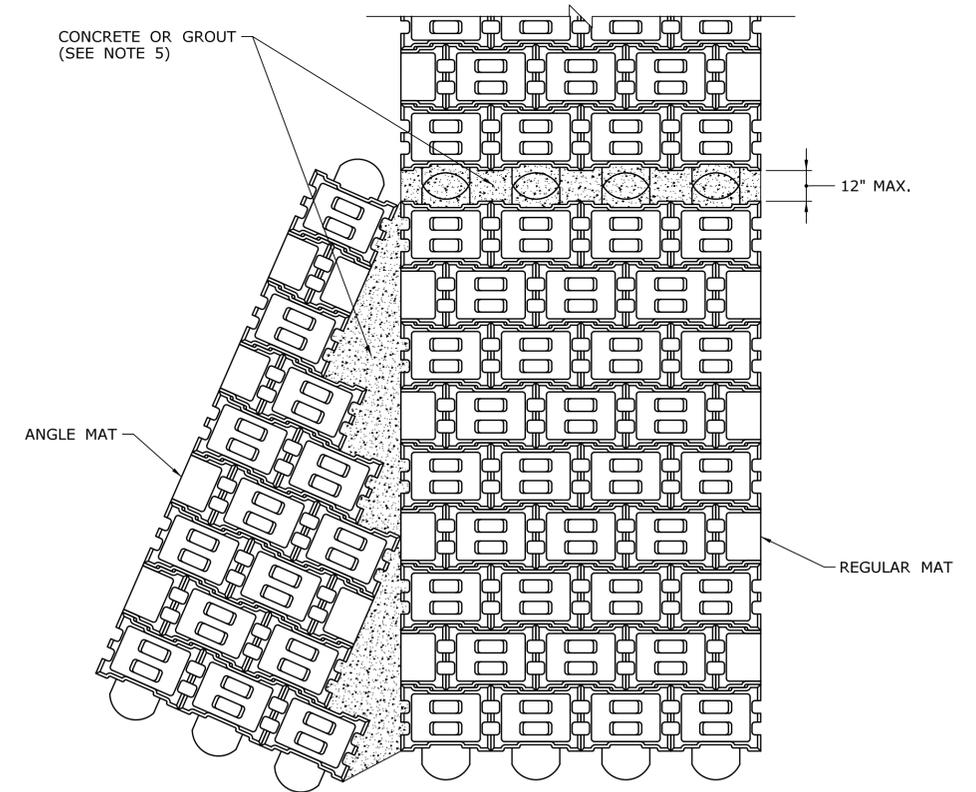
TOP TERMINATION DETAIL

N.T.S



TERMINATION AT STRUCTURE DETAIL

N.T.S



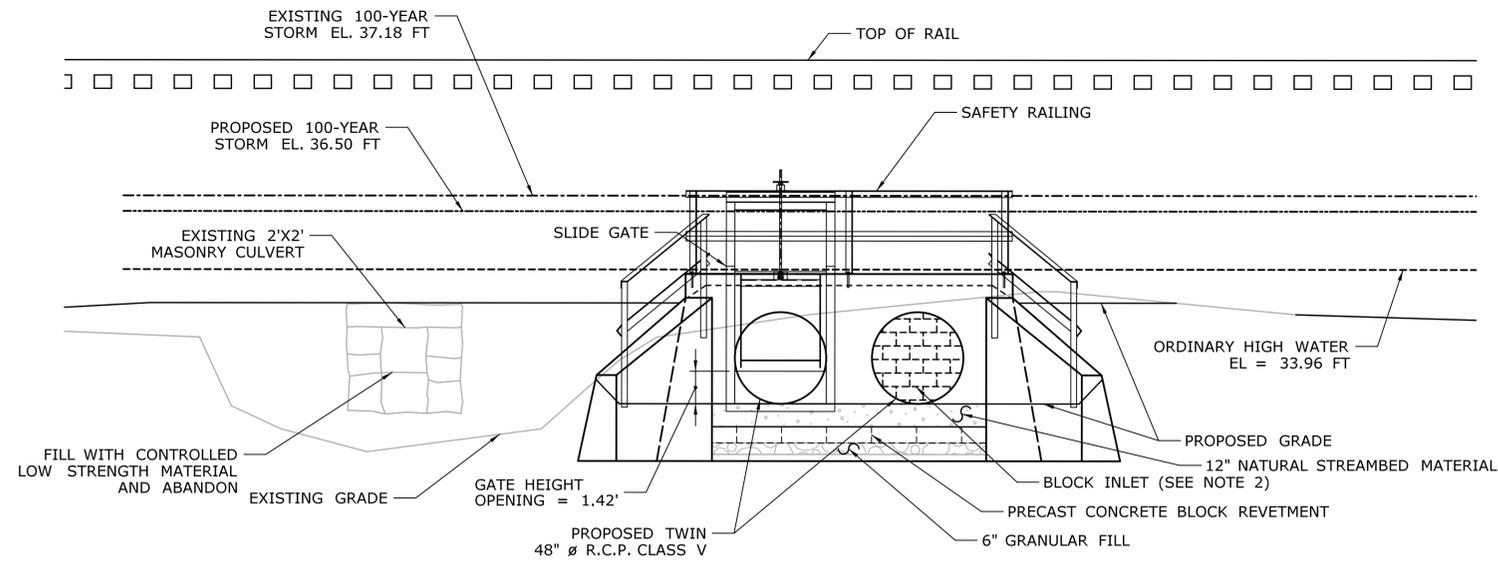
INSTALLATION DETAIL

N.T.S

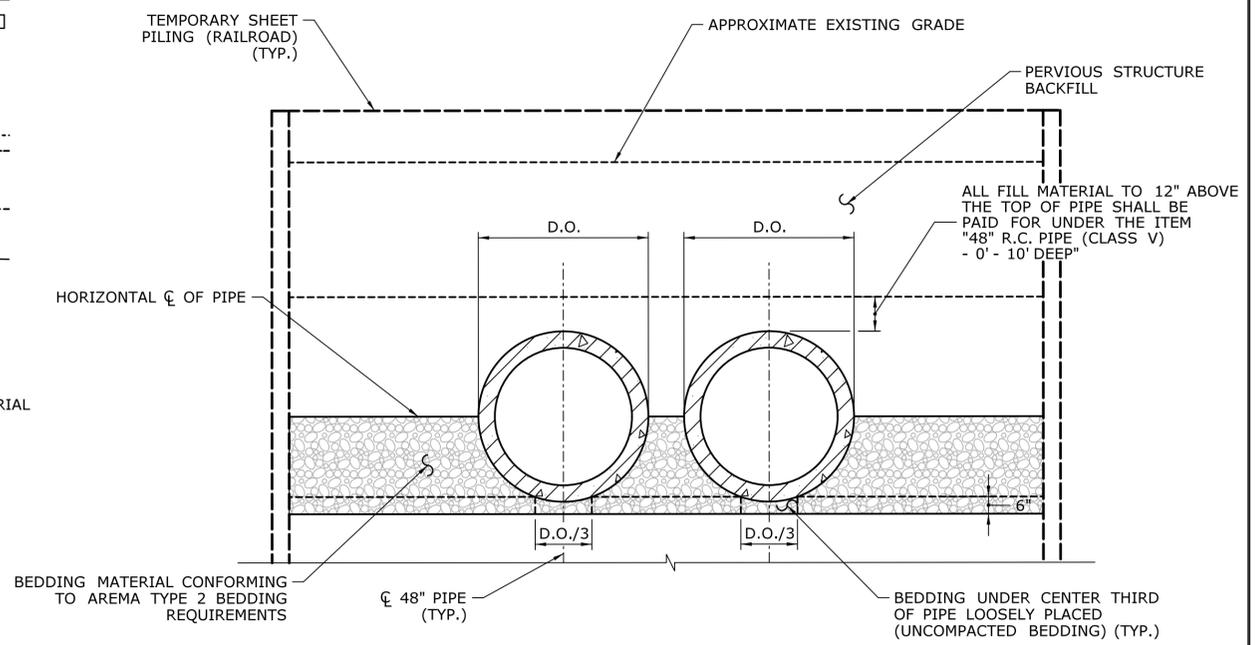
PRECAST CONCRETE BLOCK REVETMENT NOTES:

- BLOCKS MUST BE OPEN CELL AND NON-TAPERED.
- THE INSTALLATION OF THE PRECAST CONCRETE BLOCK REVETMENT SYSTEM SHALL BE IN ACCORDANCE WITH ASTM D6884 AND THE MANUFACTURER'S RECOMMENDATIONS.
- THE 6" LAYER OF GRANULAR FILL, GEOTEXTILE (SEPARATION - HIGH SURVIVABILITY), GROUT OR CONCRETE AND PRECAST CONCRETE BLOCKS SHALL BE PAID FOR UNDER ITEM "PRECAST CONCRETE BLOCK REVETMENT".
- IF PRECAST CONCRETE BLOCK MATS ARE USED THEY SHALL BE MATCHED UP TO THE GREATEST EXTENT POSSIBLE. GAPS GREATER THAN ONE BLOCK SIZE SHALL BE FILLED WITH A BLOCK. NO OVERLAPPING OF MATS WILL BE ACCEPTED.
- 4,000 PSI NON SHRINK GROUT OR CONCRETE SHALL BE USED WHERE THE LOOP ENDS OF THE MATS MEET, AT TERMINATION ENDS AS SHOWN AND WHEREVER THERE IS GREATER THAN A 2 INCH GAP BETWEEN ADJACENT MATS OR STRUCTURES.
- BACKFILLING OF THE REVETMENT SYSTEM WITH NATURAL STREAMBED MATERIAL SHALL BE COMPLETED AS SOON AS PRACTICABLE AFTER THE REVETMENT HAS BEEN INSTALLED.

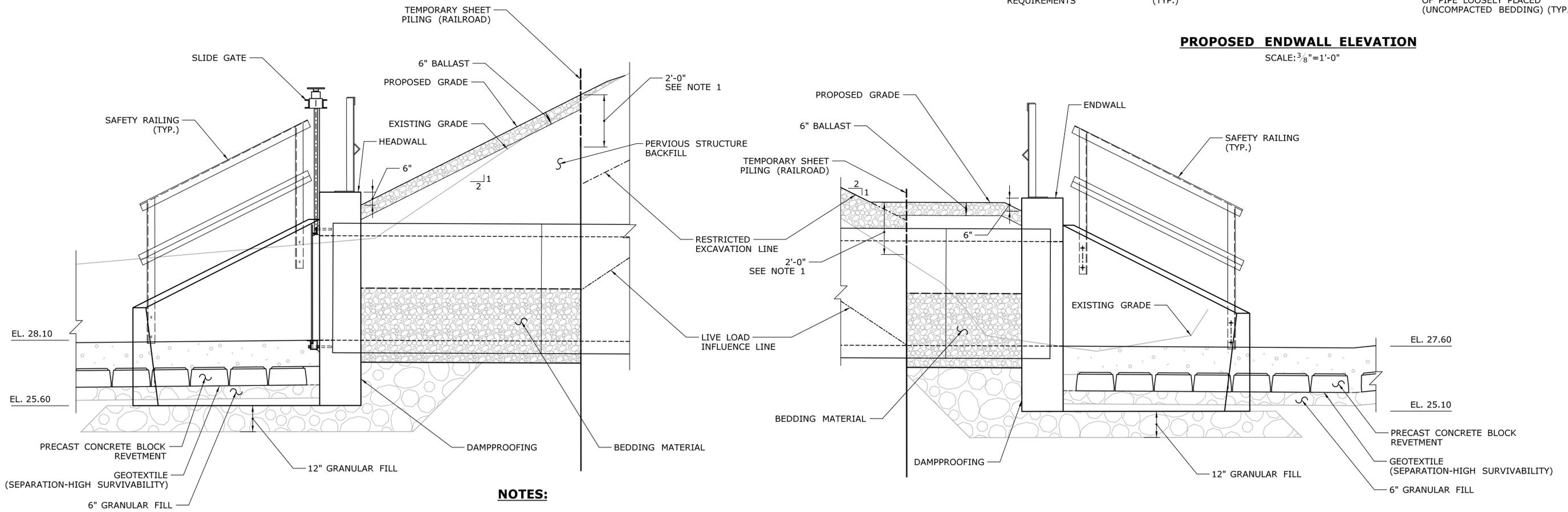
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|--|---|---|--|--|-------------------------------|
| DESIGNER/DRAFTER: D.M. | <p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> | <p>LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108</p> | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| CHECKED BY: R.B. | | | APPROVED BY: DATE: R.B. 3-23-18 | DRAWING TITLE: PRECAST CONCRETE BLOCK REVTMENT DETAILS | SHEET NO. 8 OF 10 |
| SCALE AS NOTED | FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.12_ACB_Det.dgn | | | | |
| REV. DATE REVISION DESCRIPTION SHEET NO. | PLOTTED: 3/23/2018 | | | | |



UPSTREAM ELEVATION
SCALE: 1/4"=1'-0"



PROPOSED ENDWALL ELEVATION
SCALE: 3/8"=1'-0"

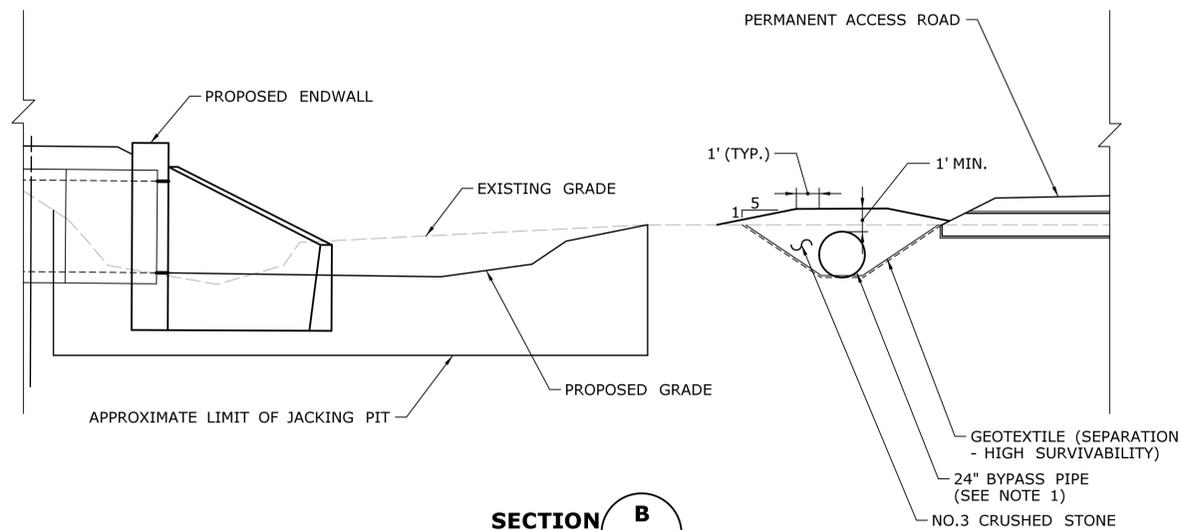


PROPOSED HEADWALL ELEVATION
SCALE: 1/2"=1'-0"

PROPOSED ENDWALL ELEVATION
SCALE: 1/2"=1'-0"

- NOTES:**
1. REMOVE TEMPORARY SHEET PILING (RAILROAD) 2'-0" BELOW THE PROPOSED GRADE AS SHOWN. THE REST OF THE TEMPORARY SHEET PILING (RAILROAD) SHALL REMAIN IN PLACE.
 2. THE INLET AND OUTLET OF THE SUPPLEMENTAL (WESTERN) CULVERT SHALL BE BLOCKED OFF. THE MEANS FOR BLOCKING THE PIPE SHALL BE A MASONRY WALL OR OTHER SYSTEM SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER SUITABLE FOR BLOCKING OFF FLOW FROM THE CULVERT, CAPABLE OF WITHSTANDING PROLONGED EXPOSURE TO WATER AND CAPABLE OF BEING REMOVED WITH NEGLIGIBLE IMPACT ON THE HEADWALL/ENDWALL. THE COST OF BLOCKING OF THE PIPE SHALL BE INCLUDED IN THE ITEM "CLASS "A" CONCRETE".

| | | | | | | | | | |
|--------------------------------|----------------------|-------------------------------|--|--|--|------------------|--|-------------------------|-------------------------------|
| DESIGNER/DRAFTER: D.M./C.R. | CHECKED BY: R.B. | SCALE IN FEET SCALE 1"=40' | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION | LOCHNER H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108 | APPROVED BY: R.B. | DATE: 3-23-18 | PROJECT TITLE: REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM | TOWN: MILFORD | PROJECT NO. 301-175 |
| REV. DATE | REVISION DESCRIPTION | SHEET NO. | PLOTTED: 3/23/2018 | FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.13 Misc Det 1.dgn | DRAWING TITLE: MISCELLANEOUS DETAILS - 1 | | DRAWING NO. ENV-09 | | SHEET NO. 9 OF 10 |



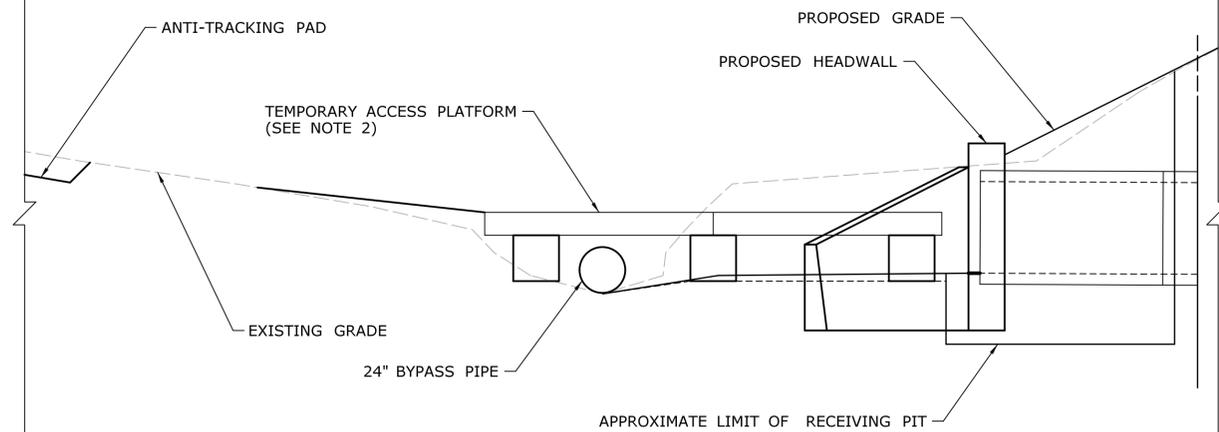
SECTION B
S-07

CONSTRUCTION STAGING ENDWALL ELEVATION

SCALE: 1/4"=1'-0"

NOTES:

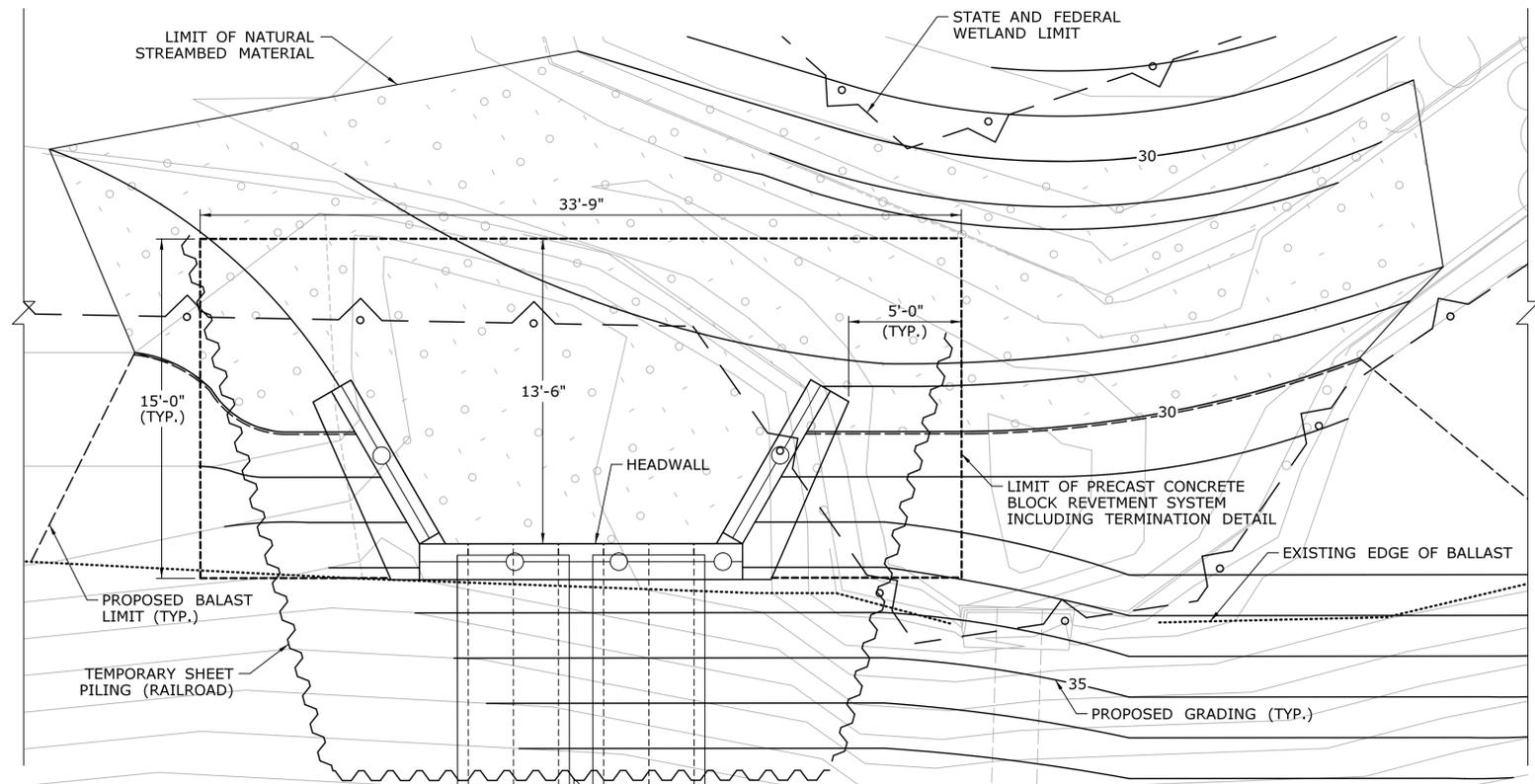
1. THE TEMPORARY BYPASS PIPE IS PROPOSED TO BE BURIED ON THE DOWNSTREAM SIDE TO PROVIDE WORK ACCESS AND A CONSTANT DOWN GRADIENT. THE FILL (CRUSHED STONE) AND GEOTEXTILE ASSOCIATED WITH THIS SHALL BE INCLUDED IN THE ITEM "HANDLING WATER". THE CONTRACTOR MAY PROPOSE AN ALTERNATE MEANS FOR THE BYPASS PIPE LAYOUT.
2. THE TEMPORARY ACCESS PLATFORM SHOWN IS A POSSIBLE MEANS OF ACCESSING THE SITE. THE CONTRACTOR MAY PROPOSE AN ALTERNATE MEANS FOR ACCESSING THE WORK AREAS. ANY MEANS OF ACCESS SHALL BE PAID UNDER THE ITEM "CONSTRUCTION ACCESS".



SECTION A
S-07

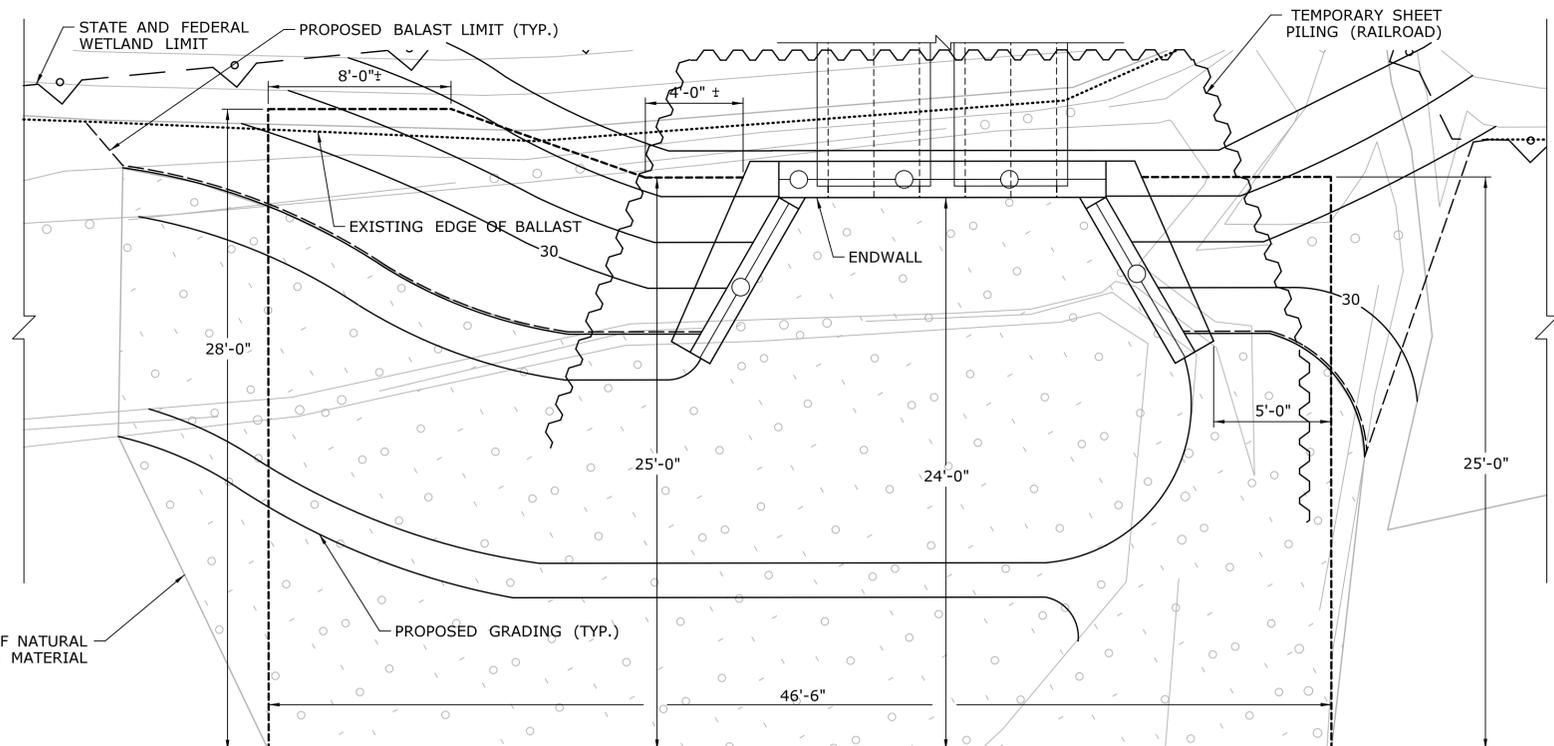
CONSTRUCTION STAGING HEADWALL ELEVATION

SCALE: 1/4"=1'-0"



UPSTREAM IN CHANNEL WORK LIMITS

SCALE: 1/4"=1'-0"



DOWNSTREAM IN CHANNEL WORK LIMITS

SCALE: 1/4"=1'-0"

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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.

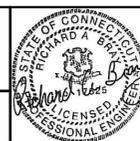
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D.M./C.R.
CHECKED BY:
R.B.
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: ...\\SB_MSH_MP65.60_0301_0175_3.14 Misc Det 2.dgn

LOCHNER
H.W. LOCHNER, INC
55 Hartland Street
East Hartford, CT 06108

APPROVED BY: R.B. DATE: 3-23-18



PROJECT TITLE:
REPLACEMENT OF CULVERT AT MP 65.60 NEW HAVEN MAINLINE OVER UNNAMED STREAM

TOWN:
MILFORD

DRAWING TITLE:
MISCELLANEOUS DETAILS - 2

PROJECT NO.
301-175

DRAWING NO.
ENV-10

SHEET NO.
10 OF 10

Attachment C: Wetland and Soils Report

Applicant: State of Connecticut, Department of Transportation

Project No: 301-175

Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

List of Attached Reports

- Wetland and Soils Report
Prepared By: Connecticut Ecosystems LLC

Connecticut Ecosystems LLC

- Wetland Delineation • Wetland & Aquatic Evaluation • Mitigation
- Natural Resource Inventory • Permit Assistance • Expert Testimony



March 2, 2018

Lochner

Attn.: Mr. Richard Bray, P.E.
55 Hartland Street, Suite 401
East Hartford, CT 06108

***Re: Culvert replacement at Mile Post 65.60
New Haven Mainline over an unnamed stream in Milford, CT
CE Job# 15-10***

Dear Mr. Bray:

The replacement of the culvert at mile post 65.60 is proposed on the New Haven Mainline in Milford, CT (Figures 1 and 2).

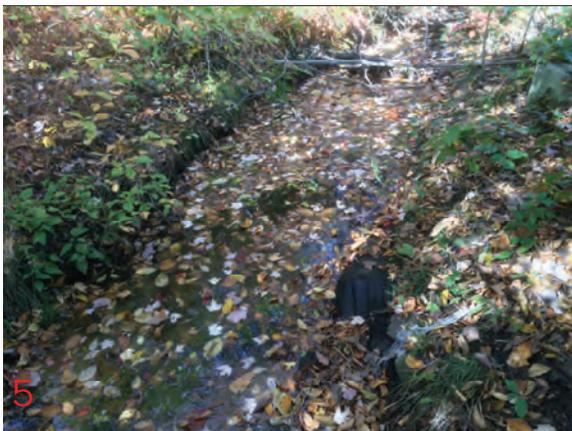
In association with this work, Connecticut Ecosystems LLC was retained to delineate the State and Army Corps wetlands and watercourses at the project site. The following additional information was compiled: wetland description and functions/values assessment, plant and wildlife inventories, soils descriptions and Army Corps data sheets.

I inspected the project site on October 20, 2015 to delineate the wetlands and watercourses, and collect the necessary soils and wetland data. State wetlands were field delineated in accordance with the standards of the National Cooperative Soil Survey and the definition of wetlands as found in the Connecticut General Statutes, Chapter 440, Section 22A-38. Federal wetlands were delineated using the Army Corps three-parameter methodology (soils, vegetation and hydrology). I reinspected the site on February 26, 2018 to collect additional information. The results of these investigations are presented in this report.

A modified version of the “Highway Methodology”, developed by the U.S. Army Corps of Engineers (USACE 1995), was used to assess wetland functions and values (data sheets are found in Appendix 1). A Soils Report and Army Corps data sheets are in Appendices 2 and 3, respectively.



Figure 2. Aerial Photograph
Culvert Replacement—New Haven Mainline
Milford, CT
Connecticut Ecosystems LLC
November 12, 2015



New Haven Mainline Culvert Milford, CT 10/20/15 1. Deciduous wooded swamp south of railroad 2. Seasonal watercourse with sand deposits south of railroad 3. Debris in swamp south of railroad 4. Culvert north of railroad 5. Watercourse north of railroad 6. Alder thicket north of railroad



New Haven Mainline Culvert (Upstream Side) Milford, CT 2/26/18 7. Watercourse adjacent to industrial park steep fill embankment 8. Fourspine Stickleback collected from watercourse 9. Deep pool at submerged, blocked culvert 10. Proposed work area 11. Edge of marsh adjacent to industrial park



New Haven Mainline Culvert (Downstream Side) Milford, CT 2/26/18 12. Wooded swamp adjacent to steep slope 13. Pockets of inundation in swamp 14. Dense stand of Phragmites in marsh 15. Discharge from culvert

Connecticut Ecosystems LLC

- Wetland Delineation • Wetland & Aquatic Evaluation • Mitigation
- Natural Resource Inventory • Permit Assistance • Expert Testimony



Wetland Description

The wetland at the project site is bisected by the railroad line into north and south sections, both of which contain State and Federal wetlands (Figure 2). North of the tracks the wetland is confined between steep fill slopes associated with the industrial development to the north (Photo 11), and the railroad line (Figure 2). A narrow unnamed watercourse channel (Photo 5) parallel to the railroad tracks is lined with thick soft sediments, and carries sluggish flow to a culvert (Photo 4) located below the railroad tracks. West of the culvert the soils were very soft and wet on the inspection date, with groundwater at the soil surface. Red maple, multiflora rose, alder, Phragmites, and tussock sedge are present in this wetland.

The wetland is wider south of the railroad tracks, although it too is confined between the steep slopes adjacent to the railroad tracks and industrial development to the south (Figure 2). This wetland consists of deciduous wooded swamp (Photo 1) and shallow marsh opponents, with the latter dominated by an extremely dense thicket of tall Phragmites. Gray water-stained leaves occur on the ground throughout the wetland, indicating seasonal inundation. A very low gradient watercourse channel (Photo 2) carries very sluggish flow through the wetland. Figure 1 indicates that this watercourse is a tributary to the Indian River off-site to the west.

A variety of flora are found in the southerly wetland, including trees (red maple, green ash), shrubs (multiflora rose, sweet pepperbush, spicebush, northern arrowwood, elderberry, buckthorn, highbush blueberry, winterberry), herbs (Phragmites, skunk cabbage, cinnamon fern, royal fern) and vines (greenbriar).

White-throated sparrows and rufous-sided towhees were vocalizing throughout the wetland on the 2015 inspection date. During the spring and summer months it is likely that a variety of other wildlife species that favor urbanized wetland habitats also occur there, including northern cardinal, black capped chickadee, downy woodpecker, and American robin.

Wetland Functions and Values Assessment

Below are the principal functions associated with the subject wetland, and some of the important characteristics that contributed to the assessment:

- **Groundwater Recharge/Discharge** - Groundwater recharge is likely limited by the silty soils found in the wetland. However, groundwater discharges were evident in some portions of the wetland.

38 Westland Avenue • West Hartford, CT 06107

Phone (860) 561-8598 • Fax (860) 561-0223 • email ecosys@comcast.net

Connecticut Ecosystems LLC

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- **Floodflow Alteration** - Factors that contribute to this function include a very gentle slope, very dense vegetation, the presence of an outlet constriction (culvert), the presence of a seasonal watercourse, and well developed microtopography.

- **Pollutant Removal**- The wetland provides this service as a result of very gentle slope, very dense vegetation, silty soils and well developed microtopography. Sediments deposited by the seasonal watercourse were observed on the wetland soil surface.

- **Production Export** - Biomass produced in the wetland is exported via the seasonal watercourse.

- **Finfish Habitat: Streams/Rivers** - An unnamed perennial watercourse is located within the project area (Figure 1), and described below. The capacity of this stream channel to support a finfish population is severely impaired by multiple factors: lack of shade and gravel spawning areas; channel substrate dominated by sand, silt and organic materials; lack of instream habitat diversity; channelization; lack of instream cover objects; narrow riparian zones; and intensive nearby development in the form of industrial parks and a major railroad line (Figure 2). The existing blocked culvert also represents a barrier to the movement of aquatic species. Nonetheless, one fish was collected in limited sampling (described below), which indicates that, despite these impairments, the watercourse has some limited capacity to support finfish.

- **Wildlife Habitat** - The wetland wildlife habitat is significantly impaired by the nearby industrial development and the railroad line, which fragment the landscape and impair the wildlife movement. The very dense Phragmites thickets are utilized by very few wildlife species. However, the deciduous wooded swamp does provide habitat structure and native flora that are attractive to a variety of wildlife species that have adapted to a human presence and a fragmented landscape.

Existing Conditions on Upstream Side of Culvert

A 2'x2' masonry culvert conveys surface water in a southerly direction below the railroad line. It is partially blocked (Photo 9), which significantly reduces the flow of water through it. As a result, a significant amount of water backs up along the railroad embankment on the upstream side of the culvert.

Surface water is conveyed to the upstream (north) side of the culvert by an unnamed watercourse (Photo 7) that is shown as perennial on the USGS topographic map, and which extends north to Woodmont Road on this map (Figure 1). The watercourse channel is approximately 4-6 feet wide, and is located at the base of a very steep constructed slope, stabilized with riprap, adjacent to an industrial park. The water temperature was 7.5° Centigrade on February 26, 2018. Several sweeps with an aquatic net collected

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several small snails, a freshwater clam and a fourspine stickleback (*Apeltes quadracus*) (Photo 8). According to Whitworth (1996), this species, which is not listed by the Connecticut Department of Environmental and Energy Protection Natural Diversity Data Base, is “regularly found throughout most of the year in freshwaters near the mouths of all watercourses in Connecticut that drain into Long Island Sound.”

According to the wetland classification system developed by Cowardin et al (1979), the narrow band of wetland northeast of the railroad embankment is “Palustrine Forested Broad-Leaved Deciduous, Seasonally Flooded/Saturated” (PFO1E). The wetland in the vicinity of the inlet of the existing culvert is classified as “Palustrine Emergent Persistent, Seasonally Flooded/Saturated” (PEM1). This is bordered to the southwest by a wetland area classified as “Palustrine Scrub-Shrub Broad-Leaved Deciduous, Seasonally Flooded/Saturated” (PSS1). These wetland classifications are shown on the “Wetland Impact Plan”. The dominant vegetation in the wetland north of the railroad line includes red maple, multiflora rose, alder, tussock sedge and Phragmites.

Existing Conditions on Downstream Side of Culvert

After flowing through the masonry culvert, the watercourse channel (Photo 15) turns to the southwest along the railroad embankment, and eventually discharges to Gulf Pond off-site and west of the project area. The straight watercourse channel is approximately 6-10 feet wide, 8-10 inches deep, and is located at the base of a very steep railroad embankment. The channel substrate consists of sand, silt and deposited organic material. The water temperature was 6.5° Centigrade on February 26, 2018. Several sweeps with an aquatic net revealed several small snails and an isopod.

This watercourse is associated with a wetland that lies between the railroad embankment and a steep slope to the south. A narrow band of “Palustrine Forested Broad-Leaved Deciduous, Seasonally Flooded/Saturated” (PFO1E) wetland occurs on the southern portion of this wetland (Photo 12), where red maple, American Elm, green ash, yellow birch, multiflora rose and skunk cabbage are found. Small pockets of shallow standing water were scattered across this wooded swamp on February 26, 2018 (Photo 13). A much wider “Palustrine Emergent Persistent, Seasonally Flooded/Saturated” (PEM1) wetland area is located between this swamp and the railroad embankment. This marsh is dominated by a dense stand of tall Phragmites (Photo 14).

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Project Description

The project engineer provided the following description of this project:

“The existing culvert will be filled in with flowable fill and the embankments will be regraded. The embankment slope at the ends of the structure are steeper than the adjacent embankment and therefore need to be flattened. This will fill in some of the existing wetlands. The regrading will result in a minor shift of the channel however the channel width will be maintained.”

Due to high velocities at the inlet and outlet of the proposed structure an articulated concrete block (ACB) revetment system is proposed. The limits of the ACB system have been set to provide effective long term channel stability and reduce the impact area to the greatest extent possible. The excavation depth required to install the system is 12”. This is significantly less than the 48” required to install an effective riprap system at this location. In order to reduce the impact of the ACB system it will be covered with one foot of natural streambed material.

There is currently no access to the downstream side of the structure. In order to install the replacement pipes an access road will be required to the downstream end. The layout of the access road has been designed to reduce impacts. The access road will be benched into the embankment on the backside of the property and follow the edge of the slope to the turnaround. The width of the road and the footprint of the turnaround have been reduced to the minimum required for construction equipment. The turnaround does not extend all the way to the downstream end of the structure. From the turnaround location the contractor shall use crane mats or a similar product to access the structure. This reduces the impact area of the road and does not bisect the wetland habitat.

The poor condition of the existing structure is partially due to a lack of maintenance access to the downstream side. For this reason the road will be made permanent to provide Metro-North Maintenance forces access to the site in the future.

In addition to the mitigation measures incorporated into this project an in-lieu fee will be paid. The fee will be based on 100% of the permanent impacts and 15% of the temporary impacts to account for the fact that some of the temporary impacts may never fully recover. The in-lieu fee will be used to create new sites to compensate for the aquatic resources lost as a result of this project. This project results in 9,330 square feet of temporary impacts and 6,420 square feet of permanent impacts.”

Temporary Wetland Impacts

The “Wetland Impact Plan” contains a table that breaks out permanent and temporary impacts to wetlands and waterways. A waterway is defined as land below the Ordinary

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High Water elevation, which is shown on the plan. For this project most of the impacts that are tabulated as “waterway impacts” are also regulated wetland impacts. For the purposes of clarity, the total permanent and temporary impacts shown on the table are considered wetland impacts.

The “Wetland Impact Plan” shows a temporary disturbance of 9,330 square feet (0.214 acre) associated with the proposed project. Most of this would be located in the wetland south of the railroad line, and would consist of “swamp mats” or similar that would be temporarily placed in the wetland in order to provide a stable base for temporary material storage and large construction equipment maneuvering. The plan calls for this area of temporary wetland disturbance to be seeded with a wetland seed mix at the end of construction activities. It should be noted that this area, which currently is dominated by Phragmites, will likely revert to Phragmites, despite the seeding initiative, given the very aggressive growth pattern of this invasive plant.

Permanent Wetland Impacts

The “Wetland Impact Plan” shows a permanent disturbance of 6,420 square feet (0.148 acre) associated with the proposed project. Most of this would be located in the wetland south of the railroad line, and would be associated with the construction of a permanent access road to allow future maintenance of the culvert. As noted above, the wetland disturbance area has been minimized to provide sufficient room for vehicle access and maneuvering. A 20 foot wide gap will remain undisturbed near the terminus of the access road to avoid bisecting the wetland.

Impacts to Wetland Functions and Values

This report identified five functions and values associated with the subject wetland: Floodflow Alteration, Pollutant Removal, Production Export, Finfish Habitat, and Wildlife Habitat (only in the wooded portion of the wetland.) Because the amount of permanent wetland disturbance is relatively small compared to the total size of this wetland, the level at which these functions are currently provided will not be materially reduced. Also, the replacement of the blocked culvert will remove a barrier to the longitudinal movements of finfish and other aquatic organisms.

Most of the permanent wetland impact will occur in the highly disturbed and low functioning wetland area dominated by a dense stand of Phragmites, an aggressive invasive species.

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Cumulative Wetland Impacts

As noted above, the wetland area that will be impacted by the proposed project has been disturbed historically by the construction of a major railroad corridor and industrial parks (Figure 2). These historical impacts have significantly reduced the functions and values provided by this wetland, in particular Wildlife Habitat and Finfish Habitat. The scope of the proposed wetland impact is much smaller than these historical disturbances, but is part of a long-term pattern of disturbances to this wetland. As noted above, the replacement of the blocked culvert will improve finfish habitat somewhat by eliminating a barrier to the movement of fish and other aquatic species below the railroad corridor.

Mitigation

As noted above, the applicant proposes to pay an in-lieu fee to create new sites to compensate for the aquatic resources that would be lost as a result of this project. In my professional opinion this represents an appropriate mitigation strategy for this project. Opportunities for wetland creation at the project site are extremely limited, primarily by topography and adjacent land uses. Furthermore, given the dominance of Phragmites at the site, it is very likely that this aggressive, invasive plant would colonize and quickly overtake any wetland creation efforts at the site.

Please do not hesitate to contact me if you have any questions regarding this correspondence.

Very truly yours,

Connecticut Ecosystems LLC

A handwritten signature in black ink, appearing to read 'E.M. Pawlak'.

Edward M. Pawlak
Registered Soil Scientist
Certified Professional Wetland Scientist

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References

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish & Wildlife Service.

Whitworth, W.R. 1996. Freshwater Fishes of Connecticut (Second Edition). Department of Environmental Protection Bulletin 114.

Professional Resume

Edward M. Pawlak

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- EDUCATION**
- New England Regional Soil Science Certificate Program, University of Massachusetts at Amherst, 1998
 - M.S., Silviculture, SUNY College of Environmental Science & Forestry, Syracuse, NY, 1983.
 - B.A., Biology & Secondary Education, State University College at Oswego, Oswego, NY, 1977.

EXPERIENCE
1995-present

Connecticut Ecosystems LLC
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Owner of environmental consulting company.
Provides professional wetland and aquatic consulting services to private and municipal clients. Professional services include:

- Inland and coastal, State and Federal wetland boundary delineations
- Wildlife and vegetative inventories
- Environmental reports
- Permit assistance
- Wetland mitigation
- Aquatic studies
- Expert testimony

1989-1995 **Soil Science & Environmental Services, Inc.**
545 Highland Avenue Cheshire, CT 06410

Senior Wetland Scientist - Managed nearly one hundred projects for private and municipal clients.

1984-1989 **Bristol-Myers Company**
Syracuse, NY & Wallingford, CT

Statistical Programmer - Prepared analysis tables and graphics for statistical and medical staff in support of New Drug Applications.

-

Supervisor of Statistical Programmers - Supervised Statistical Programmers in the Oncology Therapeutic Area.

1979-1981 **Paul V. Moore High School**
Central Square, NY

Science Teacher - Taught Regents Biology and non-Regents Chemistry lecture and laboratory classes.

1977-1979 **Franklin Junior High School**
Reisterstown, MD

Science Teacher - Taught seventh and ninth grade General Science.

PROFESSIONAL CERTIFICATIONS

AFFILIATIONS ■ Professional Wetland Scientist, Society of Wetland Scientists

Memberships

- Society of Soil Scientists of Southern New England (SSSSNE)
- Connecticut Association of Wetland Scientists
- Hartford Audubon Society
- Connecticut Botanical Society
- Society of Wetland Scientists

PAPERS &

PRESENTATIONS

- *Pawlak, E. 2013. Vernal Pool Monitoring.* CACIWC Annual Meeting November 2013.
- *Pawlak, E. 2012. Benefits of Monitoring Wetland Mitigation Projects: A Case Study.* CAWS Annual Meeting, March 2012.
- *Pawlak, E. 2010. The Use of GPS Technology in Rare Species Surveys.* CACIWC Annual Meeting, November 2010.
- *Pawlak, E. 1999. Town of Haddam Vernal Pool Study.* Vernal Pool Workshop, Wesleyan University, May 1999.
- *Pawlak, E. 1999. Criteria for Vernal Pool Identification and Inventory.* NY State Wetlands Forum, Inc. Fifth Annual Meeting, Syracuse, NY.
- *Pawlak, E. 1998. Town of Columbia Wetland Study.* CAWS First Annual Meeting, "Selecting a Wetlands Evaluation Method", Cromwell, CT.

-
-
- *Pawlak, E. 1997. Town of Haddam Vernal Pool Study.* Vernal Pool Workshop, Wesleyan University, November 1997.
 - *Pawlak, E. 1997. Haddam, CT Town-Wide Vernal Pool Study.* Poster Session at CACIWC Annual Meeting, November 1997.
 - *Pawlak, E. 1996. Haddam, CT Town-Wide Vernal Pool Study.* Poster Session at CACIWC Annual Meeting, November 1996.
 - *Pawlak, E. and G. T Logan. 1995. Draft Cromwell Wetland Buffer Designation Methodology.* SWS Annual Meeting, Cambridge, MA, May 1995.
 - *Pawlak, E. and G. T. Logan. 1994. Draft Cromwell Wetland Buffer Designation Methodology.* Poster Session of the "Wetland Buffer Conference" sponsored by SSSSNE, Stockbridge, MA, November 1994.

**WORKSHOPS &
CONFERENCES**

- Vernal Pool Mapping Workshop. April 2014.
- Wildlife Tracking Workshop. CAWS, September 2013.
- Invasive Species Workshop. CAWS, Summer 2013.
- Red Soil Workshop. SSSSNE. Wallingford, CT. Summer, 2013.
- Instructor, DEP Municipal Inland Wetland Commissioners Training Program (Vernal Pools). October 2007, 2013.
- Member of DEP Vernal Pool Model Regulations Committee. September-October 1999.
- Hydric Soils Workshop. SSSSNE. Brooklyn, CT. July 1999.
- Floodplain Wetlands Workshop. AMWS. Amherst, MA. July 1999.
- Winter Botany. AMWS. Boylston, MA. January 1999
- Vernal Pool Policy Workshop. Yale University. May 1988
- Vernal Pool Field Trip Leader. DEP Vernal Pool Workshop. April 1998
- Vernal Pools. Wesleyan University. November 1997 & January 1998
- Vernal Pool Ecology. Tufts University. Spring 1997
- Tidal Wetland Botany. IWEER. Fall 1996
- Systematics Workshop: Carex Section Ovales. UConn, Summer 1996
- Identification of Grasses, Sedges & Rushes. IWEER. Summer 1996

-

- Systematics Workshop: Scirpus. UConn, Summer 1995
- Wetland Buffer Conference, SSSSNE, Stockbridge, MA, Fall 1994
- 17th Annual Conference of the New England Association of Environmental Biologists, Spring 1993

**CONTINUING
EDUCATION**

- Wetlands Assessment & Field Techniques. UMass at Amherst, Spring 2011
- Field Ornithology - SCSU, Spring 1998
- Soil Physics - UMass at Amherst, Fall 1997
- Wetland Delineation - UMass at Amherst, Summer 1997
- Soil Formation & Classification - UMass at Amherst, Spring 1997
- Soil Morphology & Mapping - UMass at Amherst, Spring 1996
- Hydric Soils - UMass at Amherst, Fall 1994
- Aquatic Insect Ecology & Systematics - SCSU, Spring 1993
- Aquatic Entomology - SCSU, Fall 1992
- Limnology - CCSU, Fall 1991
- Herpetology - SCSU, Spring 1990

**MUNICIPAL
PROJECTS**

Connecticut Ecosystems LLC has identified potential vernal pools in 20 towns in Connecticut by remote sensing:

- Avon
- Barkhamstead
- Bolton
- Canton
- Colebrook
- East Granby
- East Haddam
- Farmington
- Granby
- Guilford
- Haddam
- Hartland
- Lyme
- New Hartford
- Salem
- Simsbury
- Somers
- Suffield
- Vernon

-

■ Westbrook

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APPENDIX 1. HIGHWAY METHODOLOGY DATA SHEETS

Introduction

The assessment of wetland functions and values in this report is based upon the "Highway Methodology Workbook Supplement" developed by the U.S. Army Corps of Engineers New England Division. This "descriptive approach" moves away from numerical or ranking methodologies, and instead relies upon professional judgment of the reviewer. It provides criteria to standardize the assessment process.

Many of these criteria appear in the data sheets that follow. Additional criteria were obtained from other assessment methodologies (Magee and Hollands 1998; Ammann et al. 1991) and the experience of the author. Responses to these criteria that are indicators of the function are listed under the "+" column. Those that detract from the function appear in the "-" column. Excluding conditions preclude a wetland from performing a particular function. The determination of whether a particular function is identified as a "principal function" is based upon the number of positive criteria responses, and the judgment and professional experience of the evaluator.

Descriptions of Functions and Values

Groundwater Recharge

The capacity of a wetland to influence the amount of water moving from surface water to ground water (Magee and Hollands 1998).

Groundwater Discharge

The capacity of a wetland to influence the amount of water moving from ground water to surface water (Magee and Hollands 1998).

Floodflow Alteration

The storage of inflowing water from storm or flooding events, resulting in detention and retention of water on the wetland surface (Magee and Hollands 1998).

Finfish Habitat: Ponds & Lakes

Considers the quality of the aquatic habitat of a pond or lake, and its capacity to support finfish.

Finfish Habitat: Streams & Rivers

Considers the quality of the aquatic habitat of a perennial watercourse, and its capacity to support finfish.

Sediment, Pollutant & Nutrient Removal

The capacity of a wetland to remove dissolved, suspended and floatable pollutants from storm water runoff.

Production Export

The capacity of a wetland to produce wildlife food sources, or to export biomass that sustains downstream ecosystems.

Recreation

The suitability of a wetland to support various recreation activities (e.g., hiking, canoeing, boating, fishing, hunting, bird watching).

Wildlife Habitat

The capacity of a wetland to support a diverse and abundant wildlife community.

Educational/Scientific Value

The suitability of a wetland for classroom field trips, or for scientific research.

Uniqueness/Heritage

The degree to which a wetland is considered a locally or regionally unique natural resource.

Wetland #:
 Inspection Date: 10/20/15

Project: *Milford Culvert*
 Weather:

Photograph(s):
 Inspector: E.M. Pawlak

GROUNDWATER RECHARGE (Excluding Condition: Slope Wetland)

| Criteria | + | - | Comments |
|--|---------------------|--|----------|
| Soils | sand/gravel outwash | hardpan, (tight fine-grained soils), shallow ledge | |
| Wetland associated with perennial or seasonal watercourse? | (yes) | no | |
| Slope | (gentle) | moderate or steep | |
| PRINCIPAL FUNCTION? (yes) no | | | |

GROUNDWATER DISCHARGE

| Criteria | + | - | Comments |
|--|------------------------|-----------------------|----------|
| Soils | hardpan, shallow ledge | --- | |
| Seeps, springs observed? | (yes) | no | |
| Wetland microrelief | (well developed) | none/poorly developed | |
| Wetland contains an outlet but no inlet? | yes | (no) | |
| PRINCIPAL FUNCTION? (yes) no | | | |

FLOODFLOW ALTERATION (Excluding Condition: Slope Wetland)

| Criteria | + | - | Comments |
|---|------------------|-----------------------|----------|
| Area of wetland is relatively | (large) | small | |
| Amount of impervious surface in wetland watershed | (large) | small | |
| Wetland slope | (gentle) | steep | |
| Wetland characterized by variable water level? | (yes) | no | |
| Wetland in floodplain of adjacent watercourse? | (yes) | no | |
| Valuable properties, structures or resources located in or near floodplain downstream from wetland? | (yes) | no | |
| Watershed has a history of economic loss due to flooding? | yes | no | ? |
| Wetland outlet constricted? | (yes) | no | Culvert |
| Wetland vegetation density | (high) | low | |
| Wetland microrelief | (well developed) | none/poorly developed | |
| PRINCIPAL FUNCTION? (yes) no | | | |

FINFISH HABITAT: PONDS/LAKES (Excluding Condition: Wetland not associated with a pond or lake)

| Criteria | + | - | Comments |
|--|-----------------------|-------|----------|
| Dominant land use adjacent to waterbody | forest, shrub, meadow | lawn | |
| Shallow littoral zone with emergent vegetation present? | yes | no | |
| Waterbody at least 10' deep? | yes | no | |
| % of pond covered by submerged or emergent vegetation | 15-40% | other | |
| Direct stormwater discharge via culvert? | no | yes | |
| Sandbar present at inlet(s) | no | yes | |
| Water transparency | high | low | |
| Significant nutrient sources (fertilizers, waterfowl) present in watershed? | no | yes | |
| Pond size \geq 0.5 acre? | yes | no | |
| Pond experiences dense algal blooms, nuisance aquatic vegetation, or duckweed? | no | yes | |
| PRINCIPAL FUNCTION? yes no | | | |

Wetland #:

FINFISH HABITAT: STREAMS/RIVERS (Excluding Condition: Wetland not associated with perennial stream)

| Criteria | + | - | Comments |
|--|----------------------|--------------------------------------|-------------------------------------|
| Channel shaded by riparian trees and/or shrubs? | yes | no | some shade up stream |
| Gravel spawning areas present? | yes | no | |
| Barriers to anadromous fish (dams, high culverts) present in stream reach? | no | yes | |
| Dominant bottom substrate | gravel/cobbles | sand/silt organic | |
| Substrate embeddedness by sand & silt | low | high | |
| Instream habitat diversity (riffle, run, pool, shallow, deep) | high | low | |
| Channel alterations (channelization, islands or point bars) | absent or few | numerous | channel straightened |
| Bank stability | stable | unstable, eroding | |
| Bank vegetative cover | high (trees, shrubs) | low | trees on banks of up stream channel |
| Cover objects (fallen logs, boulders, undercut banks) | many | absent or few | |
| Riparian zone | wide | narrow | |
| Watershed development | low | high | |
| Water quality | good | poor - likely given industrial parks | |
| Pollution tolerance of benthic macroinvertebrate taxa | mostly intolerant | mostly tolerant | |
| PRINCIPAL FUNCTION? yes no | | | But highly impacted |

SEDIMENT, POLLUTANT & NUTRIENT REMOVAL

| Criteria | + | - | Comments |
|--|---------------------------|-----------------------|----------|
| Duration of water retention in wetland | long | short | |
| Wetland edge broad & intermittently aerobic? | yes | no | |
| Drainage ditches constructed in wetland? | no | yes | |
| Water flow through wetland | diffuse | channelized | |
| Vegetation density | high | low | |
| Evidence of sediment trapping in wetland? | yes | no | |
| Ponded water present in wetland? | yes | no | |
| Alluvial soils present? | yes | no | |
| Soil type | organic/high clay content | sand/gravel | |
| Wetland basin topographic gradient | low | high | |
| Wetland microrelief | well developed | none/poorly developed | |
| PRINCIPAL FUNCTION? yes no | | | |

PRODUCTION EXPORT (Excluding Condition: No outlet)

| Criteria | + | - | Comments |
|--|----------|-----|----------|
| Wildlife food sources in wetland | abundant | few | |
| Vegetation density | high | low | |
| Nutrients flushed out of wetland into watercourse? | yes | no | |
| Evidence of wildlife use in wetland? | yes | no | |
| Fish or shellfish develop/occur in wetland? | yes | no | |
| PRINCIPAL FUNCTION? yes no | | | |

RECREATION

| Criteria | + | - | Comments |
|--|-----|----|---|
| Wetland is part of a recreation area, park, refuge, etc. | yes | no | |
| Fishing is available in or from the wetland | yes | no | |
| Hunting is permitted in wetland | yes | no | |
| Hiking occurs or has potential to occur in wetland | yes | no | |
| Wetland is a valuable wildlife habitat | yes | no | |
| Wetland has high visual/aesthetic quality | yes | no | |
| Boating or canoeing feasible in wetland | yes | no | |
| Off-road public parking near wetland available | yes | no | |
| Safety hazards (if present, list them) | ✓ | | Very dense vegetation, steep slopes along |
| PRINCIPAL FUNCTION? yes no | | | |

Wetland #:

WILDLIFE HABITAT

| Criteria | + | - | Comments |
|--|----------------|-------------------------|---|
| Wetland degradation by human activity | little or none | moderate to <u>high</u> | |
| Wetland fragmentation by development | little or none | moderate to <u>high</u> | |
| Buffer (F=forest M=meadow S=sapling/shrub thicket L=lawn A=agricultural) | | ✓ | |
| Buffer width | | ✓ | |
| Connectivity with other wetlands | | | <i>Roads sever connections</i> |
| Size of landscape block in which wetland is located | | ✓ | |
| Wildlife food sources in wetland | abundant | few | <i>moderate</i> |
| Interspersion of vegetation & open water | high | <u>low</u> | |
| Upland islands | present | <u>absent</u> | |
| Wetland class diversity (WS=wooded swamp SS=shrub swamp M=marsh WM=wet meadow OW=open water) | <u>high</u> | low | |
| Vegetation density | <u>high</u> | low | |
| Vegetation strata (T=tree S=sapling SH=shrub V=vine H=herbaceous LL=leaf litter) | ✓ | | |
| Wetland plant species diversity | high | <u>low</u> | |
| Vernal pool? | yes | <u>no</u> | |
| Edge diversity (list types, including upland cover types) | | ✓ | |
| Water regime | <u>wetter</u> | drier | |
| Habitat features (S=snags L=fallen logs SE=seep/spring) | | ✓ | |
| Cover objects (L=log/branches R=rocks B=bark) | abundant | ✓ few | |
| Flat rocks in/near watercourse (stream salamanders) | present | <u>absent</u> | |
| Sphagnum hummocks next to shallow pools? | present | <u>absent</u> | |
| Bare well drained sandy soils near wetland (turtle nest site) | present | <u>absent</u> | |
| Abundance of invasive exotic flora? (give examples) | none/low | <u>high</u> | <i>Phragmites But highly impacted</i> |
| PRINCIPAL FUNCTION? <u>yes</u> no | | | |

EDUCATIONAL/SCIENTIFIC VALUE

| Criteria | + | - | Comments |
|--|-------------|------------|------------------------------|
| Wetland contains listed species | yes | <u>no</u> | |
| Wetland provides valuable wildlife habitat | yes | <u>no</u> | |
| Wetland class diversity | high | low | <i>moderate</i> |
| Adjacent upland cover types (F=forest M=meadow S=sapling/shrub thicket A=agricultural) | high | <u>low</u> | |
| Off-road parking near wetland available | <u>yes</u> | no | |
| Proximity to schools | <u>near</u> | far | |
| Wetland contains perennial watercourse | yes | <u>no</u> | |
| Wetland contains pond/lake | yes | <u>no</u> | |
| Safety hazards (if present, list them) | | ✓ | <i>very dense Phragmites</i> |
| Site currently used for educational/scientific purposes | yes | <u>no</u> | |
| PRINCIPAL FUNCTION? <u>yes</u> <u>no</u> | | | |

UNIQUENESS/HERITAGE

| Criteria | + | - | Comments |
|---|-----|-----------|----------|
| Wetland contains listed species | yes | <u>no</u> | |
| Wetland identified as exemplary natural community | yes | <u>no</u> | |
| Wetland locally/regionally significant (explain) | | ✓ | |
| PRINCIPAL FUNCTION? <u>yes</u> <u>no</u> | | | |

Notes

Connecticut Ecosystems LLC

- Wetland Delineation • Wetland & Aquatic Evaluation • Mitigation
- Natural Resource Inventory • Permit Assistance • Expert Testimony



APPENDIX 2. SOILS REPORT

Connecticut Ecosystems LLC

- Wetland Delineation • Wetland & Aquatic Evaluation • Mitigation
- Natural Resource Inventory • Permit Assistance • Expert Testimony



ON-SITE SOIL INVESTIGATION REPORT

Project Name & Location

Culvert Replacement
New Haven Mainline over unnamed
stream
Milford, CT

CE Job No.: 15-10

Field Investigation Date(s): 10/20/15

Field Investigation Method(s):

- Spade & Auger
 Backhoe & Test Pits

Longitude: N 41° 13' 59.90"

Latitude: W 73° 1' 8.66"

Report Prepared For:

Lochner
55 Hartland Street, Suite 401
East Hartford, CT 06108

Field Conditions:

Weather: Sunny 65° F
Recent Precipitation: below average
Soil Moisture: average
Snow Depth: "
Frost Depth: "

Purpose of Investigation:

- Wetland Delineation/Flagging
 Sketch Wetland Boundaries on Base Map (No Flagging)
 High Intensity Soil Mapping by Soil Scientist
 Medium Intensity Soil Mapping from SCS Soil Survey Maps

Wetland Boundary Marker Series:

State: CT 1-1→1-21 CT 2-1→2-18 CT 3-1→3-15 CT 4-1→4-15

Army Corps: AC 1-1→1-21 AC 2-1→2-18 AC 3-1→3-15 AC 4-1→4-15

Intermittent Watercourse Marker Series: ---

Wetland Notes:

- **Type(s)**: deciduous wooded swamp; shallow marsh
- **Hydroperiod(s)**: seasonally saturated; intermittently flooded
- **Soil Parent Material(s)**: alluvial
- **Drainage Class(es)**: poorly drained
- **Slope**: very gentle

**CONNECTICUT ECOSYSTEMS LLC
ON-SITE SOIL INVESTIGATION REPORT (CONTINUED)**

**Project Name & Location: Culvert Replacement New Haven Mainline Milford, CT
Project #: 15-10**

SOIL MAP UNITS

Soil symbols used below and on the accompanying Wetland Sketch Map correspond to those in the National Cooperative Soil Survey.

WETLAND SOIL SERIES

Rippowam Series (103)

This soil was formerly mapped in Connecticut as **Rumney**.

The Rippowam series consists of deep, poorly drained soils formed in loamy, alluvial sediments. They are nearly level soils on floodplains. The soils formed in recent alluvium derived mainly from schist, gneiss or granite.

Typically, these soils have a very dark grayish brown fine sandy loam surface layer 5 inches thick. The subsoil from 5 to 27 inches is dark grayish brown, mottled fine sandy loam and sandy loam. From 27 to 60 inches the substratum is dark gray and grayish brown, loose stratified, loamy sand and very gravelly sand.

Rippowam soils are poorly drained. The seasonal high water table is within 0 to 18 inches of the surface from fall through spring. Surface runoff is slow. Permeability is moderate to moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum. This soil is subject to frequent flooding, mainly from fall to spring.

UPLAND (NON-WETLAND) SOIL SERIES

Urban Land (307)

The Urban land soil mapping unit consists mainly of areas that are covered by paved roads, parking lots, buildings and other structures. The areas are mostly in densely populated regions of the State. They range in size mostly from 5 to several hundred acres. Most of the original soils underlying Urban land have been altered by excavation or have been covered with fill material. Slopes range from 0 to 25 percent but are mostly 0-8 percent. Included with this mapping unit are small, intermingled areas of Udorthents.

CONNECTICUT ECOSYSTEMS LLC
ON-SITE SOIL INVESTIGATION REPORT (CONTINUED)

Project Name & Location: Culvert Replacement New Haven Mainline Milford, CT
Project #: 15-10

The wetlands were field delineated in accordance with the standards of the National Cooperative Soil Survey and the definition of wetlands as found in the Connecticut General Statutes, Chapter 440, Section 22A-38. The investigation was conducted and reviewed by a Registered Soil Scientist.

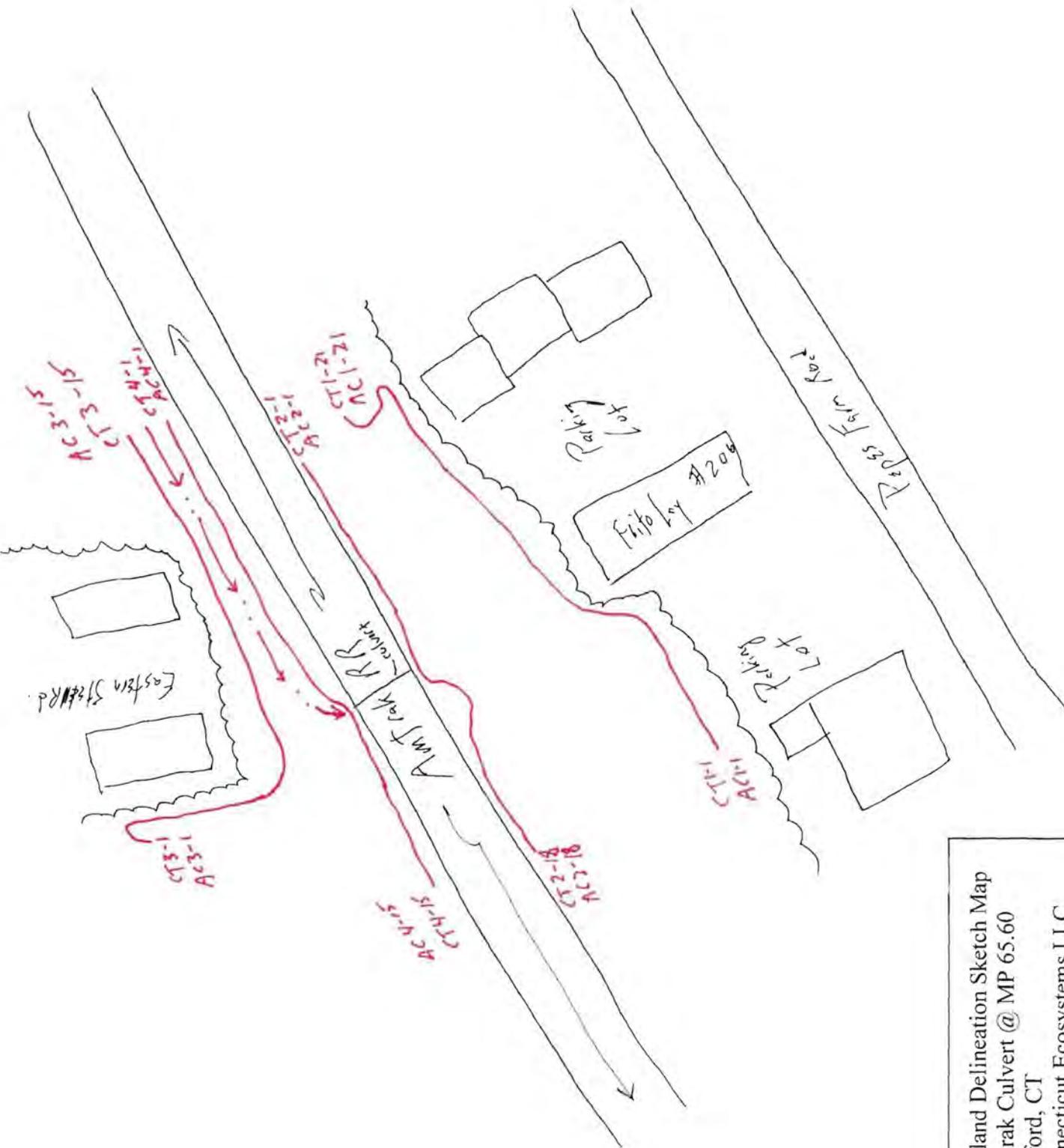
Respectfully submitted,

Connecticut Ecosystems LLC



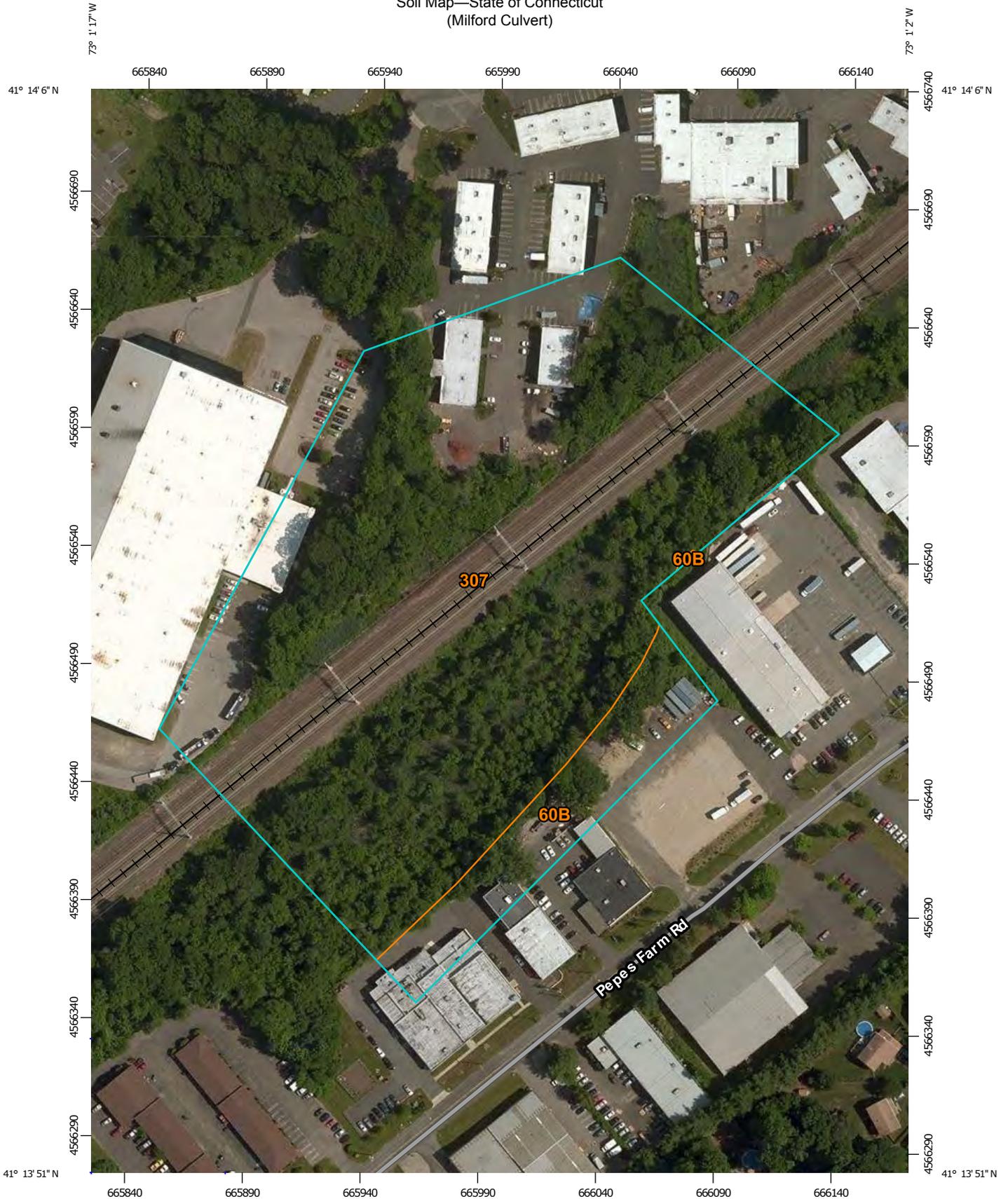
Edward M. Pawlak
Registered Soil Scientist
Certified Professional Wetland Scientist

File c:\soils2015\15-10.doc

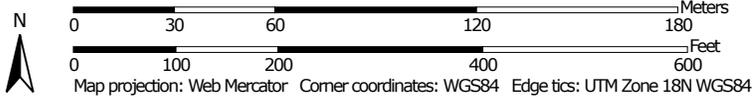


Wetland Delineation Sketch Map
Amtrak Culvert @ MP 65.60
Milford, CT
Connecticut Ecosystems LLC
October 20, 2015

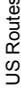
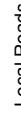
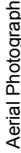
Soil Map—State of Connecticut
(Milford Culvert)



Map Scale: 1:2,240 if printed on A portrait (8.5" x 11") sheet.



MAP LEGEND

| | |
|--|---|
|  Area of Interest (AOI) |  Spoil Area |
|  Soil Map Unit Polygons |  Stony Spot |
|  Soil Map Unit Lines |  Very Stony Spot |
|  Soil Map Unit Points |  Wet Spot |
|  Special Point Features |  Other |
|  Blowout |  Special Line 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: <http://websoilsurvey.nrcs.usda.gov>
 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 14, Sep 22, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 27, 2014—Jul 22, 2014

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

| State of Connecticut (CT600) | | | |
|------------------------------------|--|--------------|----------------|
| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
| 60B | Canton and Charlton soils, 3 to 8 percent slopes | 1.2 | 10.3% |
| 307 | Urban land | 10.7 | 89.7% |
| Totals for Area of Interest | | 11.9 | 100.0% |

Connecticut Ecosystems LLC

- Wetland Delineation
- Wetland & Aquatic Evaluation
- Mitigation
- Natural Resource Inventory
- Permit Assistance
- Expert Testimony



APPENDIX 3. ARMY CORPS DATA SHEETS

38 Westland Avenue • West Hartford, CT 06107
Phone (860) 561-8598 • Fax (860) 561-0223 • email ecosys@comcast.net

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region (DRAFT)

Project/Site: New Haven Mainline Culvert City/County: Milford Sampling Date: 10/20/15
 Applicant/Owner: _____ State: CT Sampling Point: 1W
 Investigator(s): EM Pawlak, PWS Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____
 Slope (%): _____ Lat: 41° 13.955' N Long: 73° 1.136' W Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ | 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.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
|--|------------------|-------------------|------------------|--|
| 1. <i>Fraxinus pennsylvanica</i> | 38 | Y | FACW | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</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>100%</u> (A/B) |
| 2. <i>Acer rubrum</i> | 10.5 | Y | FAC | |
| 3. _____ | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| <u>48.5</u> = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size: <u>15'</u>) | | | | |
| 1. <i>Clethra alnifolia</i> | 63 | Y | FAC | Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <i>Fraxinus pennsylvanica</i> | 3 | N | FACW | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| <u>66</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>5'</u>) | | | | |
| 1. <i>Symplocos foetida</i> | 10.5 | Y | OBL | 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 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. <i>Osmonda cinnamomea</i> | 10.5 | Y | FACW | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| 12. _____ | | | | |
| <u>21</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | | | | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| 2. _____ | | | | |
| 3. _____ | | | | |
| _____ = Total Cover | | | | |

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region (DRAFT)

Project/Site: New Haven Mainline Culvert City/County: Milwaukee Sampling Date: 10/20/15
 Applicant/Owner: _____ State: WI Sampling Point: 1U
 Investigator(s): EM Pawlak, PWS Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____
 Slope (%): _____ Lat: N 41° 13.946' Long: W 73° 1.145' Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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> ___ 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 <input checked="" type="checkbox"/> |
|---|---|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
|--|------------------|-------------------|------------------|-------------------------|
| 1. <u>Acer saccharum</u> | <u>38</u> | <u>Y</u> | <u>FACU</u> | |
| 2. <u>Nyssa sylvatica</u> | <u>10.5</u> | <u>N</u> | <u>FAC</u> | |
| 3. <u>Fagus grandifolia</u> | <u>10.5</u> | <u>N</u> | <u>FACU</u> | |
| 4. <u>Quercus rubra</u> | <u>38</u> | <u>Y</u> | <u>FACU</u> | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| | | | | <u>97</u> = Total Cover |
| Sapling/Shrub Stratum (Plot size: <u>15'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u>Carpinus caroliniana</u> | <u>20.5</u> | <u>Y</u> | <u>FAC</u> | |
| 2. <u>Fagus grandifolia</u> | <u>10.5</u> | <u>Y</u> | <u>FACU</u> | |
| 3. <u>Acer rubrum</u> | <u>10.5</u> | <u>Y</u> | <u>FAC</u> | |
| 4. <u>Coryc sp.</u> | <u>10.5</u> | <u>Y</u> | <u>FACU</u> | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| | | | | <u>52</u> = Total Cover |
| Herb Stratum (Plot size: <u>5'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u>Osunda cinnamomea</u> | <u>3</u> | <u>Y</u> | <u>FACW</u> | |
| 2. _____ | | | | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| 12. _____ | | | | |
| | | | | <u>3</u> = Total Cover |
| Woody Vine Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. _____ | | | | |
| 2. _____ | | | | |
| 3. _____ | | | | |
| | | | | _____ = 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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 3/7 = 43% (A/B)

Prevalence Index worksheet:

| | |
|----------------------|---------------------|
| Total % Cover of: | Multiply by: |
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ | (A) _____ (B) _____ |

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0¹

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 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: 10

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 | | |
| 0-20 | 10YR 4/4 | | | | | | stony fine sand | fill Embankment |
| | | | | | | | | |
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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) ~~(except MLRA 143)~~
 - 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) (LRR R, S)
 - Polyvalue Below Surface (S8) (LRR R, S)
 - Thin Dark Surface (S9) (LRR R, S)
 - 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)
- Indicators for Problematic Hydric Soils³:**
- 2 cm Muck (A10) (LRR K, L, S)
 - Coast Prairie Redox (A16) (LRR K, L, R)
 - 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
 - Dark Surface (S7) (LRR K, L)
 - 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) (LRR S)
 - Red Parent Material (TF2)
 - 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:

Connecticut Ecosystems LLC

- Wetland Delineation
- Wetland & Aquatic Evaluation
- Mitigation
- Natural Resource Inventory
- Permit Assistance
- Expert Testimony



APPENDIX 4. CLASSIFICATION OF WETLANDS & DEEPWATER HABITATS OF THE UNITED STATES (COWARDIN ET AL 1979)

38 Westland Avenue • West Hartford, CT 06107
Phone (860) 561-8598 • Fax (860) 561-0223 • email ecosys@comcast.net

THE COWARDIN SYSTEM OF WETLAND CLASSIFICATION (1979) AND THE NATIONAL WETLANDS INVENTORY (NWI)

In 1979, the U.S. Fish & Wildlife Service (USFWS) published a classification of wetlands and deepwater habitats (Cowardin et al.). This serves as the national standard for wetland classification and was used to classify wetlands identified on the National Wetlands Inventory (NWI) maps. Note that the NWI maps were based on 1985 infrared aerial photograph interpretation, and some wetland classes will have changed over time, e.g. as a result of beaver activity, etc.

Visit the [USFWS National Wetlands Inventory](http://www.fws.gov/wetlands/) website for more detailed information. For a complete explanation of the classification system, reference the original publication, [Classification of Wetlands and Deepwater Habitats of the US](#).

In the Cowardin classification system, wetlands and deepwater habitats are defined as follows:

WETLANDS:

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water less than 6.6 ft deep. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (wetland plants); (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season.

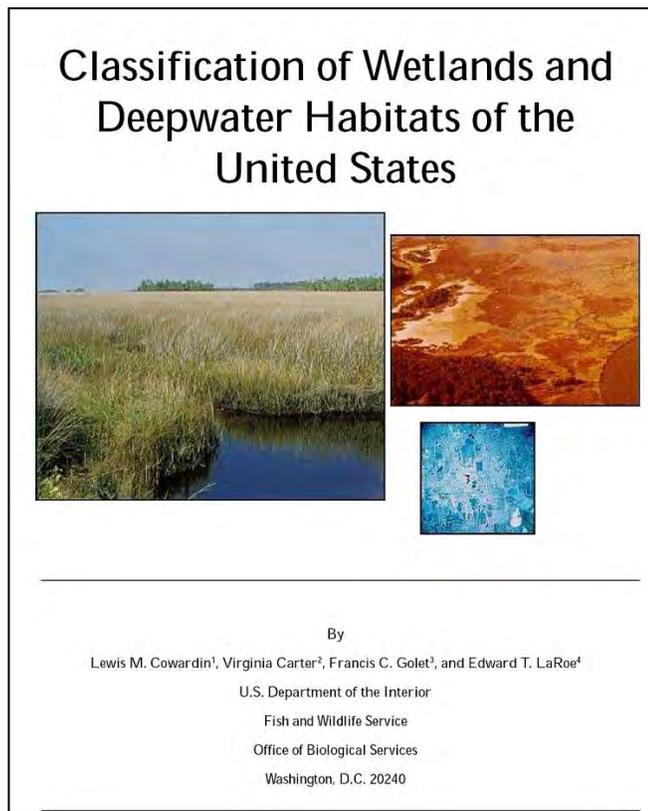
DEEPWATER HABITATS:

Includes permanently flooded deepwater areas that are deeper than 6.6 feet. Shallower waters that are often vegetated with emergent plants are regarded as wetlands rather than deepwater habitats.

The structure of the classification scheme is hierarchical, with systems forming the highest level of the classification hierarchy (Figure C-1), followed by subsystems, classes, subclasses and modifiers (water regime, water chemistry, soil and special modifiers such as beaver activity). Wetland codes and a code interpreter is located at: <http://www.fws.gov/wetlands/Data/WetlandCodes.html>. This also includes a link to the diagram of the Wetlands and Deepwater Habitats Classification Hierarchy as show in Figure C-1. <http://www.fws.gov/wetlands/documents/gNSDI/WetlandsDeepwaterHabitatsClassification.pdf>

Of the five major systems, three are of interest in inland watersheds:

1. **Riverine System** – All fresh water rivers and their tributaries are included in this system.
2. **Lacustrine System** – Includes areas of open water greater than 20 acres or more that 6.6 feet in depth.
3. **Palustrine System** – All nontidal wetlands dominated by trees, shrubs, and persistent emergent herbaceous plants (see explanation below).



PALUSTRINE SYSTEM

The Palustrine System includes all freshwater wetlands (such as marshes, bogs, and swamps) dominated by trees, shrubs, emergent herbaceous plants, floating leaved and submergent plants, and mosses and lichens. It also includes wetlands lacking such vegetation, but with all of the following characteristics:

- (1) area <20 acres
- (2) maximum water depth, 6.6 feet
- (3) salinity <0.5‰

Palustrine wetlands may be situated shoreward of lakes or river channels, on floodplains, isolated from water bodies, or on slopes. The Palustrine System is subdivided into a several wetland classes, the most common of which are:

Unconsolidated Bottom: Areas of water with at least 25% cover of particles smaller than stones (less than 6-7 cm), and a vegetative cover less than 30%.

Aquatic Bed: Areas of water dominated by plants that grow principally on or below the surface of water for most of the growing season, e.g. floating-leaved plants, pondweeds, waterlilies, and submergent plants such as bladderwort.

Emergent: Wetland characterized by rooted herbaceous and grasslike plants which stand erect above the water or ground surface (excluding mosses or lichens). Vegetation is present for most of the growing season in most years. Emergent wetlands include marshes, meadows, and fens.

Persistent: Plant species that normally remain standing until the beginning of the next growing season in most years, e.g. cattails, bulrushes, reeds.

Non-persistent: Plant species that fall below the surface of the water at the end of the growing season so that at certain seasons of the year there is no obvious sign of emergent vegetation, e.g. pickerel weed, arrowheads, ferns.

Scrub-Shrub: Wetland dominated by woody vegetation less than 20 feet tall. Plant species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. Scrub-Shrub wetlands include shrub swamps and bogs:

Broad-leaved deciduous: e.g. buttonbush, alders, willows, dogwoods, and saplings (e.g. red maple).

Needle-leaved deciduous: e.g. young or stunted trees, such as tamarack or cypress

Broad-leaved evergreen: e.g. bog rosemary, bog laurel, leatherleaf

Needle-leaved evergreen: e.g. young or stunted trees such as white pine, spruce

Forested: Wetland dominated by woody vegetation 20 feet or taller. Forested wetlands, e.g. forested swamps, generally include an overstory of trees, an understory of young trees and shrubs, and a herbaceous layer.

Broad-leaved deciduous: e.g. red maple, American elm

Needle-leaved deciduous: e.g. tamarack, cypress

Broad-leaved evergreen: e.g. red bay, holly

Needle-leaved evergreen: e.g. black spruce, Atlantic White Cedar

A NOTE on the use of the Cowardin System of Wetland Classification:

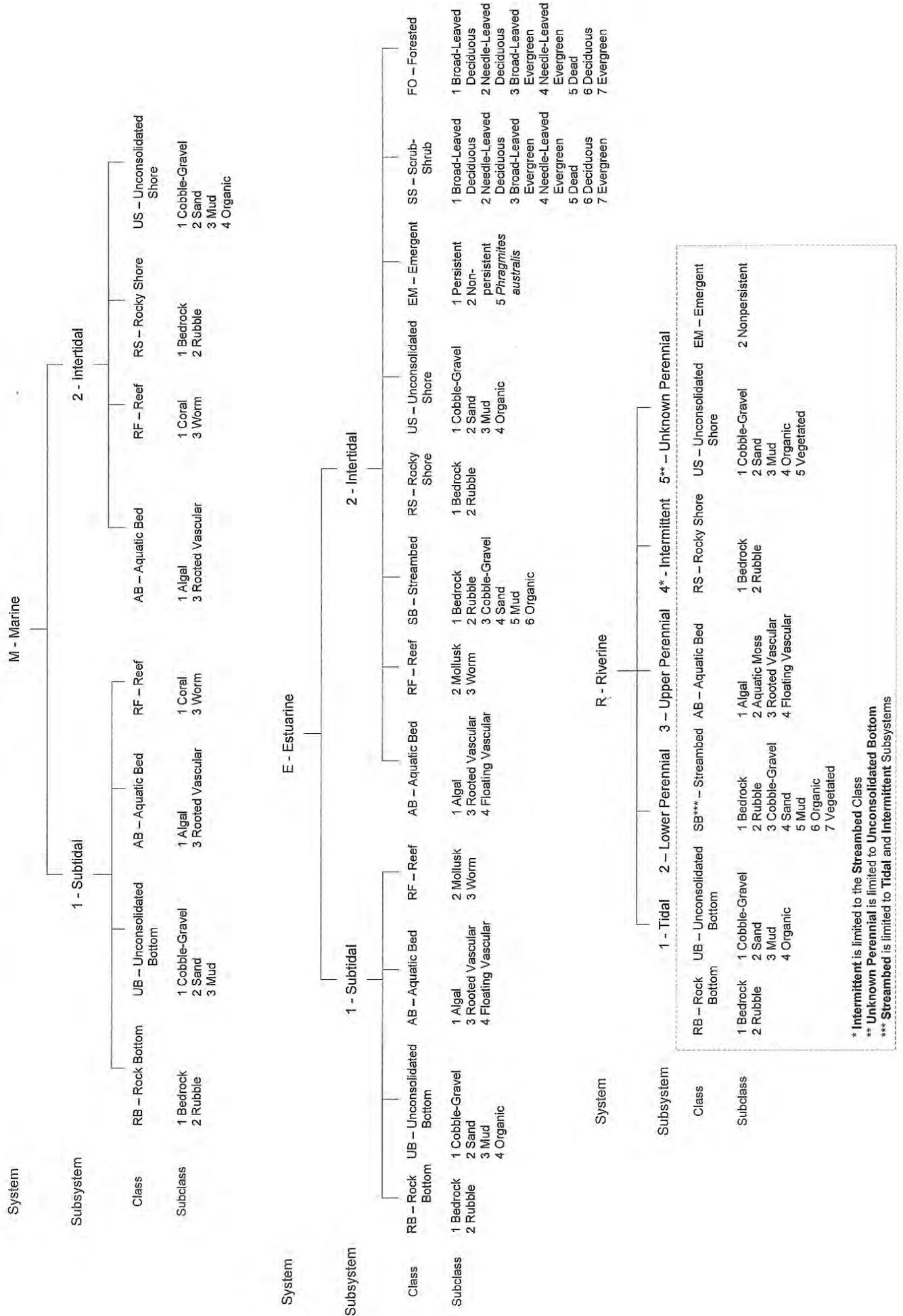
The general rule of thumb when classifying wetlands according to their cover class is the '5-30 rule', that is, a wetland type must have a minimum of 5% cover in order to be mapped, and if uppermost vegetative stratum exceeds 30% it becomes the dominant cover class. For example, if a wetland has 10% scrub-shrub cover and 30% forest cover, it gets mapped as a forested wetland (i.e. PFO). However, if neither cover class appears to exceed 30%, or if two classes appear to be co-dominant, then a combination of classes is written – e.g. PFO/SS or PSS/EM. Usually the uppermost layer gets noted first (e.g. PEM/AB) but occasionally the slightly more dominant class takes precedence (e.g. PSS/FO). The same goes for the numerical subscripts that modify the cover classes, e.g. PFO1/4E for a palustrine forested wetland that has slightly more deciduous trees than evergreen trees. See the examples of NWI classifications for wetlands below.

EXAMPLES OF NWI CLASSIFICATIONS FOR THE PALUSTRINE SYSTEM:

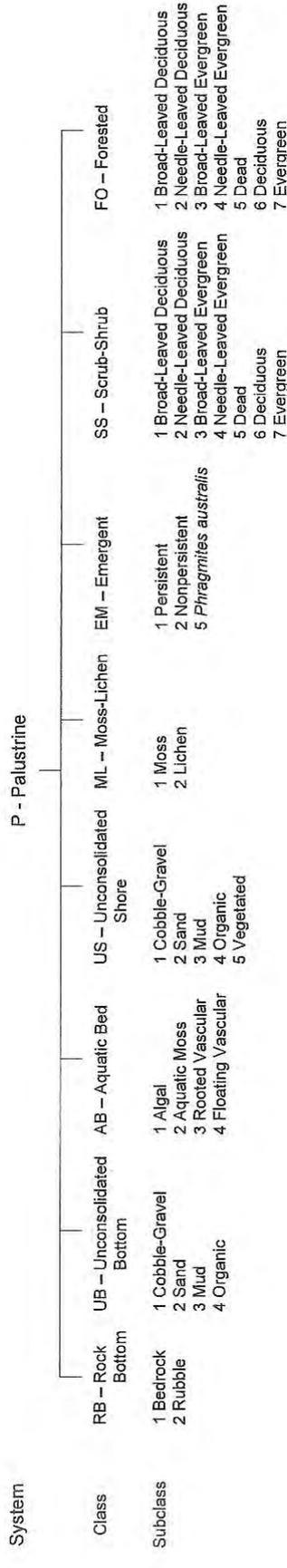
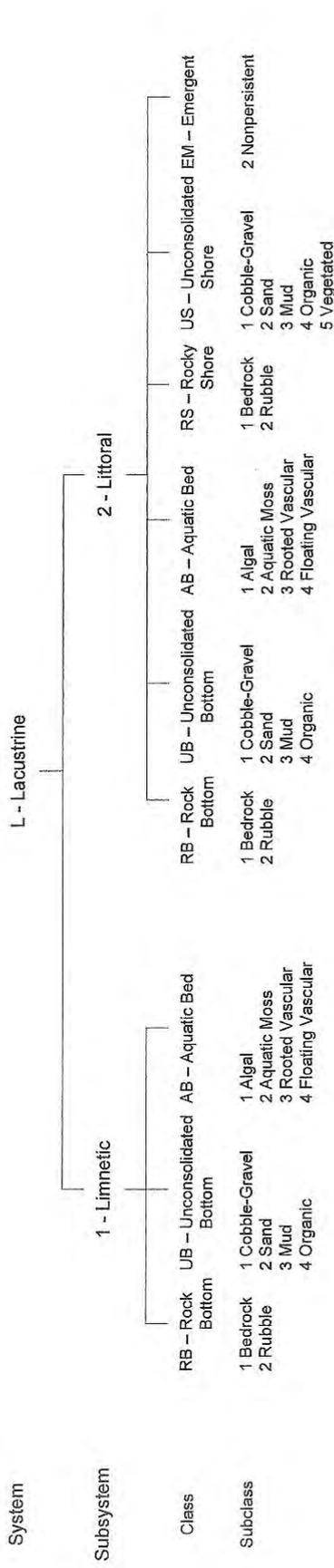
- PEM1Eb** Palustrine, **EM**ergent, persistent (**1**), seasonally flooded/saturated (**E**), beaver activity (**b**)
- PSS1Fh** Palustrine, **Scrub-Shrub**, broadleaved deciduous (**1**), semipermanently flooded (**F**), impounded/diked (**h**)
- PFO1E** Palustrine, **FO**rested, broadleaved deciduous (**1**), seasonally flooded/saturated (**E**)
- PFO5** Palustrine, **FO**rested, Dead (**5**)
- PSS1/EM1** Palustrine, dominantly **Scrub-Shrub**, broadleaved deciduous (**1**), mixed with **EM**ergent, persistent (**1**)
- PEM1/SS1** Palustrine, dominantly **EM**ergent, persistent (**1**), mixed with **Scrub-Shrub**, broadleaved deciduous (**1**)
- PFO4/SS4** Palustrine, dominantly **FO**rested, needle-leaved evergreen (**4**), mixed with **Scrub-Shrub**, needle-leaved evergreen (**4**)
- PSS1/FO4** Palustrine, dominantly **Scrub-Shrub**, broadleaved deciduous (**1**), mixed with **FO**rested needle-leaved evergreen (**4**)
- U** = Island or areas of upland within a wetland

Figure F-1

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



| MODIFIERS | | |
|--|---------------------------|---------------------------------|
| In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system. | | |
| | Water Regime | |
| | Saltwater Tidal | Freshwater Tidal |
| Nontidal | | |
| A Temporarily Flooded | L Subtidal | S Temporarily Flooded-Tidal |
| B Saturated | M Irregularly Exposed | R Seasonally Flooded-Tidal |
| C Seasonally Flooded | N Regularly Flooded | T Semipermanently Flooded-Tidal |
| E Seasonally Flooded/Saturated | P Irregularly Flooded | V Permanently Flooded-Tidal |
| F Semipermanently Flooded | | |
| G Intermittently Exposed | | |
| H Permanently Flooded | | |
| J Intermittently Flooded | | |
| K Artificially Flooded | | |
| | | Soil |
| | | Water Chemistry |
| | | Special Modifiers |
| b Beaver | 1 Hyperhaline | a Acid |
| d Partly Drained/Ditched | 2 Euhaline | t Circumneutral |
| f Farmed | 3 Mixohaline (Brackish) | l Alkaline |
| h Diked/Impounded | 4 Polyhaline | 0 Fresh |
| r Artificial | 5 Mesohaline | |
| s Spoil | 6 Oligohaline | |
| x Excavated | 0 Fresh | |
| | 7 Hypersaline | g Organic |
| | 8 Eusaline | n Mineral |
| | 9 Mixosaline | |
| | 0 Fresh | |
| | 1 Broad-Leaved Deciduous | |
| | 2 Needle-Leaved Deciduous | |
| | 3 Broad-Leaved Evergreen | |
| | 4 Needle-Leaved Evergreen | |
| | 5 Dead | |
| | 6 Deciduous | |
| | 7 Evergreen | |

Attachment D: Photographs

Applicant: State of Connecticut, Department of Transportation
Project No: 301-175
Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

List of Photographs:

1. Channel Upstream
2. Upstream Elevation
3. Channel Downstream
4. Downstream Elevation
5. Typical Vegetation to be Removed Downstream
6. Downstream Elevation from Distance



1. Channel Upstream



2. Upstream Elevation



3. Channel Downstream



4. Downstream Elevation



5. Typical Vegetation to be Removed Downstream.
(Building in background is warehouse at 206 Pepes Farm Road)



6. Downstream Elevation from Distance.

Attachment E: SHPO/THPO Documentation

Applicant: State of Connecticut, Department of Transportation
Project No: 301-175
Description: New Haven Mainline – Mile Post 65.60, Milford, CT
Culvert Replacement over an unnamed watercourse

List of Attachments

- CTDOT letter dated 2/2/18 and signed off by SHPO on 3/9/18



STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Transmittal:

From: Mandy Ranslow, Transportation Planner
Date: February 2, 2018
To: M. Dunne & C. Labadia, Deputy State Historic Preservation Officers

Project: State No.: 301-175
F.A.P. No.: N/A
Project Title: Culvert Replacement on the New Haven Mainline
Town: Milford

Subject: SHPO Consultation Documentation

Description of Activity:

The Connecticut Department of Transportation (CTDOT) proposes to use state funds to replace a masonry culvert that carries the New Haven Mainline over an unnamed stream. The existing culvert is approximately 89 feet long and has an opening that is approximately two feet high by two feet wide. There is ten feet of embankment material between the top of the culvert and the bottom of the rail ties. The existing structure carries stormwater runoff from the Eastern Steel Road commercial and industrial area.

The inlet and the outlet of the existing structure have partially collapsed. In addition sediment and debris have accumulated within the culvert. The low-lying developed areas immediately upstream of the culvert have a history of flooding, which is exacerbated by the collapsed culvert. Due to the deteriorated condition of the existing masonry culvert, the increased risk of flooding and ongoing maintenance concerns, the structure has been recommended for replacement.

The proposed replacement consists of twin 48 inch diameter reinforced concrete pipes. Endwalls with flared wings will be installed up and downstream. The replacement pipes will be jacked through the railroad embankment. The existing culvert will be filled and abandoned in place.

Access to the site is limited to two easements through private property at the end of Eastern Steel Road and Pepes Farm Road. An access road will need to be constructed for the downstream easement. This will require cutting small trees, cleaning brush, and bringing in suitable fill.

Technical Review of Project:

The date of construction of the masonry culvert is unknown, however, it likely dates to the 1890s elevation and 4-track construction of the New Haven Mainline. Generally, historic bridges, culverts, and other railroad features are considered contributing elements to the potential National Register-eligible New Haven Line. The entire New Haven Line has not been inventoried and evaluated for historic significance, however, structures dating to the elevation and widening of the rail line are typically considered historic. The integrity of the subject culvert has been diminished due to its collapse, and the proposed project will eliminate its function as a culvert. However, the culvert will be left in place, and the new culvert will be at a new location.

Aside from the potentially eligible New Haven Line, the project is not within a listed historic district. The buildings in proximity to the culvert are modern and industrial in nature. No standing structures will be impacted by this project.

Soils in the project area are classified as Urban Land and have been disturbed by rail construction and industrial development. No known archaeological sites are located in proximity to the project. It is highly unlikely intact, eligible archaeological resources will be impacted by this project.

Recommendation:

CTDOT's Office of Environmental Planning recommends that the proposed project will have no adverse effect on historic properties. This project is subject to the Connecticut Environmental Policy Act.

Attached Documents:

- 0 SHPO Letter
- x Historic Review Maps
- x Photos (in Environmental Review Request)
- x Supporting Documents – Environmental Review Request

SHPO Use Only

Based on the information provided to the State Historic Preservation Office, we:

Concur Do Not Concur (additional comments attached)

with DOT's Office of Environmental Planning's opinion that no historic properties will be adversely affected by this undertaking (Project No. 301-175 in Milford).



3/9/18

Mary B. Dunne/Catherine Labadia
Deputy State Historic Preservation Officer

Date



Department of Economic and
Community Development

Connecticut
still revolutionary

**Construction Contracts - Required Contract Provisions
(State Funded Only Contracts)**

Index

1. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements
2. Contractor Work Force Utilization / Specific Equal Employment Opportunity
3. Contract Wage Rates
4. Americans with Disabilities Act of 1990, as Amended
5. 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)
6. Tax Liability - Contractor's Exempt Purchase Certificate (CERT – 141)
7. Executive Orders (State of CT)
8. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised)
9. Whistleblower Provision
10. Connecticut Freedom of Information Act
 - a. Disclosure of Records
 - b. Confidential Information
11. Service of Process
12. Substitution of Securities for Retainages on State Contracts and Subcontracts
13. Health Insurance Portability and Accountability Act of 1996 (HIPAA)
14. Forum and Choice of Law
15. Summary of State Ethics Laws
16. Audit and Inspection of Plants, Places of Business and Records
17. Campaign Contribution Restriction

18. Tangible Personal Property
19. Bid Rigging and/or Fraud – Notice to Contractor
20. Consulting Agreement Affidavit

Index of Exhibits

- EXHIBIT A – Title VI Contractor Assurances (page 13)
- EXHIBIT B – Contractor Work Force Utilization / Equal Employment Opportunity (page 14)
- EXHIBIT C – Health Insurance Portability and Accountability Act of 1996 (HIPAA) (page 17)
- EXHIBIT D - Campaign Contribution Restriction (page 25)
- EXHIBIT E - State Wage Rates (Attached at the end)

1. 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 A, all of which are hereby made a part of this Contract.

2. Contractor Work Force Utilization / Equal Employment Opportunity

- (a) The Contractor shall comply with the Contractor Work Force Utilization / Equal Employment Opportunity requirements attached at Exhibit B 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.

3. Contract Wage Rates

The Contractor shall comply with:

The State wage rate requirements indicated in Exhibit E hereof are hereby made part of this Contract.

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 816), 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.

4. 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.

5. 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

6. 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).

7. 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.

8. 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:

- i. "Commission" means the Commission on Human Rights and Opportunities;
- ii. "Contract" and "contract" include any extension or modification of the Contract or contract;
- iii. "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
- iv. "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.

- v. "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;
- vi. "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;
- vii. "marital status" means being single, married as recognized by the State of Connecticut, widowed, separated or divorced;
- viii. "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;
- ix. "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
- x. "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, including, but not limited to, a municipality, (2) a quasi-public agency, as defined in Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

- (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, 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, 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.”

The Nondiscrimination Certifications can be found at the Office of Policy and Management website.

<http://www.ct.gov/opm/cwp/view.asp?a=2982&Q=390928>

9. 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.

10. 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.

11. 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.

12. 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.

13. 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 C, and hereby made part of this Contract.

14. 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.

15. 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.

16. 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.

17. 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 D.

18. 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.

19. 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.

20. 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.

EXHIBIT A

TITLE VI CONTRACTOR ASSURANCES

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 shall comply with the regulations relative to nondiscrimination in federally assisted programs of the United States Department of Transportation (hereinafter, "USDOT"), Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the "Regulations"), 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, shall not discriminate on the grounds of race, color, national origin, sex, age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Subsection 5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment:

In all solicitations either by competitive 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 shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, sex, age, or disability.

4. Information and Reports: The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Connecticut Department of Transportation (ConnDOT) or the Funding Agency (FHWA, FTA and FAA) to be pertinent to ascertain compliance with such Regulations, orders, 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 shall so certify to ConnDOT or the Funding Agency, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the ConnDOT shall impose such sanctions as it or the Funding Agency may determine to be appropriate, including, but not limited to:

- A. Withholding contract payments until the Contractor is in-compliance; and/or
- B. Cancellation, termination, or suspension of the Contract, in whole or in part.

6. Incorporation of Provisions: The Contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the ConnDOT or the Funding Agency may -direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the ConnDOT to enter into such litigation to protect the interests of the Funding Agency, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States

EXHIBIT B**CONTRACTOR WORKFORCE UTILIZATION / EQUAL EMPLOYMENT OPPORTUNITY****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 Appendix A below.

STATE FUNDED PROJECTS (only)**APPENDIX A****(Labor Market Goals)****LABOR MARKET AREA GOAL**
Female**Minority**

| | | | | |
|----------------------------------|---------------|-------------|-----------|------------|
| Bridgeport 6.9% | | | | 14% |
| Ansonia | Beacon Falls | Bridgeport | Derby | |
| Easton | Fairfield | Milford | Monroe | |
| Oxford | Seymour | Shelton | Stratford | |
| Trumbull | | | | |
| Danbury 6.9% | | | | 4% |
| Bethel | Bridgewater | Brookfield | Danbury | |
| Kent | New Fairfield | New Milford | Newtown | |
| Redding | Ridgefield | Roxbury | Sherman | |
| Washington | | | | |
| Danielson 6.9% | | | | 2% |
| Brooklyn | Eastford | Hampton | Killingly | |
| Pomfret | Putnam | Scotland | Sterling | |
| Thompson | Voluntown | Union | Woodstock | |
| Hartford 6.9% | | | | 15% |

| | | | |
|--------------|---------------|--------------|---------------|
| Andover | Ashford | Avon | Barkhamsted |
| Belin | Bloomfield | Bolton | Bristol |
| Burlington | Canton | Chaplin | Colchester |
| Columbia | Coventry | Cromwell | Durham |
| East Granby | East Haddam | East Hampton | East Hartford |
| East Windsor | Ellington | Enfield | Farmington |
| Glastonbury | Granby | Haddam | Hartford |
| Harwinton | Hebron | Lebanon | Manchester |
| Mansfield | Marlborough | Middlefield | Middletown |
| Newington | Plainville | Plymouth | Portland |
| Rocky Hill | Simsbury | Somers | South Windsor |
| Southington | Stafford | Suffield | Tolland |
| Vernon | West Hartford | Wethersfield | Willington |
| Winchester | Windham | Windsor | Windsor Locks |

| | | | | |
|--------------------|--|--|--|-----------|
| Lower River | | | | 2% |
| 6.9% | | | | |

| | | | |
|-----------|------------|-------|----------|
| Chester | Deep River | Essex | Old Lyme |
| Westbrook | | | |

| | | | | |
|------------------|--|--|--|------------|
| New Haven | | | | 14% |
| 6.9% | | | | |

| | | | |
|-------------|----------|-------------|----------------|
| Bethany | Branford | Cheshire | Clinton |
| East Haven | Guilford | Hamden | Killingworth |
| Madison | Meriden | New Haven | North Branford |
| North Haven | Orange | Wallingford | West Haven |
| Woodbridge | | | |

| | | | | |
|-------------------|--|--|--|-----------|
| New London | | | | 8% |
| 6.9% | | | | |

| | | | |
|-----------|----------------------------|------------------|-----------|
| Bozrah | Canterbury | East Lyme | Franklin |
| Griswold | Groton | Ledyard | Lisbon |
| Montville | New London | North Stonington | Norwich |
| Old Lyme | Old Saybrook | Plainfield | Preston |
| Salem | Sprague | Stonington | Waterford |
| Hopkinton | RI – Westerly Rhode Island | | |

| | | | | |
|-----------------|--|--|--|------------|
| Stamford | | | | 17% |
| 6.9% | | | | |

| | | | |
|----------|-----------|------------|---------|
| Darien | Greenwich | New Canaan | Norwalk |
| Stamford | Weston | Westport | Wilton |

| | | | | |
|-------------------|--|--|--|-----------|
| Torrington | | | | 2% |
| 6.9% | | | | |

| | | | |
|------------|--------------|------------|--------|
| Canaan | Colebrook | Cornwall | Goshen |
| Hartland | Kent | Litchfield | Morris |
| Norfolk | North Canaan | Salisbury | Sharon |
| Torrington | Warren | | |

| | | | | |
|---------------------------------|--|--|--|------------|
| Waterbury 6.9% | | | | 10% |
|---------------------------------|--|--|--|------------|

Bethlehem
Southbury
Wolcott

Middlebury
Thomaston
Woodbury

Naugatuck
Waterbury

Prospect
Watertown

EXHIBIT C

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 (l)(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

August 2015

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(g)(2), as amended by P.A. 10-1, 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 resulting 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/seec. 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 fund-raising 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 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 E

(state wages will be inserted here)

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

**Minimum Rates and Classifications
for Heavy/Highway Construction**

ID#: H 25344

**Connecticut Department of Labor
Wage and Workplace Standards Division**

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 to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:

Project Town: Milford

FAP Number:

State Number: 301-175

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

CLASSIFICATION

Hourly Rate

Benefits

01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. **See Laborers Group 5 and 7**

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|----------------|-------|------------|
| 1) Boilermaker | 33.79 | 34% + 8.96 |
|----------------|-------|------------|

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|---|-------|-------|
| 1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons | 33.48 | 31.66 |
|---|-------|-------|

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|------------------------------|-------|-------|
| 2) Carpenters, Piledrivermen | 32.60 | 25.34 |
|------------------------------|-------|-------|

As of:

Tuesday, October 16, 2018

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

| | | |
|-------------------|-------|-------|
| 2a) Diver Tenders | 32.60 | 25.34 |
|-------------------|-------|-------|

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|-----------|-------|-------|
| 3) Divers | 41.06 | 25.34 |
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| 03a) Millwrights | 33.14 | 25.74 |
|------------------|-------|-------|

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| 4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray | 49.75 | 21.05 |
|--|-------|-------|

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|--------------------------------|-------|-------|
| 4a) Painters: Brush and Roller | 33.62 | 21.05 |
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|--------------------------|-------|-------|
| 4b) Painters: Spray Only | 36.62 | 21.05 |
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| 4c) Painters: Steel Only | 35.62 | 21.05 |
|--------------------------|-------|-------|

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

4d) Painters: Blast and Spray 36.62 21.05

4e) Painters: Tanks, Tower and Swing 35.62 21.05

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) 38.82 26.25+3% of gross wage

6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection 35.47 35.14 + 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) 42.62 31.21

---LABORERS----

8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist 30.05 20.10

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

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|--|-------|-------|
| 9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen | 30.30 | 20.10 |
| <hr/> | | |
| 10) Group 3: Pipelayers | 30.55 | 20.10 |
| <hr/> | | |
| 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 | 30.55 | 20.10 |
| <hr/> | | |
| 12) Group 5: Toxic waste removal (non-mechanical systems) | 32.05 | 20.10 |
| <hr/> | | |
| 13) Group 6: Blasters | 31.80 | 20.10 |
| <hr/> | | |
| Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe) | 31.05 | 20.10 |
| <hr/> | | |
| Group 8: Traffic control signalmen | 16.00 | 20.10 |
| <hr/> | | |

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

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| Group 9: Hydraulic Drills | 29.30 | 18.90 |
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---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 | 32.22 | 20.10 + a |
|---|-------|-----------|

| | | |
|-------------------------|-------|-----------|
| 13b) Brakemen, Trackmen | 31.28 | 20.10 + a |
|-------------------------|-------|-----------|

---CLEANING, CONCRETE AND CAULKING TUNNEL---

| | | |
|--|-------|-----------|
| 14) Concrete Workers, Form Movers, and Strippers | 31.28 | 20.10 + a |
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|-------------------|-------|-----------|
| 15) Form Erectors | 31.60 | 20.10 + a |
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Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

---ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL
IN FREE AIR:----

| | | |
|---|-------|-----------|
| 16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers | 31.28 | 20.10 + a |
|---|-------|-----------|

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| 17) Laborers Topside, Cage Tenders, Bellman | 31.17 | 20.10 + a |
|---|-------|-----------|

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|------------|-------|-----------|
| 18) Miners | 32.22 | 20.10 + a |
|------------|-------|-----------|

---TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED
AIR: ----

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|--------------|-------|-----------|
| 18a) Blaster | 38.53 | 20.10 + a |
|--------------|-------|-----------|

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| 19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders | 38.34 | 20.10 + a |
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As of:

Tuesday, October 16, 2018

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

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| 20) Change House Attendants, Powder Watchmen, Top on Iron Bolts | 36.41 | 20.10 + a |
|---|-------|-----------|

| | | |
|------------------------------|-------|-----------|
| 21) Mucking Machine Operator | 39.11 | 20.10 + a |
|------------------------------|-------|-----------|

---TRUCK DRIVERS---(*see note below)

| | | |
|-----------------|-------|-----------|
| Two axle trucks | 29.13 | 23.33 + a |
|-----------------|-------|-----------|

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| Three axle trucks; two axle ready mix | 29.23 | 23.33 + a |
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|----------------------|-------|-----------|
| Three axle ready mix | 29.28 | 23.33 + a |
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|--|-------|-----------|
| Four axle trucks, heavy duty trailer (up to 40 tons) | 29.33 | 23.33 + a |
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As of:

Tuesday, October 16, 2018

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

| | | |
|---|-------|-----------|
| Four axle ready-mix | 29.38 | 23.33 + a |
| <hr/> | | |
| Heavy duty trailer (40 tons and over) | 29.58 | 23.33 + a |
| <hr/> | | |
| Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids) | 29.38 | 23.33 + a |
| <hr/> | | |
| ---POWER EQUIPMENT OPERATORS--- | | |
| <hr/> | | |
| 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) | 39.55 | 24.05 + a |
| <hr/> | | |
| 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) | 39.23 | 24.05 + a |
| <hr/> | | |
| 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) | 38.49 | 24.05 + a |
| <hr/> | | |

As of:

Tuesday, October 16, 2018

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper) 38.10 24.05 + a

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" Mandrell) 37.51 24.05 + a

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller. 37.51 24.05 + a

Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer). 37.20 24.05 + a

Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and Under Mandrel). 36.86 24.05 + a

Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine. 36.46 24.05 + a

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). 36.03 24.05 + a

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc. 33.99 24.05 + a

Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment. 33.99 24.05 + a

Group 12: Wellpoint Operator. 33.93 24.05 + a

Group 13: Compressor Battery Operator. 33.35 24.05 + a

Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain). 32.21 24.05 + a

Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator. 31.80 24.05 + a

Group 16: Maintenance Engineer/Oiler 31.15 24.05 + a

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

| | | |
|---|-------|-----------|
| Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator. | 35.46 | 24.05 + a |
|---|-------|-----------|

| | | |
|---|-------|-----------|
| Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license). | 33.04 | 24.05 + a |
|---|-------|-----------|

**NOTE: SEE BELOW

---LINE CONSTRUCTION---(Railroad Construction and Maintenance)---

| | | |
|--|-------|--------------|
| 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 |
|--|-------|--------------|

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

| | | |
|----------------------|-------|-------------|
| 23) Driver Groundmen | 26.50 | 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 | 37.10 | 6.5% + 10.70 |
|-------------------------------|-------|--------------|

| | | |
|---|-------|--------------|
| 27) Linemen, Cable Splicers, Dynamite Men | 41.22 | 6.5% + 12.20 |
|---|-------|--------------|

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

28) Material Men, Tractor Trailer Drivers, Equipment Operators 35.04 6.5% + 10.45

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

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 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 site ratio shall not be less than one full-time journeyman instructing and supervising the work of each 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.ct.gov/dol.

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.

As of:

Tuesday, October 16, 2018

Project: Replacement Of Culvert MP 65.60 New Haven Mainline Over Unnamed Stream

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.

~~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:

Tuesday, October 16, 2018

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.

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 J-1,2,3,4 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, fascia, 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.

Statute 31-55a

Last Updated: June 02, 2008

You are here: [DOL Web Site](#) ▶ [Wage and Workplace Issues](#) ▶ Statute 31-55a

- Special Notice -

To All State and Political Subdivisions, Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement 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 Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. 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.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace

Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd.,
Wethersfield, CT 06109 at (860)263-6790.

[Workplace Laws](#)

Published by the Connecticut Department of Labor, Project Management Office

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.

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/wgemenu.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.

Sec. 31-53b. Construction safety and health course. Proof of completion required for employees on public building projects. Enforcement. Regulations. (a) Each contract entered into on or after July 1, 2007, for the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public building project by the state or any of its agents, or by an political subdivision of the state or any of its agents, where the total cost of all work to be performed by all contractors and subcontractors in connection with the contract is at least one hundred thousand dollars, shall contain a provision requiring that, not later than thirty days after the date such contract is awarded, each contractor furnish proof to the Labor Commissioner that all employees performing manual labor on or in such public building, pursuant to such contract, have 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, in the case of telecommunications employees, have completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any employee required to complete a construction safety and health course required under subsection (a) of this section who has not completed the course shall be subject to removal from the worksite if the employee does not provide documentation of having completed such course by the fifteenth day after the date the employee is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2007, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) For the purposes of this section, "public building" means a structure, paid for in whole or in part with state funds, within a roof and within exterior walls or fire walls, designed for the housing, shelter, enclosure and support or employment of people, animals or property of any kind, including, but not limited to, sewage treatment plants and water treatment plants, "Public building" does not include site work, roads or bridges, rail lines, parking lots or underground water, sewer or drainage systems including pump houses or other utility systems.

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

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 _____, 2004.

Notary Public

 Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109