

TABLE OF CONTENTS OF SPECIAL PROVISIONS

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

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OCTOBER 3, 2018
FEDERAL AID PROJECT NO. 0136(057)
STATE PROJECT NO. 173-462

REHABILITATION OF BRIDGE NO. 02295
ROUTE 136 OVER NORWALK RIVER

City of Norwalk
Federal Aid Project No. 0136(057)

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 Rehabilitation of Bridge No. 02295 Route 136 over Norwalk River in the City of Norwalk.

CONTRACT TIME AND LIQUIDATED DAMAGES

Two Hundred Eighteen (218) calendar days will be allowed for completion of the work on this Contract and the liquidated damages charge to apply will be Two Thousand One Hundred Dollars (\$2,100.00) per calendar day.

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 - CONSTRUCTION CONTRACTOR
DIGITAL SUBMISSIONS

Upon execution of the Contract, the Contractor acknowledges and agrees that contractual submittals for this Project shall be submitted and handled through a system of paperless electronic means as outlined in the special provision for Section 1.05 herein.

Shop drawings, working drawings, and product data shall be created, digitally signed and delivered by the Contractor in accordance with the Department's [Contractor Digital Submission Manual](#) (CDSM). Other deliverables that are required by other special provisions shall be similarly submitted.

Access credentials will be provided to the Contractor by the Department.

The Department will provide the Contractor with a list of email addresses that are to be used for each submittal type.

The Department shall not be held responsible for delays, lack of processing or response to submittals that do not follow the specified guidelines in the CDSM.

NOTICE TO CONTRACTOR – UNITED STATES COAST GUARD
REQUIREMENTS

Attached herein is a letter issued by the U.S. Coast Guard dated, September 7, 2018, concerning this project. The Contractor must adhere to the U.S. Coast Guard requirements for work on, over near or affecting the waterway.

NY & NJ

U.S. Coast Guard Bridge Administration

GENERAL CONSTRUCTION REQUIREMENTS

1. All bridge closures, or bridge operating schedule changes, must be requested in writing, 90-days in advance, from the First Coast Guard District Bridge Branch Office. No channel restrictions, or vertical clearance reductions may be made without written approval from the above office.
2. Waterway closures/restrictions, barge placement or safety zones must also be requested a minimum of 90-days in advance. Please contact USCG Sector New York, 212 Coast Guard Drive, Staten Island, NY 10305-5005. Ph: (718) 354-4195/2353.
3. All submissions to the Coast Guard for review and approval must first be approved by the owner of the bridge or their authorized agent. All submission of plans, scope of work, and schedules of operation must be sent to the First Coast Guard District, Bridge Branch Office.
4. At least 30-days prior to commencement of any work, we must have for our review and approval, a copy of the construction plans, contractor schedule, preferably depicted in a time line graphic format, and the contractor's daily hours of operation. The construction plan package must show the following: **(1)** a plan of the entire waterway area in the vicinity of the project. **(2)** The location of work barges during working and off-hours. **(3)** In addition, a drawing must be included, if applicable, depicting any scaffolding or containment used indicating the location and the total vertical or horizontal channel reduction. All vertical clearance reductions below low steel or concrete under the bridge as a result of the use of scaffolding must be clearly detailed on the drawings shown in total feet. **(4)** Emergency 24-hour telephone numbers for all responsible individuals for this project must be submitted to this office before any phase of construction begins in case of an emergency situation during off-hours.
5. Scaffolding used under ANY span of the bridge must be lighted with constant burning red lights every 50 feet and on all corners. The placement of scaffolding must not interfere with the ability of a moveable bridge to open for vessel traffic. Moveable bridges must continue to operate according to their normal schedule unless special drawbridge operation regulation changes have been requested. Warning signs must be posted on both sides of the bridge, visible for a 1-mile range, to warn mariners of the vertical clearance reduction. The signs shall face upstream and downstream so as to draw the mariner's attention to the fact that the clearance has been reduced.
6. All barges placed in the waterway must be lighted with constant burning white lights on all four corners of the barge. The contractor is required to comply with all provisions of the Navigation Rules International-Inland, regarding the use of work barges or floating equipment in the waterway. www.navcen.uscg.gov.
7. Placement of construction barges in the navigable channel shall be done so as to provide a minimum horizontal clearance reduction. Only one navigation channel of a swing bridge may be blocked by work equipment at anytime. Barges must be moved out of the navigable channel after working hours unless approved in writing by the USCG.

ENCLOSURE (1)

NY & NJ

8. Barges held in place by anchor lines must be marked by anchor buoys, which should be lighted.
9. The vertical and horizontal clearances through the navigable channel of the completed structure (as-built clearances) shall be certified in writing to this office by a responsible official of the permittee, a licensed surveyor or a registered professional engineer upon completion of bridge work. As built clearances consist of: vertical clearance in the navigational channel measured from mean high and mean low water to the lowest point of the superstructure; horizontal clearance through the navigational channel between piers or fenders measured normal to the axis of the channel. Documentation shall state the horizontal and vertical datum (e.g., NAVD88) used for all measurements. Please contact this office if there are questions regarding the required clearance data for specific bridge types, i.e. fixed or movable.
10. The on-scene contractor must have a VHF-FM marine radio set to the bridge communication channels 16/13 or the designated channel for the bridge. Additional marine radios monitoring the above channels must also be maintained at the main control of any floating equipment or barges on station.
11. Preventive measures must be taken to prevent any hot work, debris, or construction material from entering the waterway. This includes sandblasting material, paint, and any concrete work by-products. Welding and burning must cease upon approach of a vessel and shall not start again until the vessel has passed the bridge.
12. The project manager must contact the Coast Guard Sector New York-VTS via marine radio before commencement of any and after completion of any Hot Work. A cell phone back-up may be used to contact the above Coast Guard Unit at (718) 354-4088.
13. If permanent bridge navigational lighting cannot be maintained operational during any phase of this project, temporary battery/power lights must be installed at the same locations. These temporary lights must be visible for a distance of **2,000 yards on 90% of the nights of the year**. Generally, a lamp of (**50 candela**) will meet these requirements. Plans for temporary lighting shall be submitted to this office for written approval. Deviations from the approved temporary lighting shall be permitted only upon written authorization from this office.
14. **All newly constructed bridge piers, or those in the process of demolition, must be lighted with either red or white flashing (60 flashes per minute) lights. All cofferdams used during construction must also be lighted with red or white flashing (60 flashes per minute) on all four corners.**
15. Bridge protective fenders shall not be constructed or rebuilt with any metal surfaces on the rubbing face of the fender system. All bolts, spikes, or other metal fastening devices must be countersunk. Metal splicing plates, if used, shall be mounted on back of outer wales.
16. All piles including those previously damaged or broken that are not being used in the new or repaired fender shall be extracted rather than cut off at the mud line. Upon completion of all fender repairs a bottom sweep is required to determine if any piles or debris are present in the waterway. A wire-drag sweep or side-scan sonar is the preferred method.
17. It is the owners' responsibility to ensure that channel depths are not affected by this work.

ENCLOSURE (1)

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Any material, machinery or equipment lost, dumped, thrown into, or otherwise entering the waterway must be removed immediately. If immediate removal is impractical and the object entering the waterway could possibly obstruct or hazard navigation, the object must be marked immediately to protect navigation and the Coast Guard shall be notified as soon as possible. Such notification shall give the location and type of obstruction and the navigational markings installed.

18. Spillage of oil and hazardous substances is specifically prohibited by Section 311 of the Clean Water Act, as amended. Measures including properly maintaining construction equipment, designating fuel/hazardous substances handling areas to allow spills to be contained before reaching the waterway, instructing personnel not to dispose of oil/hazardous substances into drains or into the waterway directly, and other necessary procedures should be implemented to prevent spillage. If oil/hazardous substances are spilled into the waterway in spite of such planning, the U.S. Coast Guard is to be notified immediately at 800-424-8802. An adequate supply of absorbent material should be readily accessible to soak up any possible spillage pending Coast Guard arrival. The use of chemical dispersing agents and emulsifiers is not authorized without prior, specific, federal approval.
19. The bridge owner/contractor shall provide any and all necessary equipment and personnel to determine the presence of any "suspected" obstructions in the waterway at any time either during or following the completion of bridge construction or demolition operations.
20. The owner or registered professional engineer shall certify that the waterway depths have not been impaired and that the waterway is clear of materials or debris resulting from bridge construction or demolition.
21. This approval may be revoked and/or civil penalties imposed for failure to ensure that the above listed stipulations are adhered to or if work is determined to hazard or impair navigation.
22. This bridge work authorization does not relieve the project proponent of the responsibility to comply with applicable state, local or other federal requirements for this project.

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

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

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

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

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

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

NOTICE TO CONTRACTOR - ARCHITECTURAL AND INDUSTRIAL MAINTENANCE COATINGS

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

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

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

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

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

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

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

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

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

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

The Contractor may add additional solvent to a coating only if such addition does not cause the coating to exceed the applicable VOC limit specified Table 1. The Contractor must adhere to type(s) of solvent and maximum amount of solvent recommended by coating manufacturer.

VOC content of a thinned coating shall be the VOC content as listed by the manufacturer after thinning in accordance with its recommendation.

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

TABLE 1		
Coating Category	Phase I	Phase II
	manufactured prior to May 1, 2018 VOC content limit (g/L)	manufactured on or after May 1, 2018 VOC content limit (g/L)
Mastic texture coating	300	100
Metallic pigmented coating	500	500
Multi-color coating	250	250
Nonflat coating	150	100
Nonflat high gloss coating ²	250	150
Nuclear coating	450	450
Pre-treatment wash primer	420	420
Primer, sealer and undercoater	200	100
Quick-dry enamel	250	--- ¹
Quick-dry primer, sealer and undercoater	200	--- ¹
Reactive penetrating carbonate stone sealer ²	--- ¹	500
Reactive penetrating sealer ²	--- ¹	350
Recycled coating	250	250
Roof coating	250	250
Rust preventive coating ²	400	250
Shellac Clear	730	730
Shellac Opaque	550	550
Specialty primer, sealer and undercoater ²	350	100
Stain	250	250
Stone consolidant ²	--- ¹	450
Swimming pool coating	340	340
Thermoplastic rubber coating and mastic	550	550
Traffic marking coating	150	100
Traffic marking coating	150	100
Tub and tile refinish	--- ¹	420
Waterproofing membrane	--- ¹	250
Waterproofing sealer	250	--- ¹
Wood coating ²	--- ¹	275
Wood preservative	350	350
Zinc-rich primer ²	--- ¹	340

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

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

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

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

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

-END-

NOTICE TO CONTRACTOR – COORDINATION WITH CONCURRENT CONSTRUCTION PROJECTS

The Contractor is hereby made aware that other on-going and/or future CTDOT construction projects are in the vicinity of this Contract and coordination is required in accordance with “Section 1.05.07 – Coordination with Work by Other Parties.” The Contractor will be required to coordinate work activities, lane closures and traffic operations with the following projects:

- 40424301 – Eversource Electric Transmission Bypass Project
- 0102-0363 – Bridge No. 00061 (Strawberry Hill Ave) Over I-95
- 0102-0348 – Bridge No. 00059 (I-95 Yankee Doodle Bridge) Over Norwalk River
- 0301-0176 – Walk Bridge
- 0301-0189 – Fort Point Street Bridge

The Contractor is hereby advised that he may be required to attend coordination meetings with the Department and affected projects as deemed necessary.

In addition to the above, the Contractor shall review and fully comply with the special provisions for “Section 1.08.04 – Limitation of Contractor Operations” located elsewhere within this Contract.

The contractor shall schedule and arrange his work to minimize conflicts with the adjacent projects. The contractor shall prepare two-week and two-month lookahead schedules as needed to share with the adjacent project’s contractors to assist in coordination of lane closures and traffic operations.

NOTICE TO CONTRACTOR – HAZARDOUS MATERIALS INVESTIGATIONS

A limited hazardous materials site investigation has been conducted at Bridge No. 02295 & Control House, Route 136 over Norwalk River in Norwalk, Connecticut. The scope of inspection was limited to the representative components projected for impact.

No detectable amounts of lead were present on the metal structural steel/metal bridge components of the drawbridge portion of the bridge, therefore any paint waste generated would be considered non-RCRA, non-hazardous waste. The rest of the bridge was entirely constructed of unpainted concrete beams with unpainted galvanized metal railing, therefore no lead paint was identified on those components.

All steel and metal generated from work tasks (painted or not) shall be segregated and recycled as scrap metal at a scrap metal recycling facility. The recycling of scrap metal (regardless of lead paint concentration) is exempt from USEPA RCRA and CTDEEP Hazardous Waste Regulation.

The black tar paper vapor barrier on the corrugated drain pipes in the abutments and the grey brittle caulk at the deck/concrete support junction were sampled and found to contain asbestos, however they are not expected to be impacted by the project. Grey rubbery expansion joint caulking, grey caulking at drawbridge arms, black expansion joint tar, cloth at guardrail base pads and black side walk caulking were also sampled and no detectable levels of asbestos were identified.

Homeless activity was observed at the east abutment areas of Bridge No. 02295, including but not limited to bedding, trash and potentially sharps/needles which could contain blood borne pathogens.

Potential universal waste (UW) and Connecticut Regulated Waste (CRW) luminaire light poles were attached to the roadside of the bridge but are not expected to be impacted.

No bird/pigeon guano accumulations or were observed in accessible areas of the bridge.

The Contractor is hereby notified that these hazardous materials requiring special management or disposal procedures will be encountered during various construction activities conducted within the project limits. The Contractor will be required to implement appropriate health and safety measures for all construction activities impacting these materials. 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 ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.**

The Department, as Generator, will provide an authorized representative to sign all manifests and waste profile documentation required by disposal facilities for disposal of hazardous materials. The Sections which shall be reviewed by the Contractor include, but are not limited to, the following:

- Item No. 0101143A – Handling & Disposal of Regulated Items

The Contractor is alerted to the fact that a Department environmental consultant may be on site for abatement and related activities, to collect environmental samples (if necessary), and to observe site conditions for the State.

Information pertaining to the results of the limited hazardous materials investigation discussed can be found in the document listed below. These documents shall be available for review electronically.

- HazMat Inspection, Bridge No. 02295 & Control House, Route 136 over Norwalk River, Norwalk, CT, TRC Environmental Corporation, August 30, 2016.
- HazMat Inspection, Bridge No. 02295, Route 136 over Norwalk River, Norwalk, CT, TRC Environmental Corporation, August 8, 2018.

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.

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 1.05 - 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 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES

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

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

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

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

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

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

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

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

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

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

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

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

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

The Plan shall conform to the following general format:

1. General Introduction.

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

iii. The Plan shall establish the policies and procedures that are necessary for the Project to be in compliance with the requirements of OSHA and other State and Federal regulatory agencies with jurisdiction, rules, regulations, standards, or guidelines in effect at the time the work is in progress.

b. Responsibility, Identification of Personnel, and Certifications. The Contractor is solely responsible for creating, implementing, and monitoring the Plan.

- i. The Contractor shall identify and designate on-site supervisory level personnel who shall be responsible for implementing and monitoring the Plan at all times throughout the duration of the Project and shall have authority to take prompt corrective measures to eliminate hazards including the ability to stop work activities.
- ii. Documentation of training provided to the on-site supervisory level personnel shall be included as part of the Plan.
- iii. For any work activities wherein the Contractor has identified a competent person as defined by OSHA, that person shall be capable of identifying existing and predictable hazards and have the authority to take prompt corrective measures to eliminate the hazards, including the ability to stop work activities.
- iv. Documentation of the qualifications of such competent persons identified, including any certifications received, shall be included as part of the Plan.
- v. The Contractor shall further identify the qualified safety professional responsible for developing the Plan and shall provide that person's qualifications for developing the Plan which shall include, but not be limited to, education, training, certifications, and experience in developing this type of Plan.
- vi. The Plan shall contain a certification executed by the qualified safety professional that developed the Plan, stating that the Plan complies with OSHA and other applicable State and Federal regulatory agencies with jurisdiction, rules, regulations, standards, or guidelines in effect at the time the work is in progress.

2. Elements of the Plan. The Plan shall address, but not be limited to, the following elements:

a. Management Safety Policy and Implementation Statement.

- i. The Plan shall describe in detail the means by which the Contractor shall implement and monitor the Plan. Implementation and monitoring shall also mean that the Plan shall be a document with provision for change to update the Plan with new information on a yearly basis at a minimum and shall include new practices or procedures, changing site and environmental conditions, or other situations that could adversely affect site personnel. The Plan shall provide guidelines for protecting all personnel from hazards associated with Project operations and activities.

- b. Emergency Telephone Numbers.**
- c. Personnel Responsibilities.**
 - i. Management responsibilities
 - ii. Responsibilities of Supervisor(s)
 - iii. Site safety officer(s) responsibilities
 - iv. Employee responsibilities
 - v. Competent person(s) as defined by OSHA responsibilities
- d. Training.**
 - i. Regulatory
 - ii. Documentation
 - iii. Site hazard assessment -Daily employee awareness of site operations
- e. Safety Rules.**
 - i. General safety rules
 - ii. Personal protective equipment
 - iii. Housekeeping
- f. Safety Checklists.**
 - i. Project safety-planning checklist
 - ii. Emergency plans and procedures checklist
 - iii. Documentation checklist
 - iv. Protective materials and equipment checklist
- g. Traffic Control Coordinator Inspections.**
 - i. Responsible person
 - ii. Frequency
 - iii. Documentation of actions taken
- h. Record Keeping.**
 - i. OSHA 200 log
- i. Reporting.**
 - i. Accident(s)
 - ii. On site
 - iii. Legal notice requirement
 - iv. Public liability
 - v. Property damage
 - vi. Department of Labor
 - vii. Hazard Communications
- j. Additional Procedures for Project Specific Situations as Applicable.**
 - i. Compressed gas cylinders
 - ii. Confined spaces
 - iii. Cranes
 - iv. Crystalline silica (stone, masonry, concrete, and brick dust)

- v. Electrical
- vi. Equipment operators
- vii. Fall protection
- viii. Hand and power tools
- ix. Hearing conservation
- x. Highway safety
- xi. Lead health and safety plan
- xii. Lock out/tag out
- xiii. Materials handling, storage, use, and disposal
- xiv. Areas of environmental concern
- xv. Night work
- xvi. Personal protective equipment
- xvii. Project entry and exit
- xviii. Respiratory protection
- xix. Sanitation
- xx. Signs, signals, and barricades
- xxi. Subcontractors
- xxii. Trenching

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

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

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

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

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

Article 1.07.10 - Contractor's Duty to Indemnify the State against Claims for Injury or Damage:

Add the following after the only paragraph:

“It is further understood and agreed by the parties hereto, that the Contractor shall not use the defense of Sovereign Immunity in the adjustment of claims or in the defense of any suit, including any suit between the State and the Contractor, unless requested to do so by the State.”

Article 1.07.13 – Contractor's Responsibility for Adjacent Property, Facilities and Services is supplemented as follows:

The following company and representative shall be contacted by the Contractor to coordinate the protection of their utilities on this project 30 days prior to the start of any work on this project involving their utilities:

Mr. Gerard McDonald
District 3 Electrical Supervisor
Department of Transportation
Milford, Connecticut
(203) 882-2033

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.04 - Limitation of Operations - Add the following:

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

The closures related to the rehabilitation of the span lock assemblies (defined below) **will not be allowed to take place prior to October 1, 2019** due to the high demand for bridge openings for recreation vessels.

Route 136 (Washington Street)

Vehicular Traffic

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.
Saturday and Sunday between 10:00 a.m. and 6:00 p.m.

The Contractor will be allowed to close the Route 136 Washington Street Bridge and detour vehicular traffic as noted below:

- 1) For two 2-day closures of the bridge for installation of the Thin Polymer (Epoxy) Overlay on the moveable spans of the bridge (one closure for each bascule leaf).
- 2) For six (6) 8-hour durations, from 10:00 p.m. to 6:00 a.m. for rehabilitation of the span lock assemblies. These closures may only occur on a contiguous Monday, Tuesday and Wednesday.

The Contractor shall notify the Engineer at least 14 days in advance of the start of each Route 136 Washington Street Bridge closure.

Pedestrian Traffic

Pedestrian traffic shall be maintained on a minimum of one (1) sidewalk at all times, except during the six (6) 8-hour durations noted above for rehabilitation of the two span locks. During the 8-hour closures, both sidewalks will be closed to pedestrian traffic. The Contractor shall station a Changeable Message Sign (CMS) at each end of the bridge advising pedestrians of the impending closures of the sidewalks. The location and operational timing of the CMS shall be as approved by the Engineer.

Marine Traffic

Except as noted below, marine traffic shall be allowed to pass through the project site at all times utilizing at a minimum, one half (1/2) of the channel width beneath the structure. This shall be accomplished by providing at least one (1) leaf of the bascule span to be operational at all times except during the rehabilitation of the two span lock assemblies. During rehabilitation of each span lock assembly (2 occasions), operation of both leaves on the bascule span will be restricted and will not be available for opening for passage of vessels beneath the structure. This restricted period will commence at 10:00 p.m. on Monday evening and will be allowed for up to a 32-hour continuous period ending on or before 6 a.m. the following Wednesday morning.

Special Events

The Contractor will not be allowed to perform any work at the Norwalk Bascule Bridge that will interfere with existing traffic operations during special events at the Maritime Center, Veterans Memorial Park, or in downtown Norwalk beginning four (4) hours prior to scheduled events until two (2) hours after scheduled events.

A schedule of special events at these facilities shall be requested through the City of Norwalk Police Department and shall form the basis of the Contractor's schedule for limited construction operations. Ongoing special events coordination throughout construction of the project shall be the responsibility of the Contractor.

All Other Roadways

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.
Saturday and Sunday between 10:00 a.m. and 6:00 p.m.

Additional Lane Closure Restrictions

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

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

SECTION 4.06 - BITUMINOUS CONCRETE

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

4.06.01—Description

4.06.02—Materials

4.06.03—Construction Methods

4.06.04—Method of Measurement

4.06.05—Basis of Payment

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

The terms listed below as used in this specification are defined as:

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

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

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

Density Lot: The total tonnage of all bituminous concrete placed in a single lift and as defined in Article 4.06.03.

Disintegration: Erosion or fragmentation of the pavement surface which can be described as polishing, weathering-oxidizing, scaling, spalling, raveling, or formation of potholes.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

4.06.03—Construction Methods:

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

- a. "State of Connecticut" printed on ticket.
- b. Name of producer, identification of Plant, and specific storage silo if used.
- c. Date and time.
- d. Mixture Designation; Mix type and level Curb mixtures for machine-placed curbing must state "curb mix only".
- e. If WMA Technology is used, the additive name and dosage rate or water injection rate must be listed.
- f. Net weight of mixture loaded into the vehicle (When RAP and/or RAS is used the moisture content shall be excluded from mixture net weight).
- g. Gross weight (equal to the net weight plus the tare weight or the loaded scale weight).
- h. Tare weight of vehicle (Daily scale weight of the empty vehicle).
- i. Project number, purchase order number, name of Contractor (if Contractor other than Producer).
- j. Vehicle number - unique means of identification vehicle.
- k. For Batch Plants, individual aggregate, recycled materials, and virgin asphalt max/target/min weights when silos are not used.
- l. For every mixture designation the running daily total delivered and sequential load number.

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

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

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

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

Vehicles with loads of bituminous concrete being delivered to State projects must not exceed the statutory or permitted load limits referred to as gross vehicle weight (GVW). The Contractor shall furnish a list and allowable weights of all vehicles transporting mixture.

The State reserves the right to check the gross and tare weight of any vehicle. If the gross or tare weight varies from that shown on the delivery ticket by more than 0.4 percent, the Engineer will recalculate the net weight. The Contractor shall correct the discrepancy to the satisfaction of the Engineer.

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

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

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

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

Refueling or cleaning of equipment is prohibited in any location on the project where fuel or solvents might come in contact with paved areas or areas to be paved. Solvents used in cleaning mechanical equipment or hand tools shall be stored off of areas paved or to be paved.

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

Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Rollers types shall include steel-wheeled, pneumatic or a combination thereof. Rollers that operate in a dynamic mode shall have drums that use a vibratory or oscillatory system or combination of. Vibratory rollers shall be equipped with indicators for amplitude, frequency and

speed settings/readouts to measure the impacts per foot during the compaction process. Oscillatory rollers shall be equipped with frequency indicators. Rollers can operate in the dynamic mode using the oscillatory system on concrete structures such as bridges and catch basins if at the lowest frequency setting.

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

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

TABLE 4.06-1: Minimum Paver Lighting

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

TABLE 4.06-2: Minimum Roller Lighting

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

*All fixtures shall be mounted above the roller.

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

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

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

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

Material Transfer Vehicle (MTV): A MTV shall be used when placing a bituminous concrete surface course as indicated in the contract documents.

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

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

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

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

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

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

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

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

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

- a) Posted speed limit is greater than 35 MPH: 30 feet per inch of elevation change.
- b) Posted speed limit is 35 MPH or less: 15 feet per inch of elevation change.

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

Temporary Transitions: A temporary transition is defined as a transition that does not remain a permanent part of the work. All temporary transitions shall meet the following length requirements:

- a) Posted speed limit is greater than 50 MPH
 - (1) Leading Transitions = 15 feet per inch of vertical change (thickness)
 - (2) Trailing Transitions = 6 feet per inch of vertical change (thickness)
- b) Posted speed limit is 40, 45, or 50 MPH
 - (1) Leading and Trailing = 4 feet per inch of vertical change (thickness)
- c) Posted speed limit is 35 MPH or less
 - (1) Leading and Trailing = 3 feet per inch of vertical change (thickness)

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

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

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

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

The Engineer may verify the mixture temperature by means of a probe or infrared type of thermometer. The Engineer may reject the load based on readings from a probe type thermometer and the specify temperature in the quality control plan (QCP) for placement.

Tack Coat Application: The tack coat shall be applied by a pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gallons per square yard for

a non-milled surface and an application rate of 0.05 to 0.07 gallons per square yard for a milled surface. For areas where both milled and un-milled surfaces occur, the tack coat shall be an application rate of 0.03 to 0.05 gallons per square yard. The Engineer must approve the equipment and the method of measurement prior to use. The material for tack coat shall not be heated in excess of 160°F and shall not be further diluted.

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

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

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

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

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

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

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

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

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

TABLE 4.06-3: Thickness Tolerances

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

Where the thickness of the lift of mixture is less than that shown on the plans beyond the tolerances shown in Table 4.06-3, the Contractor, with the approval of the Engineer, shall take corrective action in accordance with this specification.

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

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

Compaction: The Contractor shall compact the mixture to meet the density requirements as stated in Article 4.06.03 and eliminate all roller marks without displacement, shoving, cracking, or aggregate breakage.

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

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

If the Engineer determines that the use of compaction equipment in the dynamic mode may damage highway components, utilities, or adjacent property, the Contractor shall provide alternate compaction equipment. The Engineer may allow the Contractor to operate rollers in the dynamic mode using the oscillatory system at the lowest frequency setting.

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

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

Surface Requirements:

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

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

7. Longitudinal Joint Construction Methods: The Contractor shall use Method I- Notched Wedge Joint (see Figure 4.06-1) when constructing longitudinal joints where lift thicknesses are between $1\frac{1}{2}$ and 3 inches. S1.0 mixtures shall be excluded from using Method I. Method II Butt Joint (see Figure 4.06-2) shall be used for lifts less than $1\frac{1}{2}$ inches or greater than or equal to 3 inches. During placement of multiple lifts, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inches from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines. Each longitudinal joint shall maintain a consistent offset from the centerline of the roadway along its entire length. The difference in elevation between the two faces of any completed longitudinal joint shall not exceed $\frac{1}{4}$ inch in any location.

Method I - Notched Wedge Joint:

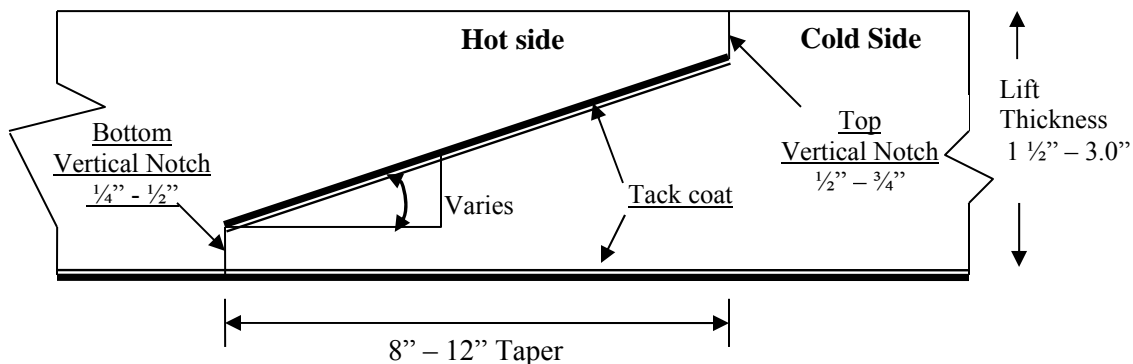


FIGURE 4.06-1: Notched Wedge Joint

A notched wedge joint shall be constructed as shown in Figure 4.06-1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches. The device shall have an integrated vibratory system.

The taper portion of the wedge joint must be placed over the longitudinal joint in the lift immediately below. The top vertical notch must be located at the centerline or lane line in the final lift. The requirement for paving full width "curb to curb" as described in Method II may be waived if addressed in the QC plan and approved by the Engineer.

The taper portion of the wedge joint shall be evenly compacted using equipment other than the paver or notch wedge joint device.

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

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

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

If Method I, Notched Wedge Joint cannot be used on lifts between 1.5 and 3 inches, Method III Butt Joint may be substituted according to the requirements below for “Method III – Butt Joint with Hot Pour Rubberized Asphalt Treatment.”

Method II - Butt Joint:

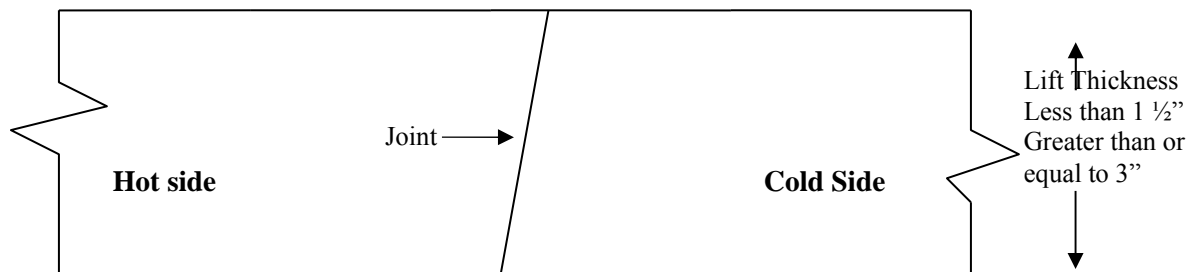


FIGURE 4.06-2: Butt Joint

When adjoining passes are placed, the Contractor shall utilize equipment that creates a near vertical edge (refer to Figure 4.06-2). The completing pass (hot side) shall have sufficient mixture so that the compacted thickness is not less than the previous pass (cold side). The end gate on the paver should be set so there is an overlap onto the cold side of the joint.

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

Method III- Butt Joint with Hot Poured Rubberized Asphalt Treatment: If Method I Wedge Joint cannot be used due to physical constraints in certain limited locations; the contractor may submit a request in writing for approval by the Engineer, to utilize Method III Butt Joint as a substitution in those locations. There shall be no additional measurement or payment made when the Method III Butt Joint is substituted for the Method I Notched Wedge

Joint. When required by the contract or approved by the Engineer, Method III (see Figure 4.06-3) shall be used.

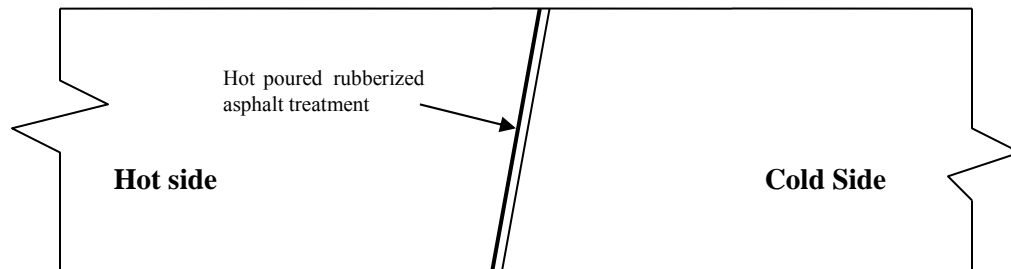


FIGURE 4.06-3: Butt Joint with Hot Poured Rubberized Asphalt Treatment

All of the requirements of Method II must be met with Method III. In addition, the longitudinal vertical edge must be treated with a rubberized joint seal material meeting the requirements of ASTM D 6690, Type 2. The joint sealant shall be placed on the face of the “cold side” of the butt joint as shown above prior to placing the “hot side” of the butt joint. The joint seal material shall be applied in accordance with the manufacturer’s recommendation so as to provide a uniform coverage and avoid excess bleeding onto the newly placed pavement.

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

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

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

There are three components to the QCP for placement: a Standard QCP, a Project Summary Sheet that details project specific information, and if applicable a separate Extended Season Paving Plan as required in Section 9 “Temperature and Seasonal Requirements”.

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

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

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

become necessary. The QCM shall have the ability to direct all Contractor personnel on the project during paving operations. All Contractor sampling, inspection and test reports shall be reviewed and signed by the QCM prior to submittal to the Engineer. The QCPs shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor.

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

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

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

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

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

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

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

- Mixtures shall not be placed when the air or sub base temperature is less than 40°F regardless of the season.
- Should paving operations be scheduled during the Extended Season, the Contractor must submit an Extended Season Paving Plan for the project that addresses minimum delivered

mix temperature considering WMA, PMA or other additives, maximum paver speed, enhanced rolling patterns and the method to balance mixture delivery and placement operations. Paving during Extended Season shall not commence until the Engineer has approved the plan.

10. Obtaining Bituminous Concrete Cores: This Section describes the methodology and sampling frequency the Contractor shall use to obtain pavement cores.

Coring shall be performed on each lift specified to a thickness of one and one-half (1 ½) inches or more within 5 days of placement. The Contractor shall extract cores (4 or 6 inch diameter for S0.25, S0.375 and S0.5 mixtures 6 inch diameter for S1.0 mixtures) from locations determined by the Engineer. The Engineer must witness the extraction, labeling of cores and filling of the core holes.

A density lot will be complete when the full designed paving width and length of the lot has been placed and shall include all longitudinal joints between the curb lines. HMA S1 mixes are excluded from the longitudinal joint density requirements.

A standard density lot is the quantity of material placed within the defined area exclusive of any structures. A combo density lot is the quantity of material placed within the defined area inclusive of structures less than or equal to 500 feet long. A bridge density lot is the quantity of material placed on a structure larger than 500 feet in length.

Prior to paving, the type and number of lot (s) shall be determined by the Engineer. The number of cores per lot shall be determined in accordance to Tables 4.06-4, 4.06-5A and 4.06-5B. Noncontiguous areas such as highway ramps may be combined to create one lot. Combined areas should be set up to target a 2000 ton lot size. The longitudinal locations of mat cores within a lot containing multiple paving passes will be determined using the total distance covered by the paver. The locations of the joint cores will be determined using the total length of longitudinal joints within the lot.

Sampling is in accordance with the following tables:

TABLE 4.06-4: Bridge Density Lot(s)

Length of Each Structure (Feet)	No. of Mat Cores	No. of Joint Cores
≤ 500'	See Table 4.06-5(A or B)	See Table 4.06-5(A or B)
501' – 1500'	3	3
1501' – 2500'	4	4
2501' and greater	5	5

All material placed on structures less than or equal to 500 feet in length shall be included as part of a standard lot as follows:

TABLE 4.06-5A: Standard and Combo Density Lot(s) \geq 500 Tons

Lot Type	No. of Mat Cores		No. of Joint Cores		Target Lot Size (Tons)
Standard Lot / Without Bridge (s)	4		4		2000
Combo Lot / Lot With Bridge(s) ⁽¹⁾	4 plus	1 per structure (\leq 300')	4 plus	1 per structure (\leq 300')	2000
		2 per structure (301' – 500')		2 per structure (301' – 500')	

TABLE 4.06-5B: Standard and Combo Density Lot $<$ 500 Tons

Lot Type	No. of Mat Cores		No. of Joint Cores	
Standard Lot / Without Bridge (s)	3		3	
Combo Lot / Lot With Bridge(s) ⁽¹⁾	2 plus	1 per structure	2 plus	1 per structure

Note:

⁽¹⁾ If a combo lot mat or joint core location randomly falls on a structure, the core is to be obtained on the structure in addition to the core(s) required on the structure.

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

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

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

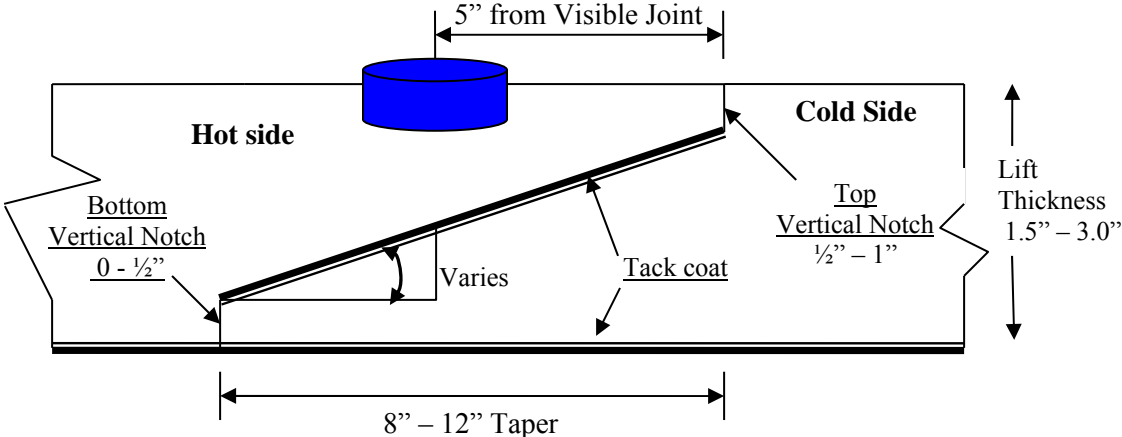


FIGURE 4.06-5: Notched Wedge Joint Cores

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

The cores shall be labeled by the Contractor with the project number, date placed, lot number and sub-lot number. The core’s label shall, include “M” for a mat core and “J” for a joint core. A mat core from the second lot and first sub-lot shall be labeled “M2 – 1” (Figure 4.06-4). The Engineer shall fill out a MAT-109 to accompany the cores. The Contractor shall deliver the cores and MAT-109 to the Department’s Central Lab. The Contractor shall use a container approved by the Engineer. The container shall have a lid capable of being locked shut and tamper proof. The Contractor shall use foam, bubble wrap, or another suitable material to prevent the cores from being damaged during handling and transportation. Once the cores and MAT-109 are in the container the Engineer will secure the lid using a security seal. The security seal’s identification number must be documented on the MAT-109. Central Lab personnel will break the security seal and take possession of the cores.

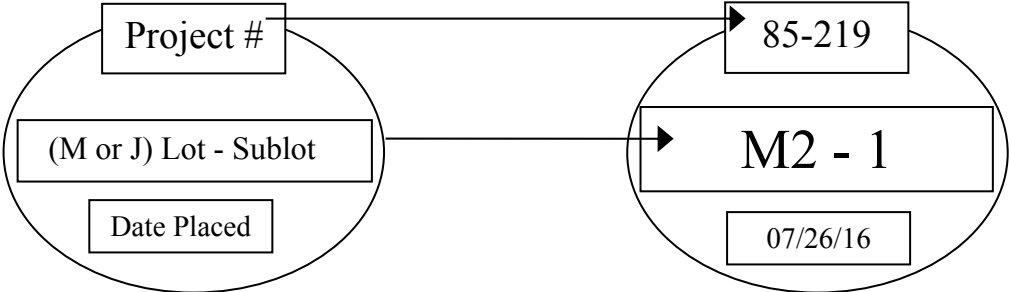


FIGURE 4.06-4: Labeling of Cores

Each core hole shall be filled within four hours upon core extraction. Prior to being filled, the hole shall be prepared by removing any free water and applying tack coat using a brush or other means to uniformly cover the cut surface. The core hole shall be filled using a bituminous

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

11. Acceptance Sampling and Testing: Sampling and testing shall be performed at a frequency not less than the minimum frequency specified in Section M.04 and sub-article 4.06.03-10.

Sampling shall be performed in accordance with ASTM D 3665, or a statistically based procedure of stratified random sampling approved by the Engineer.

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

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

12. Density Dispute Resolution Process: The Contractor and Engineer will work in partnership to avoid potential conflicts and to resolve any differences that may arise during quality control or acceptance testing for density. Both parties will review their sampling and testing procedures and results and share their findings. If the Contractor disputes the Engineer's test results, the Contractor must submit in writing a request to initiate the Dispute Resolution Process within 7 calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results within the timeframe described in sub-article 4.06.03-9 supporting its position. No request for Dispute Resolution will be allowed for a Density Lot in which any core was not taken within the required 5 calendar days of placement. Should the dispute not be resolved through evaluation of existing testing data or procedures, the Engineer may authorize the Contractor to obtain a new set of core samples per disputed lot. The core samples must be extracted no later than 14 calendar days from the date of Engineer's authorization.

The number and location (mat, joint, or structure) of the cores taken for dispute resolution must reflect the number and location of the original cores. The location of each core shall be randomly located within the respective original sub lot. All such cores shall be extracted and the

core hole filled using the procedure outlined in Article 4.06.03. The dispute resolution results shall be added to the original results and averaged for determining the final in-place density value.

13. Corrective Work Procedure:

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

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

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

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

4.06.04—Method of Measurement:

1. HMA S* or PMA S*: The quantity of bituminous concrete measured for payment will be determined by the documented net weight in tons accepted by the Engineer in accordance with this specification and Section M.04.

2. Adjustments: Adjustments may be applied to bituminous concrete quantities and will be measured for payment using the following formulas:

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

Actual Area = [(Measured Length (ft)) x (Avg. of width measurements (ft))]

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

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

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

Where: L = Length (ft)

(t) = Actual thickness (inches)

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

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

Tons Adjusted for Thickness (T_T) = A x t_{adj} x 0.0575 = (-) Tons

Where: A = Area = {[L x (Designed width + tolerance (lift thickness)/12)] / 9}

t_{adj} = Adjusted thickness = [(Dt + tolerance) - Actual thickness]

Dt = Designed thickness (inches)

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

Tons Adjusted for Weight (T_w) = GVW – DGW = (-) Tons

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

- d) Mixture Adjustment: The quantity of bituminous concrete representing the production lot at the Plant will be adjusted as follow:

- i. Non-PWL Production Lot (less than 3500 tons):

The adjustment values in Table 4.06-6 and 4.06-7 shall be calculated for each sub lot based on the Air Void (AV) and Asphalt Binder Content (PB) test results for that sub lot. The total adjustment for each day's production (lot) will be computed using tables and the following formulas:

Tons Adjusted for Superpave Design (T_{SD}) = [(AdjAV_t + AdjPB_t) / 100] X Tons

Percent Adjustment for Air Voids = AdjAV_t = [AdjAV₁ + AdjAV₂ + AdjAV_i + ... + AdjAV_n] / n

Where: AdjAV_t = Total percent air void adjustment value for the lot
 AdjAV_i = Adjustment value from Table 4.06-7 resulting from each sub lot or the average of the adjustment values resulting from multiple tests within a sub lot, as approved by the Engineer.
 n = number of sub lots based on Table M.04.03-2

TABLE 4.06-6: Adjustment Values for Air Voids

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

Percent Adjustment for Asphalt Binder = AdjPB_t = [(AdjPB₁ + AdjPB₂ + AdjPB_i + ... + AdjPB_n) / n

Where: AdjPB_t = Total percent asphalt binder adjustment value for the lot
 AdjPB_i = Adjustment value from Table 4.06-7 resulting from each sub lot
 n = number of binder tests in a production lot

TABLE 4.06-7: Adjustment Values for Binder Content

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

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

For each lot, the adjustment values shall be calculated based on PWL for AV, VMA and PB test results. The lot will be considered as being normally distributed and all applicable equations in AASHTO R9 and AASHTO R42 Appendix X4 will apply.

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

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

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

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

Where:

AdjAV_t = Total percent AV adjustment value for the lot

AdjPB_t = Total percent PB adjustment value for the lot

AdjVMA_t = Total percent VMA adjustment value for the lot

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

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

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

iii. Partial Lots:

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

Lots with 4 or more sublots will be calculated as indicated in 4.06.04-2.d.ii.

- e) Density Adjustment: The quantity of bituminous concrete measured for payment in a lift of pavement specified to be 1½ inches or greater may be adjusted for density. Separate density adjustments will be made for each lot and will not be combined to establish one density adjustment. The final lot quantity shall be the difference between the total payable tons for the project and the sum of the previous lots. If either the Mat or Joint adjustment value is “remove and replace”, the density lot shall be removed and replaced (curb to curb).

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

Tons Adjusted for Density (T_D) = $[\{(P_{AM} \times .50) + (P_{AJ} \times .50)\} / 100] \times \text{Density Lot Tons}$

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

P_{AM} = Mat density percent adjustment from Table 4.06-9

P_{AJ} = Joint density percent adjustment from Table 4.06-10

TABLE 4.06-9: Adjustment Values for Pavement Mat density

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

TABLE 4.06-10: Adjustment Values for Pavement Joint Density

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

⁽¹⁾ ACRPD = Average Core Result Percent Density

⁽²⁾ All Percent Adjustments to be rounded to the second decimal place. For example, 1.667 is to be rounded to 1.67.

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

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

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

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

- a. Container Method- Material furnished in a container will be measured to the nearest ½ gallon. The volume will be determined by either measuring the volume in the original container by a method approved by the Engineer or using a separate graduated container capable of measuring the volume to the nearest ½ gallon. The container in which the material is furnished must include the description of material, including lot number or batch number and manufacturer or product source.
- b. Vehicle Method-
 - i. Measured by Weight: The number of gallons furnished will be determined by weighing the material on calibrated scales furnished by the Contractor. To convert weight to gallons, one of the following formulas will be used:

$$\text{Tack Coat (gallons at } 60^{\circ}\text{F)} = \frac{\text{Measured Weight (pounds)}}{\text{Weight per gallon at } 60^{\circ}\text{F}}$$

$$\text{Tack Coat (gallons at } 60^{\circ}\text{F)} = \frac{0.996 \times \text{Measured Weight (pounds)}}{\text{Weight per gallon at } 77^{\circ}\text{F}}$$

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

Tack Coat (gallons at 60°F) = Factor (from Table 4.06-11) multiplied by the measured gallons.

TABLE 4.06-11: Factor to Convert Volume of Tack Coat to 60°F

Tack Coat Application Temperature (°F)	Factor	Tack Coat Application Temperature (°F)	Factor
75	0.996	120	0.985
80	0.995	125	0.984
85	0.994	130	0.983
90	0.993	135	0.982
95	0.991	140	0.980
100	0.990	145	0.979
105	0.989	150	0.978
110	0.988	155	0.977
115	0.986	160	0.976

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

4.06.05—Basis of Payment:

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

- All costs associated with providing illumination of the work area are included in the general cost of the work.
- All costs associated with cleaning the surface to be paved, including mechanical sweeping, are included in the general cost of the work. All costs associated with constructing longitudinal joints are included in the general cost of the work.
- All costs associated with obtaining cores for acceptance testing and dispute resolution are included in the general cost of the work.

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

Production Lot: $[T_T + T_A + T_W + T_{SD}] \times \text{Unit Price} = \text{Est. (P)}$

Density Lot: $T_D \times \text{Unit Price} = \text{Est. (D)}$

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

T_* = Total tons of each adjustment calculated in Article 4.06.04

Est. () = Pay Unit represented in dollars representing incentive or disincentive.

The Bituminous Concrete Adjustment Cost item if included in the bid proposal or estimate is not to be altered by the Contractor.

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

4. The cutting of bituminous concrete pavement will be paid in accordance with Article 2.02.05.

5. Material for tack coat will be paid for at the Contract unit price per gallon at 60°F for "Material for Tack Coat".

6. The Material Transfer Vehicle (MTV) will be paid at the Contract unit price per ton for a "Material Transfer Vehicle".

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

*For contracts administered by the State of Connecticut, Department of Administrative Services, the pay items and pay units are as shown in contract award price schedule.

SECTION 6.03 - STRUCTURAL STEEL

Section 6.03 is amended as follows:

6.03.03—Construction Methods: Revise Subarticle 4(f) “High Strength Bolted Connections” as follows:

Replace the first paragraph and Table A: "Minimum Bolt Tension in kips" with the following:

" The assembly of structural connections using high-strength bolts shall be installed so as to develop the minimum required bolt tension specified in Table A. The Manufacturer’s certified test report; including the rotational capacity test results must accompany the fastener assemblies. Fastener Assemblies delivered without the certified reports will be rejected.

Table A: Minimum Bolt Tension in kips*

<u>Bolt Diameter (Inches)</u>	<u>ASTM F3125 Grade A325</u>	<u>ASTM F3125 Grade A490</u>
5/8	19	24
3/4	28	35
7/8	39	49
1	51	64
1 1/8	64	80
1 1/4	81	102
1 3/8	97	121
1 1/2	118	148

*Equal to 70% of specified minimum tensile strength of bolts (as specified in ASTM Specifications for tests of full-size F3125 Grade A 325 and F3125 Grade A 490 bolts with UNC threads, loaded in axial tension) rounded to the nearest kip.

Revise the last sentence of the sixteenth paragraph, "Rotational-Capacity Tests" as follows:

" When performed in the field, the procedure shall meet the requirements of ASTM F3125 Annex A2."

In Table C, insert the word "Grade" in the third row before every occurrence of "A325" and "A490."

SECTION M.04 - BITUMINOUS CONCRETE MATERIALS

Section M.04 is being deleted in its entirety and replaced with the following:

M.04.01—Bituminous Concrete Materials and Facilities

M.04.02—Mix Design and Job Mix Formula (JMF)

M.04.03—Production Requirements

M.04.01—Bituminous Concrete Materials and Facilities: Each source of component material, Plant and laboratory used to produce and test bituminous concrete must be qualified on an annual basis by the Engineer. AASHTO or ASTM Standards noted with an (M) have been modified and are detailed in Table M.04.03-6.

Aggregates from multiple sources of supply must not be blended or stored in the same stockpile.

1. Coarse Aggregate:

All coarse aggregate shall meet the requirements listed in Section M.01.

2. Fine Aggregate:

All fine aggregate shall meet the requirements listed in Section M.01

3. Mineral Filler:

Mineral filler shall conform to the requirements of AASHTO M 17.

4. Performance Graded (PG) Asphalt Binder:

a. General:

- i. PG asphalt binder shall be uniformly mixed and blended and be free of contaminants such as fuel oils and other solvents. Binder shall be properly heated and stored to prevent damage or separation.
- ii. The binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29. The Contractor shall submit a Certified Test Report and bill of lading representing each delivery in accordance with AASHTO R 26(M). The Certified Test Report must also indicate the binder specific gravity at 77°F; rotational viscosity at 275°F and 329°F and the mixing and compaction viscosity-temperature chart for each shipment.
- iii. The Contractor shall submit the name(s) of personnel responsible for receipt, inspection, and record keeping of PG binder. Contractor plant personnel shall document specific storage tank(s) where binder will be transferred and stored until used, and provide binder samples to the Engineer upon request. The person(s) shall assure that each shipment is accompanied by a statement certifying that the transport

vehicle was inspected before loading and was found acceptable for the material shipped, and, that the binder is free of contamination from any residual material, along with two (2) copies of the bill of lading.

iv. The blending or combining of PG binders in one storage tank at the Plant from different suppliers, grades, or additive percentages is prohibited.

b. Basis of Approval:

The request for approval of the source of supply shall list the location where the material will be manufactured, and the handling and storage methods, along with necessary certification in accordance with AASHTO R 26(M). Only suppliers/refineries that have an approved "Quality Control Plan for Performance Graded Binders" formatted in accordance with AASHTO R 26(M) may supply PG binders to Department projects.

c. Standard Performance Grade (PG) Binder:

i. Standard PG binder shall be defined as "Neat". Neat PG binders shall be free from modification with: fillers, extenders, reinforcing agents, adhesion promoters, thermoplastic polymers, acid modification and other additives such as re-refined motor oil, and shall indicate such information on each bill of lading and certified test report.

ii. The standard asphalt binder grade shall be PG 64S-22.

d. Modified Performance Grade (PG) Binder:

The modified asphalt binder shall be Performance Grade PG 64E-22 asphalt modified solely with a Styrene-Butadiene-Styrene (SBS) polymer. The polymer modifier shall be added at either the refinery or terminal and delivered to the bituminous concrete production facility as homogenous blend. The stability of the modified binder shall be verified in accordance with ASTM D7173 using the Dynamic Shear Rheometer (DSR). The DSR $G^*/\sin(\delta)$ results from the top and bottom sections of the ASTM D7173 test shall not differ by more than 10%. The results of ASTM D7173 shall be included on the Certified Test Report. The binder shall meet the requirements of AASHTO M 332 (including Appendix X1) and AASHTO R 29.

e. Warm Mix Additive or Technology:

i. The warm mix additive or technology must be listed on the North East Asphalt User Producer Group (NEAUPG) Qualified Warm Mix Asphalt (WMA) Technologies List at the time of bid, which may be accessed online at <http://www.neaupg.uconn.edu>.

ii. The warm mix additive shall be blended with the asphalt binder in accordance with the manufacturer's recommendations.

iii. The blended binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29 for the specified binder grade. The Contractor shall submit a Certified Test Report showing the results of the testing

demonstrating the binder grade. In addition, it must include the grade of the virgin binder, the brand name of the warm mix additive, the manufacturer's suggested rate for the WMA additive, the water injection rate (when applicable) and the WMA Technology manufacturer's recommended mixing and compaction temperature ranges.

5. Emulsified Asphalts:

a. General:

- i. The emulsified asphalt shall meet the requirements of AASHTO M 140 or AASHTO M 208 as applicable.
- ii. The emulsified asphalts shall be free of contaminants such as fuel oils and other solvents.
- iii. The blending at mixing plants of emulsified asphalts from different suppliers is prohibited.

b. Basis of Approval

- i. The request for approval of the source of supply shall list the location where the material is manufactured, the handling and storage methods, and certifications in accordance with AASHTO PP 71. Only suppliers that have an approved "Quality Control Plan for Emulsified Asphalt" formatted in accordance with AASHTO PP 71 and submit monthly split samples per grade to the Engineer may supply emulsified asphalt to Department projects.
- ii. Each shipment of emulsified asphalt delivered to the project site shall be accompanied with the corresponding Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon at 77°F and Material Certificate.
- iii. Anionic emulsified asphalts shall conform to the requirements of AASHTO M-140. Materials used for tack coat shall not be diluted and meet grade RS-1 or RS-1H. When ambient temperatures are 80°F and rising, grade SS-1 or SS-1H may be substituted if permitted by the Engineer.
- iv. Cationic emulsified asphalt shall conform to the requirements of AASHTO M-208. Materials used for tack coat shall not be diluted and meet grade CRS-1. The settlement and demulsibility test will not be performed unless deemed necessary by the Engineer. When ambient temperatures are 80°F and rising, grade CSS-1 or CSS-1H may be substituted if permitted by the Engineer.

6. Reclaimed Asphalt Pavement (RAP):

- a. General: RAP is a material obtained from the cold milling or removal and processing of bituminous concrete pavement. RAP material shall be crushed to 100% passing the ½ inch sieve and free from contaminants such as joint compound, wood, plastic, and metals.
- b. Basis of Approval: The RAP material will be accepted on the basis of one of the following criteria:
 - i. When the source of all RAP material is from pavements previously constructed on Department projects, the Contractor shall provide a Materials Certificate listing the detailed locations and lengths of those pavements and that the RAP is only from those locations listed.
 - ii. When the RAP material source or quality is not known, the Contractor shall request for approval to the Engineer at least 30 calendar days prior to the start of the paving operation. The request shall include a Material Certificate and applicable test results stating that the RAP consists of aggregates that meet the specification requirements of sub articles M.04.01-1 through 3, and, that the binder in the RAP is substantially free of solvents, tars and other contaminants. The Contractor is prohibited from using unapproved material on Department projects and shall take necessary action to prevent contamination of approved RAP stockpiles. Stockpiles of unapproved material shall remain separate from all other RAP materials at all times. The request for approval shall include the following:
 - 1. A 50-pound sample of the RAP to be incorporated into the recycled mixture.
 - 2. A 25-pound sample of the extracted aggregate from the RAP.

7. Crushed Recycled Container Glass (CRCG):

- a. Requirements: The Contractor may propose to use clean and environmentally-acceptable CRCG in an amount not greater than 5% by weight of total aggregate.
- b. Basis of Approval: The Contractor shall submit to the Engineer a request to use CRCG. The request shall state that the CRCG contains no more than 1% by weight of contaminants such as paper, plastic and metal and conform to the following gradation:

CRCG Grading Requirements	
<u>Sieve Size</u>	<u>Percent Passing</u>
3/8-inch	100
No. 4	35-100
No. 200	0.0-10.0

The Contractor shall submit a Materials Certificate to the Engineer stating that the CRCG complies with all the applicable requirements in this specification.

8. Joint Seal Material:

- a. Requirements: Joint seal material must meet the requirements of ASTM D 6690 – Type 2. The Contractor shall submit a Material Certificate in accordance with Article 1.06.07 certifying that the joint seal material meets the requirements of this specification.

9. Recycled Asphalt Shingles (RAS)

- a. Requirements: RAS shall consist of processed asphalt roofing shingles from post-consumer asphalt shingles or from manufactured shingle waste. The RAS material under consideration for use in bituminous concrete mixtures must be certified as being asbestos free and shall be entirely free of whole, intact nails. The RAS material shall meet the requirements of AASHTO MP 23.

The producer shall test the RAS material to determine the asphalt content and the gradation of the RAS material. The producer shall take necessary action to prevent contamination of RAS stockpiles.

The Contractor shall submit a Materials Certificate to the Engineer stating that the RAS complies with all the applicable requirements in this specification.

10. Plant Requirements:

- a. General: The Plant producing bituminous concrete shall comply with AASHTO M 156.
- b. Storage Silos: The Contractor may use silos for short-term storage with the approval of the Engineer. A silo must have heated cones and an unheated silo cylinder if it does not contain a separate internal heating system. When multiple silos are filled, the Contractor shall discharge one silo at a time. Simultaneous discharge of multiple silos for the same Project is not permitted.

<u>Type of silo cylinder</u>	<u>Maximum storage time for all classes (hr)</u>	
	HMA	WMA/PMA
Open Surge	4	Mfg Recommendations*
Unheated – Non-insulated	8	Mfg Recommendations*
Unheated – Insulated	18	Mfg Recommendations*
Heated – No inert gas	TBD by the Engineer	

*Not to exceed HMA limits

- c. Documentation System: The mixing plant documentation system shall include equipment for accurately proportioning the components of the mixture by weight and in the proper order, controlling the cycle sequence and timing the mixing operations. Recording equipment shall monitor the batching sequence of each component of the mixture and produce a printed record of these operations on each Plant ticket, as specified herein.

If recycled materials are used, the Plant tickets shall include their dry weight, percentage and daily moisture content.

If a WMA Technology is added at the Plant, the Plant tickets shall include the actual dosage rate.

For drum Plants, the Plant ticket shall be produced at 5 minute intervals and maintained by the vendor for a period of three years after the completion of the project.

For batch Plants, the Plant ticket shall be produced for each batch and maintained by the vendor for a period of three years after the completion of the project. In addition, an asterisk (*) shall be automatically printed next to any individual batch weight(s) exceeding the following tolerances:

Each Aggregate Component	±1.5% of individual or cumulative target weight for each bin
Mineral Filler	±0.5% of the total batch
Bituminous Material	±0.1% of the total batch
Zero Return (Aggregate)	±0.5% of the total batch
Zero Return (Bituminous Material)	±0.1% of the total batch

The entire batching and mixing interlock cut-off circuits shall interrupt and stop the automatic batching operations when an error exceeding the acceptable tolerance occurs in proportioning.

The scales shall not be manually adjusted during the printing process. In addition, the system shall be interlocked to allow printing only when the scale has come to a complete rest. A unique printed character (m) shall automatically be printed on the ticket when the automatic batching sequence is interrupted or switched to auto-manual or full manual during proportioning.

- d. Aggregates: Aggregate stockpiles shall be managed to prevent segregation and cross contamination. For drum plants only, the percent moisture content at a minimum prior to production and half way through production shall be determined.
- e. Mixture: The dry and wet mix times shall be sufficient to provide a uniform mixture and a minimum particle coating of 95% as determined by AASHTO T 195(M) .

Bituminous concrete mixtures shall contain no more than 0.5% moisture when tested in accordance with AASHTO T 329.

- f. RAP: RAP moisture content shall be determined a minimum of twice daily (prior to production and halfway through production).
- g. Asphalt Binder: A binder log shall be submitted to the Department's Central Lab on a monthly basis.
- h. Warm mix additive: For mechanically foamed WMA, the water injection rate shall be monitored during production and not exceed 2.0% by total weight of binder. For additive added at the Plant, the dosage rate shall be monitored during production.
- i. Plant Laboratory: The Contractor shall maintain a laboratory at the production facility to test bituminous concrete mixtures during production. The laboratory shall have a minimum of 300 square feet, have a potable water source and drainage in accordance with the CT Department of Public Health Drinking Water Division, and be equipped with all necessary testing equipment as well as with a PC, printer, and telephone with a dedicated hard-wired phone line. In addition, the PC shall have internet connection and a functioning web browser with unrestricted access to <https://ctmail.ct.gov>. This equipment shall be maintained in working order at all times and be made available for use by the Engineer.

The laboratory shall be equipped with a heating system capable of maintaining a minimum temperature of 65°F. It shall be clean and free of all materials and equipment not associated with the laboratory. Sufficient light and ventilation must be provided. During summer months, adequate cooling or ventilation must be provided so the indoor air temperature shall not exceed the ambient outdoor temperature.

The laboratory testing apparatus, supplies, and safety equipment shall be capable of performing all tests in their entirety that are referenced in AASHTO R 35 and AASHTO M 323. The Contractor shall ensure that the Laboratory is adequately supplied at all times during the course of the project with all necessary testing supplies and equipment.

The Contractor shall maintain a list of laboratory equipment used in the acceptance testing processes including but not limited to, balances, scales, manometer/vacuum gauge, thermometers, gyratory compactor, clearly showing calibration and/or inspection dates, in accordance with AASHTO R 18. The Contractor shall notify the Engineer if any modifications are made to the equipment within the laboratory. The Contractor shall take immediate action to replace, repair, and/or recalibrate any piece of equipment that is out of calibration, malfunctioning, or not in operation.

M.04.02—Mix Design and Job Mix Formula (JMF)

1. Curb Mix:

- a. Requirements: The Contractor shall use bituminous concrete that meets the requirements of Table M.04.02-1. RAP may be used in 5% increments by weight up to 30%.
- b. Basis of Approval: Annually, an approved JMF based on a mix design for curb mix must be on file with the Engineer prior to use. .

Any change in component source of supply or consensus properties must be approved by the Engineer. A revised JMF shall be submitted prior to use.

**TABLE M.04.02 – 1:
Control Points for Curb Mix Mixtures**

Notes: (a) Compaction Parameter 50gyration N _{des} . (b) The percent passing the #200 sieve shall not exceed the percentage of bituminous asphalt binder.		
Mix	Curb Mix	Production Tolerances from JMF target
Grade of PG Binder content %	PG 64S-22 6.5 - 9.0	0.4
Sieve Size		
# 200	3.0 – 8.0 (b)	2.0
# 50	10 - 30	4
# 30	20 - 40	5
# 8	40 - 70	6
# 4	65 - 87	7
¼"		
3/8 "	95 - 100	8
½ "	100	8
¾"		8
1"		
2"		
Additionally, the fraction of material retained between any two consecutive sieves shall not be less than 4%		
Mixture Temperature		
Binder	325°F maximum	
Aggregate	280-350° F	
Mixtures	265-325° F	
Mixture Properties		
Air Voids (VA) %	0 – 4.0 (a)	

2. Superpave Design Method – S0.25, S0.375, S0.5, and S1

- a. Requirements: All designated mixes shall be designed using the Superpave mix design method in accordance with AASHTO R 35. A JMF based on the mix design shall meet the requirements of Tables M.04.02-2 through Table M.04.02-5. Each JMF must be submitted no less than seven (7) days prior to production and must be approved by the Engineer prior to use. All approved JMFs expire at the end of the calendar year.

All aggregate component consensus properties and tensile strength ratio (TSR) specimens shall be tested at an AASHTO Materials Reference Laboratory (AMRL) by NETTCP certified technicians.

All bituminous concrete mixes shall be tested for stripping susceptibility by performing the tensile strength ratio (TSR) test procedure in accordance with AASHTO T 283(M) at a minimum every 36 months. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. TSR specimens, and corresponding JMF shall be submitted with each test report.

i. Superpave Mixtures with RAP: RAP may be used with the following conditions:

- RAP amounts up to 15% may be used with no binder grade modification.
- RAP amounts up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
- Two representative samples of RAP shall be obtained. Each sample shall be split and one split sample shall be tested for binder content in accordance with AASHTO T 164 and the other in accordance AASHTO T 308.
- RAP material shall not be used with any other recycling option.

ii. Superpave Mixtures with RAS: RAS may be used solely in HMA S1 mixtures with the following conditions:

- RAS amounts up to 3% may be used.
- RAS total binder replacement up to 15% may be used with no binder grade modification.
- RAS total binder replacement up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance to AASHTO M 323 appendix X1 or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.

- Superpave Mixtures with RAS shall meet AASHTO PP 78 design considerations. The RAS asphalt binder availability factor (F) used in AASHTO PP 78 shall be 0.85.

iii. Superpave Mixtures with CRCG: CRCG may be used solely in HMA S1 mixtures. One percent of hydrated lime, or other accepted non-stripping agent, shall be added to all mixtures containing CRCG. CRCG material shall not be used with any other recycling option.

b. Basis of Approval: The following information must be included with the JMF submittal:

- Gradation, consensus properties and specific gravities of the aggregate, RAP or RAS.
- Average asphalt content of the RAP or RAS by AASHTO T 164.
- Source of RAP or RAS, and percentage to be used.
- Warm mix Technology, manufacturer's recommended additive rate and tolerances and manufacturer recommended mixing and compaction temperatures.
- TSR test report and anti-strip manufacturer and recommended dosage rate if applicable.
- Mixing and compaction temperature ranges for the mix with and without the warm-mix technology incorporated.
- JMF ignition oven correction factor by AASHTO T 308.

With each JMF submittal, the following samples shall be submitted to the Division of Materials Testing:

- 4 - one quart cans of PG binder, with corresponding Safety Data Sheet (SDS)
- 1 - 50 lbs bag of RAP
- 2 - 50 lbs bag of plant blended virgin aggregate

A JMF may not be approved if any of the properties of the aggregate components or mix do not meet the verification tolerances as described in the Department's current QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures.

Any material based on a JMF, once approved, shall only be acceptable for use when it is produced by the designated plant, it utilizes the same components, and the production of material continues to meet all criteria as specified herein, and component aggregates are maintained within the tolerances shown in Table M.04.02-2. A new JMF must be submitted to the Engineer for approval whenever a new component source is proposed.

Only one mix with one JMF will be approved for production at any one time. Switching between approved JMF mixes with different component percentages or sources of supply is prohibited.

c. Mix Status: Each facility will have each type of mixture rated based on the results of the previous year's production. Mix Status will be provided to each bituminous concrete producer annually prior to the beginning of the paving season.

The rating criteria are based on compliance with Air Voids and Voids in Mineral Aggregate (VMA) as indicated in Table M.04.03-4 and are calculated as follows:

Criteria A: Percentage of acceptance test results with compliant air voids.

Criteria B: The average of the percentage of acceptance test results with compliant VMA, and percentage of acceptance test results with compliant air voids.

The final rating assigned will be the lower of the rating obtained with Criteria A or B.

Mix status is defined as:

“A” – Approved:

Assigned to each mixture type from a production facility with a current rating of 70% or greater, or to each mixture type completing a successful PPT.

“PPT” – Pre-Production Trial:

Temporarily assigned to each mixture type from a production facility when:

1. there are no compliant acceptance production test results submitted to the Department from the previous year;
2. there is a source change in one or more aggregate components
3. there is a component percentage change of more than 5% by weight;
4. there is a change in RAP percentage;
5. the mixture has a rating of less than 70% from the previous season;
6. a new JMF not previously submitted.

Bituminous concrete mixtures with a “PPT” status cannot be used on Department projects. Testing shall be performed by the Producer with NETTCP certified personnel on material under this status. Test results must confirm that specifications requirements in Table M.04.02-2 and Table M.04.02-5 are met before material can be used. One of the following methods must be used to verify the test results:

Option A: Schedule a day when a Department Inspector can be at the facility to witness testing or,

Option B: When the Contractor or their representative performs testing without being witnessed by an Inspector, the Contractor shall submit the test results and a split sample including 2 gyratory molds, 5,000 grams of boxed bituminous concrete, and 5,000 grams of cooled loose bituminous concrete for verification testing and approval.

Option C: When the Contractor or their representative performs testing without being witnessed by a Department Inspector, the Engineer may verify the mix in the Contractor’s laboratory.

Witnessing or verifying by the Department of compliant test results will change the mix’s status to an “A”.

The differences between the Department's test results and the Contractor's must be within the "C" tolerances included in the Department's QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures in order to be verified.

"U" – Not Approved:

Status assigned to a type of mixture that does not have an approved JMF. . Bituminous concrete mixtures with a "U" status cannot be used on Department projects.

TABLE M.04.02– 2: Superpave Mixture Design Criteria

<i>Notes:</i> ⁽¹⁾ For all mixtures using a WMA technology, the mix temperature shall meet PG binder and WMA manufacturer's recommendations.								
Sieve	S0.25		S0.375		S0.5		S1	
	CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		CONTROL POINTS	
inches	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)
2.0	-	-	-	-	-	-	-	-
1.5	-	-	-	-	-	-	100	-
1.0	-	-	-	-	-	-	90	100
3/4	-	-	-	-	100	-	-	90
1/2	100	-	100	-	90	100	-	-
3/8	97	100	90	100	-	90	-	-
#4	75	90	-	75	-	-	-	-
#8	32	67	32	67	28	58	19	45
#16	-	-	-	-	-	-	-	-
#30	-	-	-	-	-	-	-	-
#50	-	-	-	-	-	-	-	-
#100	-	-	-	-	-	-	-	-
#200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0
VMA (%)	16.5 ± 1		16.0 ± 1		15.0 ± 1		13.0 ± 1	
VA (%)	4.0 ± 1		4.0 ± 1		4.0 ± 1		4.0 ± 1	
Gse	JMF value		JMF value		JMF value		JMF value	
Gmm	JMF ± 0.030		JMF ± 0.030		JMF ± 0.030		JMF ± 0.030	
Dust / binder	0.6 – 1.2		0.6 – 1.2		0.6 – 1.2		0.6 – 1.2	
Mix Temp ⁽¹⁾	265 – 325°F		265 – 325°F		265 – 325°F		265 – 325°F	
TSR	≥ 80%		≥ 80%		≥ 80%		≥ 80%	
T-283 Stripping	Minimal, as determined by the Engineer							

TABLE M.04.02–3: Superpave Consensus Properties Requirements for Combined Aggregate

Notes: (1) 95/90 denotes that a minimum of 95% of the coarse aggregate, by mass, shall have one fractured face and that a minimum of 90% shall have two fractured faces.. (2) Criteria presented as maximum Percent by mass of flat and elongated particles of materials retained on the #4 sieve, determined at 5:1 ratio.					
Traffic Level	Design ESALs (80 kN), Millions	Coarse Aggregate Angularity ⁽¹⁾ ASTM D 5821, Minimum %	Fine Aggregate Angularity AASHTO T 304, Method A Minimum %	Flat and Elongated Particles ⁽²⁾ ASTM D 4791, Maximum %	Sand Equivalent AASHTO T 176, Minimum %
1	< 0.3	55/- -	40	10	40
2	0.3 to < 3.0	75/- -	40	10	40
3	≥ 3.0	95/90	45	10	45

TABLE M.04.02– 4: Superpave Traffic Levels and Design Volumetric Properties

Traffic Level	Design ESALs (million)	Number of Gyration by Superpave Gyrotory Compactor			Percent Density of Gmm from HMA/WMA specimen			Voids Filled with Asphalt (VFA) Based on Nominal mix size – inch			
		Nini	Ndes	Nmax	Nini	Ndes	Nmax	0.25	0.375	0.5	1
1	< 0.3	6	50	75	≤ 91.5	96.0	≤ 98.0	70 - 80	70 - 80	70 - 80	67 - 80
2	0.3 to < 3.0	7	75	115	≤ 90.5	96.0	≤ 98.0	65 - 78	65 - 78	65 - 78	65 - 78
3	≥ 3.0	8	100	160	≤ 90.0	96.0	≤ 98.0	65 – 77	73 - 76	65 - 75	65 - 75

**TABLE M.04.02– 5:
Superpave Minimum Binder Content by Mix Type and Level**

Mix Type	Level	Binder Content Minimum
S0.25	1	5.70
S0.25	2	5.60
S0.25	3	5.50
S0.375	1	5.70
S0.375	2	5.60
S0.375	3	5.50
S0.5	1	5.10
S0.5	2	5.00
S0.5	3	4.90
S1	1	4.60
S1	2	4.50
S1	3	4.40

M.04.03— Production Requirements:

1. Standard Quality Control Plan (QCP) for Production:

The QCP for production shall describe the organization and procedures which the Contractor shall use to administer quality control. The QCP shall include the procedures used to control the production process, to determine when immediate changes to the processes are needed, and to implement the required changes. The QCP must detail the inspection, sampling and testing protocols to be used, and the frequency for each.

Control Chart(s) shall be developed and maintained for critical aspect(s) of the production process as determined by the Contractor. The control chart(s) shall identify the material property, applicable upper and lower control limits, and be updated with current test data. As a minimum, the following quality characteristics shall be included in the control charts: percent passing #4 sieve, percent passing #200 sieve, binder content, air voids, Gmm and VMA. The control chart(s) shall be used as part of the quality control system to document variability of the bituminous concrete production process. The control chart(s) shall be submitted to the Engineer the first day of each month.

The QCP shall also include the name and qualifications of a Quality Control Manager. The Quality Control Manager shall be responsible for the administration of the QCP, including compliance with the plan and any plan modifications.

The Contractor shall submit complete production testing records to the Engineer within 24 hours in a manner acceptable to the Engineer.

The QCP shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QCP must also include a list of sampling & testing methods and frequencies used during production, and the names of all Quality Control personnel and their duties.

Approval of the QCP does not imply any warranty by the Engineer that adherence to the plan will result in production of bituminous concrete that complies with these specifications. The Contractor shall submit any changes to the QCP as work progresses.

2. Acceptance Requirements:

i. General:

Acceptance samples shall be obtained from the hauling vehicles and tested by the Contractor at the Plant.

The Contractor shall submit all acceptance tests results to the Engineer within 24 hours or prior to the next day's production. All acceptance test specimens and supporting documentation must be retained by the Contractor and may be disposed of with the approval of the Engineer. All quality control specimens shall be clearly labeled and separated from the acceptance specimens.

Contractor personnel performing acceptance sampling and testing must be present at the facility prior to, during, and until completion of production, and be certified as a NETTCP HMA Plant Technician or Interim HMA Plant Technician and be in good standing. Production of material for use on State projects must be suspended by the Contractor if such personnel are not present. Technicians found by the Engineer to be non-compliant with NETTCP policies and procedures or Department policies may be removed by the Engineer from participating in the acceptance testing process for Department projects until their actions can be reviewed.

Anytime during production that testing equipment becomes defective or inoperable, production can continue for a maximum of 1 hour. The Contractor shall obtain box sample(s) in accordance with Table M.04.03-2 to satisfy the daily acceptance testing requirement for the quantity shipped to the project. The box sample(s) shall be tested once the equipment issue has been resolved to the satisfaction of the Engineer. Production beyond 1 hour may be considered by the Engineer. Production will not be permitted beyond that day until the subject equipment issue has been resolved.

Verification testing will be performed by the Engineer in accordance with the Department's QA Program for Materials.

Should the Department be unable to verify the Contractor's acceptance test result(s) due to a failure of the Contractor to retain acceptance test specimens or supporting documentation, the Contractor shall review its quality control plan, determine the cause of the nonconformance and respond in writing within 24 hours to the Engineer describing the corrective action taken. In

addition, the Contractor must provide supporting documentation or test results to validate the subject acceptance test result(s). The Engineer may invalidate any adjustments for material corresponding to the subject acceptance test(s). Failure of the Contractor to adequately address quality control issues at a facility may result in suspension of production for Department projects at that facility.

ii. Curb Mix Acceptance Sampling and Testing Procedures:

Curb Mix shall be tested in accordance to Table M.04.03-1 by the Contractor at a frequency of one test per every 250 tons of cumulative production, regardless of the day of production.

TABLE M.04.03 – 1: Curb Mix Acceptance Test Procedures

Protocol	Reference	Description
1	AASHTO T 30(M)	Mechanical Analysis of Extracted Aggregate
2	AASHTO T 168	Sampling of Bituminous Concrete
3	AASHTO T 308	Binder content by Ignition Oven method (adjusted for aggregate correction factor)
4	AASHTO T 209(M) ⁽²⁾	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
5	AASHTO T 312 ⁽²⁾	⁽¹⁾ Superpave Gyrotory molds compacted to N _{des}
6	AASHTO T 329	Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method

Notes: ⁽¹⁾ One set equals two six-inch molds. Molds to be compacted to 50 gyrations

⁽²⁾ Once per year or when requested by the Engineer

a. Determination of Off-Test Status:

- i. Curb Mix is considered “off test” when the test results indicate that any single value for bitumen content or gradation are not within the tolerances shown in Table M.04.02-1. If the mix is “off test”, the Contractor must take immediate actions to correct the deficiency and a new acceptance sample shall be tested on the same day or the following day of production.
- ii. When multiple silos are located at one site, mixture supplied to one project is considered as coming from one source for the purpose of applying the “off test” status.
- iii. The Engineer may cease supply from the plant when test results from three consecutive samples are not within the JMF tolerances or the test results from two consecutive samples not within the control points indicated in Table M.04.02-1 regardless of production date.

b. JMF revisions

- i. If a test indicates that the bitumen content or gradation are outside the tolerances, the Contractor may make a single JMF revision as allowed by the Engineer prior to any additional testing. Consecutive test results outside the requirements of Table M.04.02-1 JMF tolerances may result in rejection of the mixture.
- ii. Any modification to the JMF shall not exceed 50% of the JMF tolerances indicated in Table M.04.02-1 for any given component of the mixture without approval of the Engineer. When such an adjustment is made to the bitumen, the corresponding production percentage of bitumen shall be revised accordingly.

iii. Superpave Mix Acceptance:

a. Sampling and Testing Procedures

Production Lot: The Lot will be defined as one of the following types:

- Non-PWL Production Lot for total estimated project quantities per mixture less than 3500 tons: All mixture placed during a single continuous paving operation.
- PWL Production Lot for total estimated project quantities per mixture of 3500 tons or more: Each 3500 tons of mixture produced within 30 calendar days.

Production Sub Lot:

- For Non-PWL: As defined in Table M.04.03 – 2
- For PWL: 500 tons (the last Sub Lot may be less than 500 tons)

Partial Production Lots (For PWL only): A Lot with less than 3500 tons due to:

- completion of the Course
- a Job Mix Formula revision due to changes in:
 - o cold feed percentages over 5%
 - o target combined gradation over 5%
 - o target binder over 0.15%
 - o any component specific gravity
- a Lot spanning 30 calendar days

The acceptance sample(s) location(s) shall be selected using stratified – random sampling in accordance with ASTM D 3665 based on:

- the total daily estimated tons of production for non-PWL lots, or
- the total lot size for PWL lots.

One acceptance sample shall be obtained and tested per Sub Lot. The Engineer may direct that additional acceptance samples be obtained. For non-PWL lots, one acceptance

test shall always be performed in the last sub-lot based on actual tons of material produced.

For Non-PWL lots, quantities of the same mixture per plant may be combined daily for multiple State projects to determine the number of sub lots.

The payment adjustment will be calculated as described in 4.06.

**TABLE M.04.03 – 2:
Superpave Acceptance Testing Frequency per Type/Level/Plant for Non-PWL lots**

Daily quantity produced in tons (lot)	Number of Sub Lots/Tests
0 to 150	0, Unless requested by the Engineer
151 to 500	1
501 to 1,000	2
1,001 to 2,000	3
2,001 or greater	1 per 500 tons or portions thereof

The following test procedures shall be used for acceptance:

TABLE M.04.03– 3: Superpave Acceptance Testing Procedures

Protocol	Procedure	Description
1	AASHTO T 168	Sampling of bituminous concrete
2	AASHTO R 47	Reducing samples to testing size
3	AASHTO T 308	Binder content by ignition oven method (adjusted for aggregate correction factor)
4	AASHTO T 30(M)	Gradation of extracted aggregate for bituminous concrete mixture
5	AASHTO T 312	⁽¹⁾ Superpave gyratory molds compacted to N _{des}
6	AASHTO T 166	⁽²⁾ Bulk specific gravity of bituminous concrete
7	AASHTO R 35	⁽²⁾ Air voids, VMA
8	AASHTO T 209(M)	Maximum specific gravity of bituminous concrete (average of two tests)
9	AASHTO T 329	Moisture content of bituminous concrete

Notes: ⁽¹⁾ One set equals two six-inch molds. Molds to be compacted to N_{max} for PPTs and to N_{des} for production testing. The first subplot of the year will be compacted to N_{max}

⁽²⁾ Average value of one set of six-inch molds.

If the average ignition oven corrected binder content differs by 0.3% or more from the average of the Plant ticket binder content in five (5) consecutive tests regardless of the production date (moving average), the Contractor shall immediately investigate, determine an assignable cause and correct the issue. When two consecutive moving average differences are 0.3% or more and no assignable cause has been established, the Engineer may require a new ignition oven aggregate correction factor to be performed or to adjust the current factor by the average of the differences between the corrected binder content and production Plant ticket for the last five (5) acceptance results.

The test specimen must be placed in an ignition oven for testing in accordance with AASHTO T 308 within thirty minutes of being obtained from the hauling vehicle and the test shall start immediately after.

The Contractor shall perform TSR testing within 30 days after the start of production for all design levels of HMA- and PMA- S0.5 plant-produced mixtures, in accordance with AASHTO T 283(M). The TSR test shall be performed at an AMRL certified laboratory by NETTCP certified technicians. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. The test results and specimens shall be submitted to the Engineer for review. Superpave mixtures that require anti-strip additives (either liquid or mineral) shall continue to meet all requirements specified herein for binder and bituminous concrete. The Contractor shall submit the name, manufacturer, percent used, technical datasheet and SDS for the anti-strip additive (if applicable) to the Engineer.

b. Determination of Off-Test Status:

- i. Superpave mixes shall be considered “*off test*” when any Control Point Sieve, binder content, VA, VMA, or Gmm value is outside of the limits specified in Table M.04.03-4 or the target binder content at the Plant is below the minimum binder content stated in Table M.04.02-5. Note that further testing of samples or portions of samples not initially tested for this purpose cannot be used to change the status.
- ii. Any time the bituminous concrete mixture is considered Off-test:
 1. The Contractor shall notify the Engineer when the Plant is “*off test*” for any mix design that is delivered to the project in any production day. When multiple silos are located at one site, mixture supplied to one project is considered as coming from one source for the purpose of applying the “*off test*” determination.
 2. The Contractor must take immediate actions to correct the deficiency, minimize “*off test*” production to the project, and obtain an additional Process Control (PC) test after any corrective action to verify production is in conformance to the specifications. A PC test will not be used for acceptance and is solely for the use of the Contractor in its quality control process.

c. Cessation of Supply for Superpave Mixtures in non-PWL lots:

A mixture shall not be used on Department’s projects when it is “off test” for:

- i. four (4) consecutive tests in any combination of VA, VMA or Gmm, regardless of date of production, or,
- ii. two (2) consecutive tests in the Control Point sieves in one production shift.

As a result of cessation of supply, the mix status will be changed to PPT.

d. JMF revisions:

JMF revisions are only permitted prior to or after a production shift. A JMF revision is effective from the time it was submitted and is not retroactive to the previous test(s).

JMF revisions shall be justified by a documented trend of test results.

Revisions to aggregate and RAP specific gravities are only permitted when testing is performed at an AMRL certified laboratory by NETTCP certified technicians.

A JMF revision is required when the Plant target RAP and/or bin percentage deviates by more than 5% and/or the Plant target binder content deviates by more than 0.15% from the active JMF.

TABLE M.04.03– 4: Superpave Mixture Production Requirements

Notes: (1) 300°F minimum after October 15. (2) JMF tolerances shall be defined as the limits for production compliance. (3) For all mixtures with WMA technology, changes to the minimum aggregate temperature will require Engineer’s approval. (4) For PMA and mixtures with WMA technology, the mix temperature shall meet manufacturer’s recommendations. In addition, for all mixtures with WMA technology, the maximum mix temperature shall not exceed 325°F.(5) 0.4 for PWL lots (6) 1.3 for PWL lots (7) 1.2 for PWL lots

Sieve	S0.25		S0.375		S0.5		S1		Tolerances
	CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		From JMF Targets (2)
	Min(%)	Max(%)	Min(%)	Max(%)	Min(%)	Max(%)	Min(%)	Max(%)	±Tol
1.5	-	-	-	-	-	-	100	-	
1.0	-	-	-	-	-	-	90	100	
3/4	-	-	-	-	100	-	-	90	
1/2	100	-	100	-	90	100	-	-	
3/8	97	100	90	100	-	90	-	-	
#4	75	90	-	75	-	-	-	-	
#8	32	67	32	67	28	58	19	45	
#16	-	-	-	-	-	-	-	-	
#200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0	
Pb	JMF value		JMF value		JMF value		JMF value		0.3 ⁽⁵⁾
VMA (%)	16.5		16.0		15.0		13.0		1.0 ⁽⁶⁾
VA (%)	4.0		4.0		4.0		4.0		1.0 ⁽⁷⁾
Gmm	JMF value		JMF value		JMF value		JMF value		0.030
Agg. Temp ⁽³⁾	280 – 350F		280 – 350F		280 – 350F		280 – 350F		
Mix Temp ⁽⁴⁾	265 – 325 F ⁽¹⁾		265 – 325 F ⁽¹⁾		265 – 325 F ⁽¹⁾		265 – 325 F ⁽¹⁾		
Prod. TSR	N/A		N/A		≥80%		N/A		
T-283 Stripping	N/A		N/A		Minimal as determined by the Engineer		N/A		

**TABLE M.04.03– 5:
Superpave Traffic Levels and Design Volumetric Properties**

Traffic Level	Design ESALs	Number of Gyration by Superpave Gyratory Compactor	
	(million)	Nini	Ndes
1	< 0.3	6	50
2	0.3 to < 3.0	7	75
3	≥3.0	8	100

**TABLE M.04.03-6:
Modifications to Standard AASHTO and ASTM Test Specifications and Procedures**

AASHTO Standard Method of Test	
Reference	Modification
T 30	Section 7.2 thru 7.4 Samples are not routinely washed for production testing
T 168	<p>Samples are taken at one point in the pile. Samples from a hauling vehicle are taken from only one point instead of three as specified.</p> <p>Selection of Samples: Sampling is equally important as the testing, and the sampler shall use every precaution to obtain samples that are truly representative of the bituminous mixture.</p> <p>Box Samples: In order to enhance the rate of processing samples taken in the field by construction or maintenance personnel the samples will be tested in the order received and data processed to be determine conformance to material specifications and to prioritize inspections by laboratory personnel.</p>
T 195	Section 4.3 only one truck load of mixture is sampled. Samples are taken from opposite sides of the load.
T 209	<p>Section 7.2 The average of two bowls is used proportionally in order to satisfy minimum mass requirements.</p> <p>8.3 Omit Pycnometer method.</p>
T 283	When foaming technology is used, the material used for the fabrication of the specimens shall be cooled to room temperature, and then reheated to the manufactures recommended compaction temperature prior to fabrication of the specimens.

AASHTO Standard Recommended Practices	
Reference	Modification
R 26	<p>All laboratory technician(s) responsible for testing PG-binders be certified or Interim Qualified by the New England Transportation Technician Certification Program (NETTCP) as a PG Asphalt Binder Lab Technician.</p> <p>All laboratories testing binders for the Department are required to be accredited by the AASHTO Materials Reference Laboratory (AMRL).</p> <p>Sources interested in being approved to supply PG-binders to the Department by use of an “in-line blending system,” must record properties of blended material, and additives used.</p> <p>Each source of supply of PG-binder must indicate that the binders contain no additives used to modify or enhance their performance properties. Binders that are manufactured using additives, modifiers, extenders etc., shall disclose the type of additive, percentage and any handling specifications/limitations required.</p> <p>All AASHTO M 320 references shall be replaced with AASHTO M 332.</p> <p>Once a month, one split sample and test results for each asphalt binder grade and each lot shall be submitted by the PG binder supplier to the Department’s Central Lab. Material remaining in a certified lot shall be re-certified no later than 30 days after initial certification. Each April and September, the PG binder supplier shall submit test results for two (2) BBR tests at two (2) different temperatures in accordance with AASHTO R 29.</p>

SECTION M.06 - METALS

Section M.06 is amended as follows:

M.06.01—Reinforcing Steel:

Delete the entire last paragraph in Subarticle 1 "Bar Reinforcement" that reads: "Prior to the incorporation... ..and type of bar reinforcement."

M.06.02—Structural Steel:

Revise Subarticle 2 "Anchor Bolts" as follows:

"(a) Anchor bolt assemblies shall meet the requirements of ASTM F1554, and the grade shall be as specified on the plans. All components of the bolt assembly shall be galvanized in accordance with ASTM F2329."

Replace Subarticle 3 "High Strength Bolts" with the following:

" **3. High-Strength Bolts:** High-strength bolts, including suitable nuts and hardened washers, shall meet the following requirements:

- (a) High-strength bolts shall meet the requirements of ASTM F3125 Grade A325 or ASTM F3125 Grade A490 as shown on the plans. High-strength bolts used with coated steel shall be mechanically galvanized, unless otherwise specified. High-strength bolts used with uncoated weathering grades of steel shall be Type 3.

Nuts for ASTM F3125 Grade A325 bolts shall meet the requirements of ASTM A563, Grades DH, DH3, C, C3 and D. Where galvanized high-strength bolts are used, the nuts shall be galvanized, heat-treated Grade DH. Where Type 3 high-strength bolts are used, the nuts shall be Grade C3 or DH3.

Nuts for ASTM F3125 Grade A490 bolts shall meet the requirements of ASTM A563, Grade DH. Where Type 3 high-strength bolts are used, the nuts shall be Grade DH3.

All galvanized nuts shall be lubricated with a lubricant containing a visible dye of any color that contrasts with the color of the galvanizing. Black bolts must be oily to the touch when delivered and installed.

Circular flat and square or rectangular beveled, hardened steel washers shall meet the requirements of ASTM F436. Unless otherwise specified, galvanized washers shall be furnished when galvanized high-strength bolts are specified, and washers with atmospheric corrosion resistance and weathering characteristics shall be furnished when

Type 3 high-strength bolts are specified.

Compressible-washer-type direct tension indicator washers, used in conjunction with high-strength bolts, shall meet the requirements of ASTM F959. Where galvanized high-strength bolts are used, the washers shall be galvanized in accordance with ASTM B695, Class 55. Where Type 3 high-strength bolts are used, the washers shall be galvanized in accordance with ASTM B695, Class 55 and coated with epoxy.

- (b) Identifying Marks:** ASTM F3125 Grade A325 for bolts and the specifications referenced therein for nuts require that bolts and nuts manufactured to the specification be identified by specific markings on the top of the bolt head and on one face of the nut. Markings may be raised or depressed at the manufacturer's option and shall be visible after coating if coating is required. Head markings must identify the grade by the symbol "A325," the manufacturer and the type, if Type 3. Nut markings must identify the grade, the manufacturer and if Type 3, the type. Markings on direct tension indicators must identify the manufacturer and Type "A325." Other washer markings must identify the manufacturer and if Type 3, the type.

ASTM F3125 Grade A490 for bolts and the specifications referenced therein for nuts require that bolts and nuts manufactured to the specifications be identified by specific markings on the top of the bolt head and on one face of the nut. Markings may be raised or depressed at the manufacturer's option and shall be visible after coating if coating is required. Head markings must identify the grade by the symbol "A490," the manufacturer and the type, if Type 3. Nut markings must identify the grade, the manufacturer and if Type 3, the type. Markings on direct tension indicators must identify the manufacturer and Type "A490." Other washer markings must identify the manufacturer and if Type 3, the type.

ASTM F3125 Grade A325 and ASTM F3125 Grade A490 bolt lengths up to 4 times the diameter which are fully threaded but which are not required to be fully threaded by the relevant ASME standard shall be marked with a "T" immediately after the grade designation, for example "A325T." Bolts with any other non-standard dimensions, including thread length, shall be marked with an "S" immediately after the grade designation, for example "A325S." All other markings, if used, such as a private label distributor's mark shall also be separate and distinct.

- (c) Dimensions:** Bolt and nut dimensions shall meet the requirements for Heavy Hexagon Structural Bolts and for Heavy Semi-Finished Hexagon Nuts given in ASME Standard B18.2.6.
- (d) Galvanized Bolts:** Galvanized bolts shall meet the requirements of ASTM F3125 Grade A325, Type 1. The bolts shall be hot-dip galvanized in accordance with ASTM F2329, to a thickness of 50 μm or mechanically galvanized in accordance with ASTM B695, Class 55. Bolts, nuts, and washers of any assembly shall be galvanized by the same process. The nuts shall be overtapped to the minimum amount required for the fastener assembly,

and shall be lubricated with a lubricant containing a visible dye so a visual check can be made for the lubricant at the time of field installation. Galvanized bolts shall be tension tested after galvanizing. ASTM F3125 Grade A490 bolts shall be uncoated or shall be coated in accordance with either ASTM F1136 Grade 3 or ASTM F2833 Grade 1.

- (e) **Test Requirements:** The maximum hardness of ASTM F3125 Grade A325 bolts shall be 34 HRC. The maximum hardness of ASTM F3125 Grade A490 bolts shall be 38 HRC. Plain, ungalvanized nuts shall have a minimum hardness of 89 HRB.

Proof load tests, in accordance with the requirements of ASTM F606 Method 1, shall be required for the bolts. Wedge tests of full-size bolts are required in accordance with Section 10.1 of ASTM F3125. Galvanized bolts shall be wedge tested after galvanizing. Proof load tests of ASTM A563 are required for nuts. Proof load tests for nuts used with galvanized bolts shall be performed after galvanizing, overtapping and lubricating.

Rotational-capacity tests are required and shall be performed on all plain or galvanized (after galvanizing) bolt, nut and washer assemblies by the manufacturer or distributor prior to shipping and by the Contractor at the Site.

The thickness of galvanizing on bolts, nuts and washers shall be measured. On bolts, it shall be measured on the wrench flats or on top of the bolt head, and on nuts it shall be measured on the wrench flats.

- (f) **Certified Test Reports and Materials Certificates:** The Contractor shall submit notarized copies of Certified Test Reports and Materials Certificates in accordance with Article 1.06.07 for fastener assemblies. In addition the Certified Test Reports and Materials Certificates shall include the following:

1. Mill test reports shall indicate the place where the material was melted and manufactured.
2. Test reports for proof load tests, wedge tests, and rotational-capacity tests shall indicate where the tests were performed, date of tests, location of where the components were manufactured and lot numbers.
3. The test report for galvanized components shall indicate the thickness of the galvanizing.

- (g) **Material Samples:** Prior to incorporation into the work, the Contractor shall submit samples of the bolt assemblies to the Engineer for testing in accordance with the latest edition of the "[Materials Testing Manual](#) (Chapter 8, Minimum Schedule for Acceptance Testing)." Samples shall be submitted for each diameter, length, material designation, grade, coating and manufacturer of bolt assembly."

M.06.03—Galvanizing:

Replace the entire subarticle with the following:

" **M.06.03—Galvanizing:** Unless otherwise specified on the plans or in the special provisions, the zinc coating on all iron and steel materials, other than wire, shall meet the requirements of ASTM A123, A153 or F2329, whichever shall apply.

When mechanical galvanizing is used it shall meet the requirements of ASTM B695 Class 55."

ON-THE-JOB TRAINING (OJT) WORKFORCE DEVELOPMENT PILOT:

Description

To provide construction industry related job opportunities to minorities, women and economically disadvantaged individuals; and to increase the likelihood of a diverse and inclusive workforce on Connecticut Department of Transportation (ConnDOT) projects.

All contractors (existing and newcomers) will be automatically placed in the Workforce Development Pilot. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level for new projects. Instead, these requirements will be applicable on an annual basis for each contractor performing work on ConnDOT projects.

The OJT Workforce Development Pilot will allow a contractor to train employees on Federal, State and privately funded projects located in Connecticut. However, contractors should give priority to training employees on ConnDOT Federal-Aid funded projects.

Funding

The Department will establish an OJT fund annually from which contractors may bill the Department directly for eligible trainee hours. The funds for payment of trainee hours on federal-aid projects will be allocated from the ½ of 1% provided for OJT funding, and will be based on hours trained, not to exceed a maximum of \$25,000.00 per year; per contractor.

Minorities and Women

Developing, training and upgrading of minorities, women and economically disadvantaged individuals toward journeyman level status is the primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority, women and economically disadvantaged individuals as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Coordinator, will assign training goals for a calendar year based on the contractor's past two year's activities and the contractor's anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time, the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from one (1) to six (6) per

contractor per calendar year. Each January, a summary of the trainees required and the OJT Workforce Development Pilot package will be sent to participating contractors. The number of trainees assigned to each contractor in the summary will increase proportionately not to exceed 6, as shown in the following table. This package will also be provided to contractors as they become newly eligible for the OJT Workforce Development Pilot throughout the remainder of the year. Projects awarded after September 30 will be included in the following year's Program.

The dollar thresholds for training assignments are as follows:

\$4.5 – 8 million=	1 trainee
\$ 9 – 15 million=	2 trainees
\$16 – 23 million=	3 trainees
\$24 – 30 million=	4 trainees
\$31 – 40 million=	5 trainees
\$41 – and above=	6 trainees

Training Classifications

Preference shall be given to providing training in the following skilled work classifications. However, the classifications established are not all-inclusive:

Equipment Operators	Electricians
Laborers	Painters
Carpenters	Iron / Reinforcing Steel Workers
Concrete Finishers	Mechanics
Pipe Layers	Welders

The Department has on file common training classifications and their respective training requirements; that may be used by the contractors. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and the number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

Where feasible, 25% percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

Records and Reports

The Contractor shall maintain enrollment in the program and submit all required reports documenting company compliance under these contract requirements. These documents and any other information shall be submitted to the OJT Program Coordinator as requested.

Upon the trainee's completion and graduation from the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

Trainee Interviews

In order to determine the continued effectiveness of the OJT Program in Connecticut, the department will periodically conduct personal interviews with current trainees and may survey recent graduates of the program. This enables the OJT Program Coordinator to modify and improve the program as necessary. Trainee interviews are generally conducted at the job site to ensure that the trainees' work and training is consistent with the approved training program.

Trainee Wages

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent	of the journeyman wage for the first half of the training period
75 percent	of the journeyman wage for the third quarter of the training period
90 percent	of the journeyman wage for the last quarter of the training period

In no case, will the trainee be paid less than the prevailing rate for general laborer as shown in the contract wage decision (must be approved by the Department of Labor).

Achieving or Failing to Meet Training Goals

The Contractor will be credited for each trainee currently enrolled or who becomes enrolled in the approved training program and providing they receive the required training under the specific training program. Trainees will be allowed to be transferred between projects if required by the Contractor's schedule and workload. The OJT Program Coordinator must be notified of transfers within five (5) days of the transfer or reassignments by e-mail (Phylisha.Coles@ct.gov).

Where a contractor does not or cannot achieve its annual training goal with female or minority trainees, they must produce adequate Good Faith Efforts documentation. Good Faith Efforts are those designed to achieve equal opportunity through positive, aggressive, and continuous result-oriented measures. 23 CFR § 230.409(g) (4). Contractors should request minorities and females from unions when minorities and females are under-represented in the contractor's workforce.

Whenever a contractor requests ConnDOT approval of someone other than a minority or female, the contractor must submit documented evidence of its Good Faith Efforts to fill that position with a minority or female. When a non-minority male is accepted, a contractor must continue to attempt to meet its remaining annual training goals with females and minorities.

Where a contractor has neither attained its goal nor submitted adequate Good Faith Efforts documentation, ConnDOT will issue a letter of non-compliance. Within thirty (30) days of receiving the letter of non-compliance, the contractor must submit a written Corrective Action Plan (CAP) outlining the steps that it will take to remedy the non-compliance. The CAP must be approved by ConnDOT. Failure to comply with the CAP may result in your firm being found non-responsive for future projects.

Measurement and Payment

Optional reimbursement will be made to the contractor for providing the required training under this special provision on ConnDOT Federal-Aid funded projects only.

Contractor will be reimbursed at \$0.80 for each hour of training given to an employee in accordance with an approved training or apprenticeship program. This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement.

Reimbursement for training is made annually or upon the trainees completion and not on a monthly basis. No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the Contractor.

Program reimbursements will be made directly to the prime contractor on an annual basis. To request reimbursement, prime contractors must complete the Voucher for OJT Workforce Development Pilot Hourly Reimbursement for each trainee in the OJT Program. This form is included in the OJT Workforce Development Pilot package and is available on the Department's web site at:

www.ct.gov/dot

The completed form must be submitted to the Office of Contract Compliance for approval. The form is due on the 15th day of January for each trainee currently enrolled and for hours worked on ConnDOT Federal-Aid funded projects only.

D.B.E. SUBCONTRACTORS AND MATERIAL SUPPLIERS OR MANUFACTURERS

January 2013

I. ABBREVIATIONS AND DEFINITIONS AS USED IN THIS SPECIAL PROVISION

A. *CTDOT* means the Connecticut Department of Transportation.

B. *USDOT* means the U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (“FHWA”), the Federal Transit Administration (“FTA”), and the Federal Aviation Administration (“FAA”).

C. *Broker* means a party acting as an agent for others in negotiating Contracts, Agreements, purchases, sales, etc., in return for a fee or commission.

D. *Contract, Agreement or Subcontract* means a legally binding relationship obligating a seller to furnish supplies or services (including but not limited to, construction and professional services) and the buyer to pay for them. For the purposes of this provision, a lease for equipment or products is also considered to be a Contract.

E. *Contractor* means a consultant, second party or any other entity under Contract to do business with CTDOT or, as the context may require, with another Contractor.

F. *Disadvantaged Business Enterprise (“DBE”)* means a for profit small business concern:

1. That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and
2. Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it; and
3. Certified by CTDOT under Title 49 of the Code of Federal Regulations, Part 26, (Title 49 CFR Part 23 of the Code of Federal Regulations for Participation of Disadvantaged Business Enterprise in Airport Concessions)

G. *USDOT-assisted Contract* means any Contract between CTDOT and a Contractor (at any tier) funded in whole or in part with USDOT financial assistance.

H. *Good Faith Efforts (“GFE”)* means all necessary and reasonable steps to achieve a DBE goal or other requirement which by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

I. *Small Business Concern* means, with respect to firms seeking to participate as DBEs in USDOT-assisted Contracts, a small business concern as defined pursuant to Section 3 of the Small Business Act and Small Business Administration (“SBA”) regulations implementing it (13 CFR Part 121) that also does not exceed the cap on average annual gross receipts in 49 CFR Part 26, Section 26.65(b).

J. *Socially and Economically Disadvantaged Individual* means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is:

1. Any individual who CTDOT finds, on a case-by-case basis, to be a socially and economically disadvantaged individual.
2. Any individuals in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:
 - “Black Americans”, which includes persons having origins in any of the Black racial groups of Africa;
 - “Hispanic Americans”, which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
 - “Native Americans”, which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians.
 - “Asian-Pacific Americans”, which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kiribati, Juvalu, Nauru, or Federated States of Micronesia;
 - “Subcontinent Asian Americans”, which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
 - Women;
 - Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

K. *Commercially Useful Function (“CUF”)* means the DBE is responsible for the execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved with its own forces and equipment. The DBE must be responsible for procuring, determining quantity, negotiating price, determining quality and paying for all materials (where applicable) associated with their work. The DBE must also perform at least 30% of the total cost of its contract with its own workforce.

II. ADMINISTRATIVE REQUIREMENTS

A. General Requirements

A DBE goal percentage equaling **Thirteen Percent (13%)** of the Contract value has been established for this Contract. This DBE goal percentage will be applied to the final Contract value to ultimately determine the required DBE goal. If additional work is required, DBE firms should be provided the appropriate opportunities to achieve the required DBE goal.

In order to receive credit toward the Contract DBE goal, the firms utilized as DBE subcontractors or suppliers must be certified as DBEs in the type of work to be counted for credit by CTDOT’s Office of Contract Compliance prior to the date of the execution of the subcontract. Neither CTDOT nor the State of Connecticut’s Unified Certification Program (UCP) makes any representation as to any DBE’s technical or financial ability to perform the work. Prime contractors are solely responsible for performing due diligence in hiring DBE subcontractors.

All DBEs shall perform a CUF for the work that is assigned to them. The Contractor shall monitor and ensure that the DBE is in compliance with this requirement. The Connecticut DBE UPC Directory of certified firms can

be found on the CTDOT website <http://www.ct.gov/dot>. The directory lists certified DBE firms with a description of services that they are certified to perform. Only work identified in this listing may be counted towards the project's DBE goal. A DBE firm may request to have services added at any time by contacting CTDOT's Office of Contract Compliance. No credit shall be counted for any DBE firm found not to be performing a CUF.

Once a Contract is awarded, all DBEs that were listed on the pre-award DBE commitment document must be utilized. The Contractor is obligated to provide the value and items of the work originally established in the pre-award documentation to the DBE firms listed in the pre-award documentation. Any modifications to the pre-award commitment must follow the procedure established in Section II-C.

The Contractor shall designate a liaison officer who will administer the Contractor's DBE program. Upon execution of this Contract, the name of the liaison officer shall be furnished in writing to CTDOT's unit administering the Contract, CTDOT's Office of Contract Compliance and CTDOT's Office of Construction ("OOC"). Contact information for the designated liaison officer shall be furnished no later than the scheduled date for the pre-construction meeting.

The Contractor shall submit a bi-monthly report to the appropriate CTDOT unit administering the Contract. This report shall indicate what work has been performed to date, with the dollars paid and percentage of DBE goal completed.

Verified payments made to DBEs shall be included in this bi-monthly report. A sample form is included on the CTDOT website.

In addition, the report shall include:

1. A projected time frame of when the remaining work is to be completed for each DBE.
2. A statement by the Contractor either confirming that the approved DBEs are on schedule to meet the Contract goal, or that the Contractor is actively pursuing a GFE.
3. If retainage is specified in the Contract specifications, then a statement of certification that the subcontractors' retainage is being released in accordance with 1.08.01 (Revised or supplemented).

Failure by the Contractor to provide the required reports may result in CTDOT withholding an amount equal to one percent (1%) of the monthly estimate until the required documentation is received.

The Contractor shall receive DBE credit when a DBE, or any combination of DBEs, perform work under the Contract in accordance with this specification.

Only work actually performed by and/or services provided by DBEs which are certified for such work and/or services, as verified by CTDOT, can be counted toward the DBE goal. Supplies and equipment a DBE purchases or leases from the Contractor or its affiliate cannot be counted toward the goal.

Monitoring of the CUF will occur by CTDOT throughout the life of the project. If it is unclear that the DBE is performing the work specified in its subcontract with the prime Contractor, further review may be required. If it is determined that the DBE is not performing a CUF, then the work performed by that DBE will not be counted towards the DBE goal percentage.

B. Subcontract Requirements

The Contractor shall submit to CTDOT's OOC all requests for subcontractor approvals on the standard CLA-12 forms provided by CTDOT. The dollar amount and items of work identified on the CLA-12 form must, at minimum, equal the dollar value submitted in the pre-award commitment. CLA-12 forms can be found at <http://www.ct.gov/dot/construction> under the "Subcontractor Approval" section. All DBE subcontractors must be identified on the CLA-12 form, regardless of whether they are being utilized to meet a Contract goal percentage. A copy of the legal Contract between the Contractor and the DBE subcontractor/supplier, a copy of the Title VI Contractor Assurances and a copy of the Required Contract Provision for Federal Aid Construction Contracts (Form FHWA-1273) (Federal Highway Administration projects only) must be submitted along with a request for subcontractor approval. These attachments cannot be substituted by reference.

If retainage is specified in the Contract specifications, then the subcontract agreement must contain a prompt payment mechanism that acts in accordance with Article 1.08.01 (Revised or supplemented).

If the Contract specifications do not contain a retainage clause, the Contractor shall not include a retainage clause in any subcontract agreement, and in this case, if a Contractor does include a retainage clause, it shall be deemed unenforceable.

In addition, the following documents are to be included with the CLA-12, if applicable:

- An explanation indicating who will purchase material.
- A statement explaining any method or arrangement for utilization of the Contractor's equipment.

The subcontract must show items of work to be performed, unit prices and, if a partial item, the work involved by all parties. If the subcontract items of work or unit prices are modified, the procedure established in Section II-C must be followed.

Should a DBE subcontractor further sublet items of work assigned to it, only lower tier subcontractors who are certified as a DBE firm will be counted toward the DBE goal. If the lower tier subcontractor is a non-DBE firm, the value of the work performed by that firm will not be counted as credit toward the DBE goal.

The use of joint checks between a DBE firm and the Contractor is acceptable, provided that written approval is received from the OOC prior to the issuance of any joint check. Should it become necessary to issue a joint check between the DBE firm and the Contractor to purchase materials, the DBE firm must be responsible for negotiating the cost, determining the quality and quantity, ordering the material and installing (where applicable), and administering the payment to the supplier. The Contractor should not make payment directly to suppliers.

Each subcontract the Contractor signs with a subcontractor must contain the following assurance:

"The subcontractor/supplier/manufacture shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor/subcontractor/supplier/manufacture to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate."

C. Modification to Pre-Award Commitment

Contractors may not terminate for convenience any DBE subcontractor or supplier that was listed on the pre-award DBE commitment without prior written approval of the OOC. This includes, but is not limited to, instances

in which a Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Prior to approval, the Contractor must demonstrate to the satisfaction of the OOC, that it has good cause, as found in 49CFR Part 26.53 (f)(3), for termination of the DBE firm.

Before transmitting its request for approval to terminate pre-award DBE firms to the OOC, the Contractor must give written notice to the DBE subcontractor and include a copy to the OOC of its notice to terminate and/or substitute, and the reason for the notice.

The Contractor must provide five (5) days for the affected DBE firm to respond. This affords the DBE firm the opportunity to advise the OOC and the Contractor of any reasons why it objects to the termination of its subcontract and why the OOC should not approve the Contractor's action.

Once the Contract is awarded, should there be any amendments or modifications of the approved pre-award DBE submission other than termination of a DBE firm, the Contractor shall follow the procedure below that best meets the criteria associated with the reason for modification:

1. If the change is due to a scope of work revision or non-routine quantity revision by CTDOT, the Contractor must notify CTDOT's OOC in writing or via electronic mail that their DBE participation on the project may be impacted as soon as they are aware of the change. In this case, a release of work from the DBE firm may not be required; however the Contractor must concurrently notify the DBE firm in writing, and copy the OOC for inclusion in the project DBE file. This does not relieve the Contractor of its obligation to meet the Contract specified DBE goal, or of any other responsibility found in this specification.
2. If the change is due to a factor other than a CTDOT directive, a request for approval in writing or via electronic mail of the modification from the OOC must be submitted, along with an explanation of the change(s), prior to the commencement of work. The Contractor must also obtain a letter of release from the originally named DBE indicating their concurrence with the change, and the reason(s) for their inability to perform the work. In the event a release cannot be obtained, the Contractor must document all efforts made to obtain it.
3. In the event a DBE firm that was listed in the pre-award documents is **unable** or **unwilling** to perform the work assigned, the Contractor shall:
 - Notify the OOC Division Chief immediately and make efforts to obtain a release of work from the firm.
 - Submit documentation that will provide a basis for the change to the OOC for review and approval prior to the implementation of the change.
 - Use the DBE Directory to identify and contact firms certified to perform the type of work that was assigned to the unable or unwilling DBE firm. The Contractor should also contact CTDOT's Office of Contract Compliance for assistance in locating additional DBE firms to the extent needed to meet the contract goal.

Should a DBE subcontractor be terminated or fail to complete work on the Contract for any reason, the Contractor must make a GFE to find another DBE subcontractor to substitute for the original DBE. The DBE replacement shall be given every opportunity to perform at least the same amount of work under the Contract as the original DBE subcontractor.

If the Contractor is unable to find a DBE replacement:

- The Contractor should identify other contracting opportunities and solicit DBE firms in an effort to meet the Contract DBE goal requirement, if necessary, and provide documentation to support a GFE. (Refer to GFE in Section III.)
- The Contractor must demonstrate that the originally named DBE, who is unable or unwilling to perform the work assigned, is in default of its subcontract, or identify other issues that affected the DBE firm's ability to perform the assigned work. **The Contractor's ability to negotiate a more advantageous agreement with another subcontractor is not a valid basis for change.**

III. GOOD FAITH EFFORTS

The DBE goal is **NOT** reduced or waived for projects where the Contractor receives a Pre-Award GFE determination from the Office of Contract Compliance prior to the award of the Contract. It remains the responsibility of the Contractor to make a continuing GFE to achieve the specified Contract DBE goal. The Contractor shall pursue every available opportunity to obtain additional DBE firms and document all efforts made in such attempts.

At the completion of all Contract work, the Contractor shall submit a final report to CTDOT's unit administering the Contract indicating the work done by and the dollars paid to DBEs. Only verified payments made to DBEs performing a CUF will be counted towards the Contract goal.

Goal attainment is based on the total Contract value, which includes all construction orders created during the Contract. If the Contractor does not achieve the specified Contract goal for DBE participation or has not provided the value of work to the DBE firms originally committed to in the pre-award submission, the Contractor shall submit documentation to CTDOT's unit administering the Contract detailing the GFE made during the performance of the Contract to satisfy the goal.

A GFE should consist of the following, where applicable (CTDOT reserves the right to request additional information):

1. A detailed statement of the efforts made to replace an unable or unwilling DBE firm, and a description of any additional subcontracting opportunities that were identified and offered to DBE firms in order to increase the likelihood of achieving the stated goal.
2. A detailed statement, including documentation of the efforts made to contact and solicit bids from certified DBEs, including the names, addresses, and telephone numbers of each DBE firm contacted; the date of contact and a description of the information provided to each DBE regarding the scope of services and anticipated time schedule of work items proposed to be subcontracted and the response from firms contacted.
3. Provide a detailed explanation for each DBE that submitted a subcontract proposal which the Contractor considered to be unacceptable stating the reason(s) for this conclusion.
4. Provide documentation, if any, to support contacts made with CTDOT requesting assistance in satisfying the specified Contract goal.

5. Provide documentation of all other efforts undertaken by the Contractor to meet the defined goal. Additional documentation of efforts made to obtain DBE firms may include but will not be limited to:
 - Negotiations held in good faith with interested DBE firms, not rejecting them without sound reasons.
 - Written notice provided to a reasonable number of specific DBE firms in sufficient time to allow effective participation.
 - Those portions of work that could be performed by readily available DBE firms.

In instances where the Contractor can adequately document or substantiate its GFE and compliance with other DBE Program requirements, the Contractor will have satisfied the DBE requirement and no administrative remedies will be imposed.

IV. PROJECT COMPLETION

At the completion of all Contract work, the Contractor shall:

1. Submit a final report to CTDOT's unit administering the Contract indicating the work done by, and the dollars paid to DBEs.
2. Submit verified payments made to all DBE subcontractors for the work that was completed.
3. Submit documentation detailing any changes to the DBE pre-award subcontractors that have not met the original DBE pre-award commitment, including copies of the Department's approvals of those changes.
4. Retain all records for a period of three (3) years following acceptance by CTDOT of the Contract and those records shall be available at reasonable times and places for inspection by authorized representatives of CTDOT and Federal agencies. If any litigation, claim, or audit is started before the expiration of the three (3) year period, the records shall be retained until all litigation, claims, or audit findings involving the records are resolved.

If the Contractor does not achieve the specified Contract goal for DBE participation in addition to meeting the dollar value committed to the DBE subcontractors identified in the pre-award commitment, the Contractor shall submit documentation to CTDOT's unit administering the Contract detailing the GFE made during the performance of the Contract to satisfy the goal.

V. SHORTFALLS

A. Failure to meet DBE goals

As specified in (II-A) above, attainment of the Contract DBE goal is based on the final Contract value. The Contractor is expected to achieve the amount of DBE participation originally committed to at the time of award; however, additional efforts must be made to provide opportunities to DBE firms in the event a Contract's original value is increased during the life of the Contract.

The Contractor is expected to utilize the DBE subcontractors originally committed in the DBE pre-award documentation for the work and dollar value that was originally assigned.

If a DBE is terminated or is unable or unwilling to complete its work on a Contract, the Contractor shall make a GFE to replace that DBE with another certified DBE to meet the Contract goal.

The Contractor shall immediately notify the OOC of the DBE's inability or unwillingness to perform, and provide reasonable documentation and make efforts to obtain a release of work from the firm.

If the Contractor is unable to find a DBE replacement, then the Contractor should identify other contracting opportunities and solicit DBE firms in an effort to meet the Contract DBE goal requirement, if necessary, and provide documentation to support a GFE.

When a DBE is unable or unwilling to perform, or is terminated for just cause, the Contractor shall make a GFE to find other DBE opportunities to increase DBE participation to the extent necessary to at least satisfy the Contract goal.

For any DBE pre-award subcontractor that has been released appropriately from the project, no remedy will be assessed, provided that the Contractor has met the criteria described in Section II-C.

B. Administrative Remedies for Non-Compliance:

In cases where the Contractor has failed to meet the Contract specified DBE goal or the DBE pre-award commitment, and where no GFE has been demonstrated, then one or more of the following administrative remedies will be applied:

1. A reduction in Contract payments to the Contractor as determined by CTDOT, not to exceed the shortfall amount of the **DBE goal**. The maximum shortfall will be calculated by multiplying the Contract DBE goal (adjusted by any applicable GFE) by the final Contract value, and subtracting any verified final payments made to DBE firms by the Contractor.
2. A reduction in Contract payments to the Contractor determined by CTDOT, not to exceed the shortfall amount of the **pre-award commitment**. The maximum shortfall will be calculated by subtracting any verified final payments made by the Contractor to each DBE subcontractor from the amount originally committed to that subcontractor in the pre-award commitment.
3. A reduction in Contract payments to the Contractor determined by CTDOT for any pre-award DBE subcontractor who has not obtained the dollar value of work identified in the DBE pre-award commitment and has not followed the requirements of Section II-C or for any DBE firm submitted for DBE credit that has not performed a CUF.
4. The Contractor being required to submit a written DBE Program Corrective Action Plan to CTDOT for review and approval, which is aimed at ensuring compliance on future projects.
5. The Contractor being required to attend a Non-Responsibility Meeting on the next contract where it is the apparent low bidder.
6. The Contractor being suspended from bidding on contracts for a period not to exceed six (6) months.

VI. CLASSIFICATIONS OTHER THAN SUBCONTRACTORS

A. Material Manufacturers

Credit for DBE manufacturers is 100% of the value of the manufactured product. A manufacturer is a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Contractor.

If the Contractor elects to utilize a DBE manufacturer to satisfy a portion of, or the entire specified DBE goal, the Contractor must provide the OOC with:

- Subcontractor Approval Form (CLA-12) indicating the firm designation,
- An executed "Affidavit for the Utilization of Material Suppliers or Manufacturers" (sample attached), and
- Substantiation of payments made to the supplier or manufacturer for materials used on the project.

B. Material Suppliers (Dealers)

Credit for DBE dealers/suppliers is limited to 60% of the value of the material to be supplied, provided such material is obtained from an approved DBE dealer/supplier.

In order for a firm to be considered a regular dealer, the firm must own, operate, or maintain a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. At least one of the following criteria must apply:

- To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question.
- A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating or maintaining a place of business if the person both owns and operates distribution equipment for the products. Any supplementing of the regular dealers' own distribution equipment shall be by long term lease agreement, and not on an ad hoc or contract to contract basis.
- Packers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers within the meaning of this paragraph.

If the Contractor elects to utilize a DBE supplier to satisfy a portion or the entire specified DBE goal, the Contractor must provide the OOC with:

- Subcontractor Approval Form (CLA-12) indicating the firm designation,
- An executed "Affidavit for the Utilization of Material Suppliers or Manufacturers" (sample attached), and
- Substantiation of payments made to the supplier or manufacturer for materials used on the project.

C. Brokering

- Brokering of work for DBE firms who have been listed by the Department as certified brokers is allowed. Credit for those firms shall be applied following the procedures in Section VI-D.
- Brokering of work by DBEs who have been approved to perform subcontract work with their own workforce and equipment is not allowed, and is a Contract violation.

- Firms involved in the brokering of work, whether they are DBEs and/or majority firms who engage in willful falsification, distortion or misrepresentation with respect to any facts related to the project shall be referred to the U.S. DOT, Office of the Inspector General for prosecution under Title 18, U.S. Code, Part I, Chapter 47, Section 1020.

D. Non-Manufacturing or Non-Supplier DBE Credit

Contractors may count towards their DBE goals the following expenditures with DBEs that are not manufacturers or suppliers:

- Reasonable fees or commissions charged for providing a bona fide service such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment materials or supplies necessary for the performance of the Contract, provided that the fee or commission is determined by the OOC to be reasonable and consistent with fees customarily allowed for similar services.
- The fees charged only for delivery of materials and supplies required on a job site when the hauler, trucker, or delivery service is a DBE, and not the manufacturer, or regular dealer of the materials and supplies, and provided that the fees are determined by the OOC to be reasonable and not excessive as compared with fees customarily allowed for similar services.
- The fees or commissions charged for providing bonds or insurance specifically required for the performance of the Contract, provided that the fees or commissions are determined by CTDOT to be reasonable and not excessive as compared with fees customarily allowed for similar services.

E. Trucking

While technically still considered a subcontractor, the rules for counting credit for DBE trucking firms are as follows:

- The DBE must own and operate at least one fully licensed, insured, and operational truck used on the Contract.
- The DBE receives credit for the total value of the transportation services it provides on the Contract using trucks it owns, insures and operates using drivers it employs.
- The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the Contract.
- The DBE may lease trucks from a non-DBE firm; however the DBE may only receive credit for any fees or commissions received for arranging transportation services provided by the non-DBE firms. Additionally, the DBE firm must demonstrate that they are in full control of the trucking operation for which they are seeking credit.

VII. Suspected DBE Fraud

In appropriate cases, CTDOT will bring to the attention of the USDOT any appearance of false, fraudulent, or dishonest conduct in connection with the DBE program, so that USDOT can take the steps, e.g. referral to the

Department of Justice for criminal prosecution, referral to USDOT Inspector General, action under suspension and debarment or Program Fraud and Civil Penalties rules provided in 49 CFR Part 31.

**CONNECTICUT DEPARTMENT OF TRANSPORTATION
(OFFICE OF CONSTRUCTION)
BUREAU OF ENGINEERING AND CONSTRUCTION**

This affidavit must be completed by the State Contractor's DBE notarized and attached to the contractor's request to utilize a DBE supplier or manufacturer as a credit towards its DBE contract requirements; failure to do so will result in not receiving credit towards the contract DBE requirement.

State Contract No.

Federal Aid Project No.

Description of Project

I, _____, acting in behalf of _____,
(Name of person signing Affidavit) (DBE person, firm, association or corporation)

of which I am the _____ certify and affirm that _____
(Title of Person) (DBE person, firm, association or corporation)

is a certified Connecticut Department of Transportation DBE. I further certify and affirm that I have read and understand 49 CFR, Sec. 26.55(e)(2), as the same may be revised.

I further certify and affirm that _____ will assume the actual and
(DBE person, firm, association or Corporation)

for the provision of the materials and/or supplies sought by _____.

If a manufacturer, I operate or maintain a factory or establishment that produces, on the premises, the materials, supplies, articles or equipment required under the contract an of the general character described by the specifications.

If a supplier, I perform a commercially useful function in the supply process. As a regular dealer, I, at a minimum, own and operate the distribution equipment for bulk items. Any supplementing of my distribution equipment shall be by long-term lease agreement, and not on an ad hoc or contract-by-contract basis.

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

(Name of Corporation or Firm)

(Signature & Title of Official making the Affidavit)

Subscribed and sworn to before me, this _____ day of _____ 20 _____.

Notary Public (Commissioner of the Superior Court)

My Commission Expires _____

CERTIFICATE OF CORPORATION

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

of the Corporation named in the foregoing instrument; that I have been duly authorized to affix the seal of the Corporation to such papers as require the seal; that _____, who signed said instrument on behalf of the Corporation, was then _____ of said corporation; that said instrument was duly signed for and in behalf of said Corporation by authority of its governing body and is within the scope of its corporation powers.

(Signature of Person Certifying)

(Date)

ITEM #0000312A – FURNISH AND INSTALL BIRD CONTROL SYSTEM

Description:

Work under this item shall consist of modifying the existing bird-netting system on structure for the purpose of preventing infestation. Also included shall be the provision of all materials, equipment, tools and labor necessary for the revised installation of the system at locations shown on the plans or as directed by the Engineer.

The modification of the bird-netting system shall accommodate inspection holes or other means of facilitating future access by bridge inspectors to structural components including, but not limited to, bearings, floor beams, and decking above the girder/floor beams.

Materials:

- A. Bird netting for repair/modification/replacement shall be 10/4, knotted multi twine, U.V. resistant polyethylene material in a matte black finish. Netting twine shall be a maximum 0.018" in diameter and have a knotted square strength of at least 33 lbs., with a maximum 7/8" square mesh size.
- B. Wire mesh shall be a Type 304 stainless steel with a ¼" mesh size, with a PVC coating in a matte black finish. The wire thickness shall be 18 gauge in diameter.
- C. Tensioned Wire: Tensioned wire shall be a stainless steel wire conforming to the requirements of ASTM A580, Type 304, and shall have a minimum diameter of 1/16".
- D. Clips: Clips used for fastening the netting to the tensioned wire (both removable and non-removable) shall be stainless steel, Type 304.
- E. Clamps: Clamps shall be malleable iron.
- F. Steel Plate: Steel plates shall conform to ASTM A709, 50 ksi.
- G. Threaded Stud: Welded threaded studs to existing stiffener plates shall conform to ASTM F593, Group 2.
- H. Wing nuts: Wing nuts for ¾" diameter threaded studs shall be stainless steel conforming to ASTM F594.

All hardware and materials shall be in accordance with the manufacturer's recommendations or approved equal.

Construction Methods:

The Contractor shall submit shop drawings for review and approval in accordance with Article 1.05.02.

Threaded welded studs shall be attached to existing beam stiffener plates to accommodate secured modified netting between the beams, as shown on the plans.

The Contractor shall provide protection and maintain conditions in a manner acceptable to the owner which ensures protection of concrete, masonry from damage, discoloration or deterioration during modification and installation of the bird-netting system.

The Contractor shall protect work from damage due to work performed under this contract. The Contractor shall, at the end of each work day, remove all rubbish and discarded materials from the site. The Contractor shall guarantee workmanship, materials and effectiveness of installation for a period of not less than five (5) years from completion of the contract.

Method of Measurement:

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

Basis of Payment:

Work shall be paid for at the contract lump sum price for "Furnish and Install Bird Control System", which price shall include all materials, connection plates, welded studs, tools, equipment, and labor necessary to complete the work as identified on the plans and as noted herein.

<u>Pay Item</u>	<u>Pay Unit</u>
Furnish and Install Bird Control System	L.S.

ITEM #0100250A – LOCK MACHINERY

Description:

The work for Lock Machinery consists of removing the existing lock bar, front and rear guide bushings and installing new lock bars and bushings. Remove and install new actuator hatch with new gasket and screws. This work is to be performed on the two span lock assemblies on the bridge and shall be coordinated with the bridge roadway closure schedule. The lock machinery work shall be scheduled after the live load bearing work (ITEM 0603651A) is aligned and complete.

The Buy America requirements in Article 1.06.01 shall apply.

During installation, receiver shoes must be adjusted with the span lock to obtain the specified clearance and surface contact between the shoes and lock bar under live load. Work will require testing the span locks to measure clearances and alignment between the shoes and bar, ensure the span locks operate without excessive resistance, and each bar mates into the receiver shoes.

Contractor is to field verify all indicated measurement herein at the bridge site.

General Requirements:

(1) Submittals

- (a) Manufacturer's data and/or shop drawings shall be submitted for all manufactured and purchased items of machinery in accordance with Article 1.05.02.
 - 1. Shop drawings shall show all parts completely detailed and dimensioned. Reproduction of the Plans shall not be used as foundation sheets for assembly or erection drawings.
 - 2. The Contractor shall prepare and submit shop drawings to the Department for acceptance in accordance with Subarticle 1.05.02-3 prior to fabricating the material.
 - 3. Shop drawings shall include, but not be limited to, field measurements, installation plans, material lists and material designations. The weight of the detailed elements shall be included on the shop drawings.
 - 4. Materials and material specifications shall be stated for each part. Where standard specifications are used, the applicable designation of such material specifications shall be given.
 - 5. Submit catalog cuts of new components.
- (b) Work Procedure: Submit a detailed list of the work procedure to be followed.
- (c) Submit certified material test reports including all chemical and mechanical properties for each material that is part of the Work.
- (d) Submit a report of all measurements after field adjusting and testing.

(2) Delivery and Storage

- (a) Machinery parts shall be cleaned of dirt, chips, grit, and all other injurious materials prior to shipping and, finished metal surfaces and unpainted metal surfaces that would be damaged by corrosion shall be coated as soon as practicable after finishing with a rust-inhibiting preservative as defined herein, this coating shall be removed from all surfaces prior to lubrication of machinery.
- (b) Any interface between stainless steel or aluminum and steel, the steel shall be coated with primer prior to assembly.
- (c) Machinery parts shall be completely protected from weather, dirt, and all other injurious conditions during manufacture, shipment, and storage.
- (d) Every precaution shall be taken to ensure that the bearing surfaces are not damaged and that all parts arrive at their destination in satisfactory condition.
- (e) Assembled units shall be mounted on skids or otherwise crated for protection during handling and shipment.
- (f) Spare parts as defined in the Plans shall be protected for shipment and prolonged storage by coating, wrapping, and boxing. All spare parts shall be durably tagged or marked with a clear identification showing the designation used on the approved shop drawing. Boxes for spare parts shall be clearly marked on the outside to show their contents.

(3) Guarantees and Warranties

- (a) Manufacturer's warranties or guarantees on equipment, materials or products purchased for use on the Contract which are consistent with those provided as customary trade practice, shall be obtained by the Contractor and, upon acceptance of the contract, the Contractor shall assign to the owner, all manufacturer's warranties or guarantees on all such equipment, material or products furnished or installed.
- (b) The Contractor shall warrant the satisfactory in-service operation of the mechanical equipment, material, products, and related components. This warranty shall extend for a period of one year following the date of final acceptance of the Project.

(4) Quality Assurance

- (a) Products used in the work shall be produced by manufacturers regularly engaged in the manufacture of the specified products.
- (b) For the fabrication, installation, and testing of work required by the machinery items, the Contractor shall use adequate numbers of skilled, trained, and experienced mechanics and millwrights who are thoroughly familiar with the requirements and methods specified for the proper execution of the specified work. The Contractor shall provide personnel and supervisory personnel with a minimum of two movable bridge jobs as previous experience in the installation of bridge machinery. The installation of the machinery shall be directly supervised by a representative of the machinery manufacturer and supplier having at least ten years of prior similar experience.

- (c) The Contractor shall provide all reasonable facilities, necessary tools and instruments required for the proper performance of the personnel engaged in the execution of the specified work.

(5) Codes and Standards

- (a) Work shall comply with, but not be limited to, all applicable requirements of the following codes and standards and their abbreviations used in this Specification:
 1. American Association of State Highway and Transportation Officials (AASHTO)
 2. American Iron and Steel Institute (AISI)
 3. American National Standards Institute (ANSI)
 4. American Society of Mechanical Engineers (ASME)
 5. American Society for Testing and Materials (ASTM)
 6. American Welding Society (AWS)
 7. National Lubricating Grease Institute (NLGI)
 8. Society of Automotive Engineers (SAE)
 9. Steel Structures Painting Council (SSPC)
 10. United States Military Specifications (MIL)
- (b) The work shall meet the requirements of all other codes and standards as specified elsewhere in these Specifications. Where codes and standards are mentioned for any pay item, it is intended to call attention to them; it is not intended that any other codes and standards shall be assumed to be omitted if not mentioned.

(6) Measurements and Verification

Dimensions indicated on the Contract Drawings are nominal and are intended for guidance only. Shop drawings are to be based on dimensions from the "As-Built" shop drawings referenced in the Plans. Field verify dimensions that interface with existing structure or components prior to submitting shop drawings.

(7) Substitutions

- (a) The terms "approved equal", "of equal quality" and "or equal" which may appear on the Contract Drawings and in these Specifications are intended to allow the Contractor to submit for review other manufacturers and model numbers of products of equal quality and rating for those specified.
- (b) Prior to the Contractor's ordering of any substitute product, the Department's acceptance of the equivalence of the substitute product shall be obtained in writing. The acceptance of the substitute products is at the sole discretion of the Department who will establish the basis for equivalence and will review the quality of the materials and products described in detail on the submitted shop drawings and product data.

- (c) Acceptance by the Department of any substitute products submitted by the Contractor shall not relieve the Contractor of responsibility for the proper operation, performance, or functioning of that product.
- (d) Where a product is specified by a manufacturer's name and catalog or part number in this Specification or on the Contract Drawings, it is so specified to establish quality, configuration, and arrangement of parts. An equivalent product made by another manufacturer may be submitted for review for the specified product subject to the acceptance of the Department; however, all necessary changes required by the substitution in related machinery, structural, architectural and electrical parts, shall be made by the Contractor at no additional cost.

(8) Inspection:

- (a) The Contractor shall give no less than ten (10) working days' notice to the Department of the beginning of work at foundries, forge, and machine shops so that inspection may be provided. No materials shall be cast, forged, or machined before the Department has been notified where the orders have been placed.
- (b) The Contractor shall furnish all facilities for the inspection of material and workmanship in the foundries, forge, and machine shops, and the Inspector designated by the Department shall be allowed free access to necessary parts of the premises. Work done while the Inspector has been refused access or presented in a manner that prevents adequate inspection will automatically be rejected.
- (c) The Inspector will have the authority to reject materials or workmanship which does not fulfill the requirements of these Specifications.
- (d) Inspection at the foundries, forge, and machine shops is intended as a means of facilitating the work and avoiding errors. It is expressly understood that inspection will not relieve the Contractor from any responsibility regarding material or workmanship and the necessity for replacing defective materials or workmanship which are delivered to the job site.
- (e) The Contractor shall furnish the Department with a copy of all orders covering work performed by subcontractors or suppliers.

(9) Defective Materials and Workmanship:

- (a) The acceptance of any material or finished parts by the Department shall not prohibit their subsequent rejection if found defective. Rejected material and workmanship shall be replaced or made acceptable by the Contractor at no additional cost.
- (b) All machinery rejected during inspection and testing shall be removed from the work site and replaced without additional cost.
- (c) Delays resulting from the rejection of material, equipment or work shall not be the basis of any claim.
- (d) All defects found during the warrantee/guarantee period resulting from faulty material, components, workmanship, or installation shall be corrected by the Contractor without cost.

The Department reserves the right to make necessary corrections with its own forces and charge the resulting costs to the Contractor.

(10) Work Procedures

- (a) All labor, materials, tools, equipment, services, testing, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this project.
- (b) Prior to beginning work, the Contractor shall review conditions at the site for verifying measurements, assessing existing conditions, and safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personal protection, work procedures, movable bridge operation, emergency evacuation procedures and use of equipment including procedures unique to this project.
- (c) Shut down and lockout/tagout operating machinery electrical power while working on equipment.
- (d) Only work on one component at a time. Whenever the contractor is not at the bridge site the span is to be operational unless work is done during an approved navigation or roadway closure. Whenever disassembling or opening bearings use temporary supports to hold shafts in place.
- (e) Submit a schedule of all work that requires interruption to movable span operation and restrictions to either roadway or channel navigation for review and acceptance. Provide work activities for each day and the duration of the restriction.

Materials:

(1) Front Guide Bushing

- (a) Furnish two (2) bronze front guide bushings as shown on the Plans. Material for bushings to meet ASTM B22 tin bronze alloy C86300. Hardness of bronze to be controlled by chemical content of tin within the specified range of the alloy. Submit certified material test report which includes hardness test.
- (b) Wearing surfaces to have a machined finish of 32 micro-inch. Surfaces in fixed contact to have a finish of 125 micro-inch unless otherwise noted.
- (c) All grease lubricated bronze bushings shall have grease grooves cut in a pattern as indicated in the Plans. All grease grooves shall be machine cut and smooth. The corners of all grooves shall be rounded to a minimum 1/8-inch radius, unless otherwise shown on the Plans.

(2) Lock Bar Assembly

- (a) The lock bar assembly consists of a new lock bar including key and retaining screws, rear guide bushing, clevis pin, and stem set screw. Key retaining screw and set screw to be AISI type 316 stainless-steel.

(a) Inspection Cover

1. New Gasket, Oil Resistant, Aramid/ Buna-N Blue, 1/16" Thick
 - a. Outside Dimensions: to be field verified
 - b. Quantity: 2
2. New stainless steel AISI type 316 hex head cap screws matched to same size and length as existing screws in cover.
 - a. Quantity: 16

(b) Lock Bar

1. All forgings shall be reduced to size from a single bloom or ingot until the cross-sectional grain is homogeneous. The blooms or ingots shall have a cross-sectional area at least three times that required after finishing. No forging shall be done at less than a red heat.
2. Unless otherwise indicated, perform for each forging:
 - a. Magnetic Particle exams in accordance with ASTM A275 and ASTM E709 performed by fabricator after finish machining.
 - b. Ultrasonic exams in accordance with ASTM A388 performed by foundry.
3. Forgings acceptance based on non-destructive test free of indication of discontinuities unless otherwise noted or acceptance criteria of the forging material standard.
4. Carbon Steel and Alloy Steel Forgings shall meet the requirements of AASHTO Specification M102 (ASTM A668).
5. No tack welding on forged materials permitted for lugs to aid with handling materials.

Supplemental Materials:

(1) Fasteners

- (a) All finished shanks of turned fasteners shall be 1/16 inch larger in diameter than the diameter of the thread, which shall determine the head and nut dimensions. The shanks of all turned fasteners shall have Class LC3 fit in the finished holes in accordance with ANSI Standard B18.2. The material used for machining turned shank fasteners shall meet the requirements of ASTM A449, Type 1. Turned fasteners shall be fully detailed on shop drawings.
- (b) Socket flat countersunk head cap screws shall conform to ASTM F879 (Stainless Steel) for diameters less than 7/8" and ASTM F835 (Alloy Steel) for diameters equal or greater than 7/8".
- (c) The dimensions of socket-head cap screws, socket flathead cap screws and socket-set screws shall conform to ANSI Standard B18.3. The screws shall be made of heat-treated alloy steel, cadmium-plated and furnished with a self-locking nylon pellet embedded in the threaded section. Unless otherwise called for on the drawings or specified herein, set screws shall be of the headless safety type, shall have threads of coarse thread series and shall have cup

points. Set screws shall neither be used to transmit torsion nor as the fastening or stop for any equipment that contributes to the stability or operation of the bridge.

- (d) All elements connected by bolts shall be drilled or reamed assembled to assure accurate alignment of the holes in each element and accurate clearance over the entire shank length of the bolt.
- (e) High-strength bolts shall be installed using nuts meeting the requirements of ASTM A563, and hardened plain washer meeting ASTM F436 under the nut.
- (f) Split lock washers shall conform to the SAE regular dimensions. The material shall meet the SAE tests for temper and toughness.
- (g) All cotters shall conform to the SAE standard dimensions and shall be made of half-round stainless-steel wire, ASTM A276, Type 316.
- (h) All fasteners shall be of United States manufacture and shall be clearly marked with the manufacturer's designation.

(2) Grease Fittings

Large fitting shall be equal to Alemite part number 1823-1 with associated adapters. Pressure fittings shall be rated at a minimum of 10,000 psi. Fittings shall contain a steel check valve that will receive grease and close against backpressure.

(3) Shims

- (a) New shim packs shall be neatly trimmed to the dimensions of the assembled parts and drilled for all bolts that pass through the shims. In general, sufficient thicknesses shall be furnished to secure 0.002-inch variations of the shim allowance plus one shim equal to the full allowance. Provide holes 1/16" larger in diameter than the connecting fastener shank diameter.
- (b) Shim material shall be ASTM A240 type 316.
- (c) Shims shall provide full bearing between machinery components and structural supports.
- (d) Shims shall be shown and fully dimensioned as details on the shop drawings. Shims with open side or U-shaped holes for bolts will not be permitted. No shims shall have less than two holes for bolts.
- (e) The use of peel-able laminated shims with solder or resin bonding will be permitted. Plastic or other non-metallic shims will not be permitted.

(4) Coatings (Machinery Components)

- (a) The paint coating system shall be a 3-coat or 2-coat system consisting of one coat of aluminum epoxy mastic primer and one or two coats of aliphatic acrylic polyurethane.
 1. 3-coat system to be used on machinery and structural steel areas greater than 36 square inches which are cleaned to bare metal.

2. Use 2-coat system over small areas of bare metal and existing paint determined to be in good condition by the Department.
 3. Use one of the paint manufacturers listed on the NEPCOAT Qualified Products List A or B and accepted by the Department.
 4. Machinery parts paint color to meet either federal safety orange for parts that rotate or federal safety green for stationary parts.
 5. Structural steel parts to match paint color to existing structural steel color blue Federal Standard 595.
- (b) The threads of all mounting bolts shall be coated with anti-seize compound before assembly of the nuts to prevent corrosion or galling and to facilitate future removal if necessary.
- (c) For general sealing against water intrusion use Permatex Ultra-Blue RTV sealant for oily surfaces. For sealing pipe threads use Permatex Seal + Lock Thread Compound during assembly. For sealing inspection covers use Permatex Ultra Rubber Gasket Sealant and Dressing or approved equal.
- (d) For screw in tapped holes use permanent assembly thread locker coating on threads. Accepted products but not limited to:
1. Permatex Threadlocker Blue
 2. Loctite Threadlocker Blue 242
- (e) Rust inhibiting coatings shall be used for the temporary protection of machined surfaces. Rust inhibitor shall be wax-type petroleum based cosmoline meeting MIL-C-11796C Class C for use on machined metal surfaces.

Construction Methods:

(1) Replace Lock bar and Bushings

- (a) Remove boot cover, existing lock bar, rear guide bushing in the actuator housing and front guide bushing. Grease fittings into bushings need to be removed and salvaged prior to removal.
- (b) Purge old grease using new grease pumped into fill port until new grease flows out purge port on opposite side of housing. Purge lock bar stem until new grease is visible after removing inspection cover. Use Exxon Beacon P290 or approved equal. Provide 35 pounds of new grease.
- (c) Install new rear and front guide bushings, and new lock bar assembly with new clevis pin. Install new boot cover with the zipper on the bottom.
- (d) Ensure that the mating surfaces between existing receiver socket shoes, shims and existing guide casting are cleaned and deburred in the field.

(2) Lubrication

- (a) Lubricate all sliding surfaces during assembly.

- (b) Reconnect existing lubrication piping and fittings and lubricate bushings until fresh lubricant is purged at the lockbar / guide interface.

(3) Cleaning and Painting

- (a) New and refurbished machinery external surfaces shall be cleaned with final surface preparation, prior to painting, done by solvent hand tools, or power tool cleaning to meet the requirements of SSPC- SP 1, 2, or 3 with the following exceptions:
 - 1. The following excepted surfaces and equipment shall be cleaned with solvent to meet the requirements of SSPC-SP 1. Generally, these surfaces are not painted, however remove excess grease for painting non-wearing surfaces of these components.
 - a. Seals and gaskets
 - b. Limit switches
 - c. Bronze, galvanized, and stainless-steel parts
 - d. Any machinery surface in sliding contact during operation
- (b) After proper surface preparation, machinery surfaces shall be coated with a 3-coat system applied as per the manufacture's temperature and humidity requirements for application. Machined surfaces for fit-up with other components to have one primer coat.
- (c) Acceptable coatings are given under Supplemental Materials.
- (d) The Contractor shall take special care to avoid painting of machinery surfaces which are in normal sliding contact. All nameplates, legend plates, and escutcheons mounted on machinery shall be masked for protection from paint. Lubrication fittings shall be kept clog-free.
- (e) Paint surfaces of lock bar that do not engage within the guides or receiver socket.

(4) Testing

- (a) Testing is to be done without any live load on the span and is for minimizing strain on the lock motors. Test cycle each span lock assembly three (3) times while recording the actuator motor current prior to start of work and after completion of the work. The motor current draw prior to work will serve as the base-line values to be used to evaluate span lock alignment. The motor current draw shall not exceed 75% of the full motor's rated full load amperes. After the work the clearances between the shoes and lock bars are to be measured and recorded, and shall meet the required clearance fit defined in the Plans.
- (b) All span lock grease fittings and surfaces to be greased prior to testing as necessary to maintain a film of grease at all sliding surfaces.

(5) Waste Disposal

Unless otherwise specified all refuse, materials and debris resulting from execution of this item shall become the responsibility of the Contractor and removed from the premises. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.

Method of Measurement:

No direct measurement shall be made for the work, as it is paid on a lump sum basis.

Basis of Payment:

- (c) The work will be paid for at the contract lump sum price for “Lock Machinery”, which shall include all materials, equipment, and labor necessary to complete the work as identified on the plans and as noted herein.
- (d) This work shall not be compensated until the Department determines that the work has been tested and functions to the satisfaction of the Department.
- (e) Final payment will not be made until all the project closeout data submittals have been completed. Once the completed package has been received in its entirety, the Department will make the final payment to the Contractor.

Pay Item	Pay Unit
Lock Machinery	L.S.

ITEM #0100427A – WATER RESCUE OPERATIONS

Description: The Contractor shall furnish, maintain and operate multiple water rescue operation boats for Contract work over or adjacent to water. The boat shall patrol in the vicinity of each above-water work location and be available for water rescue operations. These water safety measures will be required to protect all Contractor and Department staff. The Contractor shall also obtain all necessary permits and licenses for the boat and its operators.

Construction Methods: Work under this item shall be performed in accordance with OSHA Article 29 CFR 1926.106 and the following requirements:

1. Boats shall be a minimum of twenty (20) feet in length with a stable, flat-bottom and shall be designed specifically for emergency life-rescuing operation.
2. Boats shall be equipped with oars and a motor with power within the minimum and maximum horsepower requirements indicated by the manufacturer of the boats provided.
3. Each boat shall be equipped with required safety equipment: life vests, protective clothing, life line, anchor, emergency first aid kit, oxygen equipment and backboard.
4. A communication system, such as a walkie-talkie, shall be used to inform the boat operators of an emergency and to inform the operators where the boat is needed. The operators and at least one worker at each work location over water shall be equipped with a communication device.
5. The operators must possess the following current certifications issued by the American Red Cross or equivalent certifications approved by the Engineer:
 - a. Adult First Aid including CPR training
 - b. Life Guard Training or Water Rescue Operations
6. Boats shall remain in the water when workers are above water and must be capable of being quickly launched to respond to an emergency within three (3) to four (4) minutes.
7. There must be at least two (2) rescue operators available on-board each boat when work is being performed over or adjacent to water.
8. Each boat shall be operable and available at all times when work is being performed over or adjacent to water. In the event of a breakdown, above-water work must be discontinued until a boat is repaired or a replacement boat is on Site and in the water.

9. The number of boats required must be determined based on the following:
- a. The number of work locations where there is a danger of falling into water
 - b. The distance to each of those locations
 - c. Water temperature, currents, dams, rapids and other hazards
 - d. Appropriate response times for rescue

Method of Measurement: Water Rescue Operations, being paid for on a lump sum basis, will not be measured for payment. The Contractor shall submit a proposed schedule of values to the Engineer for review and approval.

Basis of Payment: This work will be paid for at the Contract lump sum price for “Water Rescue Operations,” which price shall include all labor, equipment, materials, maintenance, fuel, repairs, storage and services incidental thereto.

Pay Item	Pay Unit
Water Rescue Operations	l.s.

ITEM #0101143A – HANDLING AND DISPOSAL OF REGULATED ITEMS

Description:

Work under this item shall include the management (handling and disposal) of regulated items and all associated work by persons who are employed by a CTDEEP permitted Spill Contractor and trained/certified in accordance with OSHA Hazard Communication regulations. Regulated items include hazardous and other materials and wastes, the disposal of which is restricted by Federal and/or State laws and regulations, and which may be a component of equipment or other items located on-site. Regulated items include those listed herein, or additional similar items identified on site by the Engineer. Work under this item does not include asbestos containing materials, lead paint, contaminated or hazardous soils.

Activities shall be performed in accordance with, but not limited to, the current revision of the USEPA & CTDEEP Hazardous Waste Regulations (40 CFR 260-282, 22a-209 and 22a-449(c)), USEPA PCB Regulations (40 CFR 761), USEPA Protection of Stratospheric Ozone (40 CFR 82), OSHA Hazard Communication (29 CFR 1910.1200), OSHA Hazardous Waste & Emergency Response Regulations (29 CFR 1910.120), USDOT Hazardous Materials Regulation (49 CFR 171-180), OSHA, RCRA, CERCLA, CAA, TSCA, and all other laws and regulations.

The work activities include the removal, handling, packing, labeling, transport, manifesting, and recycling or disposal of various regulated items at the Project site prior to beginning planned demolition activities.

The Contractor is solely responsible for verifying actual locations and quantities of the items with hazardous/regulated material/waste constituents and for their proper handling and disposal. The recycling or proper disposal, as appropriate, of all regulated items shall be completed prior to the initiation of any demolition activities.

Materials:

All materials shall be suitable for the management of regulated items and shall meet all applicable federal, state and local regulations. Such materials include, but are not limited to, proper containers, packing materials, labels, signs, shipping papers, personnel protective equipment (PPE) and spill kits.

Construction Methods:

(1) Allowable Disposal/Recycling Facilities

Disposal facilities for RCRA-hazardous, TSCA-hazardous, Connecticut Regulated, and Universal wastes shall be chosen from among those listed below. No other facility shall be used for these types of wastes without the written approval of the Engineer.

Advanced Disposal Services
Greentree Landfill
635 Toby Road
Kersey, PA 15846
Phone: (814) 265-1744 Fax: (814) 265-8745
MSW, C&D, asbestos, PCB remediation waste <50 ppm, petroleum contaminated soils, nonhazardous solid wastes

Advanced Disposal
(managed by Interstate Waste Services)
7095 Glades Pike
Summerset, PA 15501
Phone: (814) 444-0112 Fax: (814) 444-0127
MSW, C&D debris, residual waste, sewer sludge, incinerator ash, asbestos

Allied Waste Niagara Falls Landfill, LLC
5600 Niagara Falls Blvd.
Niagara, NY 14304
Phone: (716) 285-3344 Fax: (716) 285-3398
Non-hazardous waste, industrial solid waste, municipal sewage treatment sludge, contaminated soil & debris, asbestos waste, C&D debris, industrial process sludge

American Lamp Recycling, LLC
26 Industrial Way
Wappingers Falls, NY 12590
Phone: (845) 896-0058 Fax: (845) 896-1520
Mercury containing device, universal waste

Tradebe (Bridgeport United Recycling, Inc.)
50 Cross Street
Bridgeport, CT 06610
Phone: (203) 334-1666 Fax: (203) 334-1439
RCRA & CRW waste oil, fuel, wastewater

Clean Earth of Carteret
24 Middlesex Ave.,
Carteret, NJ 07008
Phone: (732) 541-8909 Fax: (732) 541-8505
Concrete, brick, block, street sweepings, stone, rock, asphalt and petroleum contaminated soil

Clean Earth of Philadelphia, Inc.
3201 South 61 St.,

Philadelphia, PA 19153
Phone: (215) 724-5520 Fax: (215) 724-2939
Petroleum contaminated soil

Clean Earth of North Jersey, Inc. (aka CENJ)
115 Jacobus Ave,
South Kearny, NJ 07105
Phone: (973) 344-4004 Fax: (973) 344-8652
RCRA liquid and solid, asbestos

Clean Earth of Southeast Pennsylvania, Inc.
7 Steel Road,
Morrisville, PA 19067
Phone: (215) 428-1700 Fax: (215) 428-1704
Petroleum contaminated soil
Clean Harbors Environmental Services, Inc.
2247 South Hwy. 71,
Kimball, NE 69145
Phone: (308) 235-1012 Fax: (308) 235-4307
RCRA liquid, solid & sludge

Clean Harbors Environmental Services, Inc.
Cleveland Facility
2900 Rockefeller Ave.,
Cleveland, OH 44115
Phone: (216) 429-2401 Fax: (216) 883-1918
RCRA liquid: aqueous organic & inorganic wastewater

Clean Harbors Environmental Services, Inc.
Spring Grove Facility
4879 Spring Grove Ave.,
Cincinnati, OH 45232
Phone: (513) 681-6242 Fax: (513) 681-0869
RCRA liquid, solid & sludge: aqueous organic & inorganic wastewater, PCB wastewater treatment

Clean Harbors of Baltimore, Inc.
1910 Russell St,
Baltimore, MD 21230
Phone: (410) 244-8200 Fax: (410) 752-2647
RCRA liquid: aqueous organic & inorganic wastewater

Clean Harbors of Braintree, Inc.
1 Hill Avenue,
Braintree, MA 02184
Phone: (781) 380-7134 Fax: (781) 380-7193

RCRA & TSCA liquid & solid

Clean Harbors of Connecticut, Inc.
51 Broderick Road,
Bristol, CT 06010
Phone: (860) 583-8917 Fax: (860) 583-1740
RCRA & CRW liquid

Clean Harbors of Woburn
(Murphy's Waste Oil Services, Inc.)
252 Salem Street,
Woburn, MA 01801
Phone: (781) 935-9066 Fax: (781) 935-8615
RCRA liquid: oil, oil/water mixtures; CRW oil filters,
oily soil & debris, F001/F002 contaminated oils,
antifreeze

Clinton Landfill
242 Church Street
Clinton, MA 01510
Phone: (978) 365-4110 Fax: (978) 365-4106
Comm-97 soils and other materials subject to a BUD
and additional review by MADEP (*2-week lead time
for review by MADEP)

Colonie Landfill (Waste Connections, Inc.)
1319 Loudon Rd,
Cohoes, New York 12047
Phone: (518) 783-2827 Fax: (518) 786-7331
Non-haz. wastes, special wastes, contaminated soil

Cumberland County Landfill
(aka Community Refuse Services
Managed by Interstate Waste Services)
135 Vaughn Road,
Shippensburg, PA 17257
Phone: (717) 729-2060 Fax: (717) 423-6822
Municipal solid waste, non-hazardous waste

ACV Enviro (aka Cycle Chem & General
Chemical Corp.)
217 South First Street,
Elizabeth, NJ 07206
Phone: (908) 355-5800 Fax: (908) 355-0562
RCRA, TSCA liquid and solid

Envirite of PA (US Ecology)
730 Vogelsong Road,
York, PA 17404
Phone: (717) 846-1900 Fax: (717) 854-6757
RCRA hazardous wastes

Environmental Quality Company:
Wayne Disposal Facility
(aka EQ Michigan Disposal Waste Treatment Plant
and Wayne Disposal Inc. Site #2)
49350 North I-94 Service Drive
Belleville, MI 48111
Phone: (734) 697-2200 Fax: (734) 699-3499
RCRA & TSCA liquid and solid

US Ecology (Environmental Quality Detroit Inc.)
1923 Frederick Street,
Detroit MI 48211
Phone: (734) 329-8017 Fax: (313) 923-3375
RCRA & CRW liquid wastewater
Environmental Soil Management of New York,
LLC (ESMI of New York)
304 Towpath Road,
Fort Edward, NY 12828
Phone: (518) 747-5500 Fax: (518) 747-1181
Petroleum contaminated soil

Environmental Soil Management of NH
67 International Dr.
Loudon, NH 03307
Phone: (603) 783-0228 Fax: (603) 783-0104
Petroleum contaminated soil

Triumvirate (Formerly EnviroSafe Corporation
Northeast & Jones Environmental Services)
263 Howard Street,
Lowell, MA 01852
Phone: (978) 453-7772 Fax: (978) 453-7775
RCRA & TSCA liquid and solid

Hazelton Creek Properties, LLC*
(Hazelton Mine Reclamation Project)
280 South Church St.,
Hazelton, PA 18201
Phone: (570) 574-1010 Fax: (570) 457-3395
Fresh, brackish or marine dredge material, coal ash,
cement kiln dust, lime kiln dust, co-gen ash, regulated
fill
*Please note that if this facility is to be used, each bin
letter will require an additional 10 day (or more) waiting
period on top of the 15 day lab period designated in the
specs to allow for PADEP review.

Heritage Hazardous Waste Landfill (Heritage
Environmental Services, LLC)
4370 W County Rd 1275 N

Roachdale, IN 46172
Phone:(765) 435-2704 Fax: (315) 687-3898
Hazardous Wastes, Asbestos

Manchester Landfill
311 Olcutt St.,
Manchester, CT 06040
Phone: (860) 647-3248 Fax: (860) 647-3238
Municipal solid waste, non-hazardous waste,
contaminated soil

Northeast Lamp Recycling, Inc.
250 Main Street,
East Windsor, CT 06088
Phone: (860) 292-1992 Fax: (860) 292-1114
CRW solid waste, mercury containing devices &
universal waste
Stericycle (Northland Environmental, LLC)
(aka PSC Environmental Systems)
275 Allens Ave.,
Providence RI 02905
Phone: (401) 781-6340 Fax: (401) 781-9710
RCRA liquid and solid

Ontario County Landfill
(Managed by Casella Waste)
3555 Post Farm Road,
Stanley, NY 14561
Phone: (585) 526-4420 Fax: (585) 526-5459
Municipal solid waste, non-hazardous waste solid,
special wastes including asbestos, ash from
boilers/incinerators, contaminated soil, demo debris

Paradise Heating Oil, Inc.
Quimby Street,
Ossining, NY 10562
Phone: (631) 926-2576 Fax: (718) 294-2226
CRW waste oil liquid

Phoenix Soil, LLC
58 North Washington Street
Plainville, CT 06062
Phone: (860) 747-8888 Fax: (203) 757-4933
Contaminated Soil

Red Technologies Soil
232 Airline Avenue
Portland, CT 06980
Phone: (860) 342-1022 Fax: (860) 342-1042
Temporary Storage & Transfer of contaminated soil

Republic Services Conestoga Landfill
420 Quarry Road
Morgantown, PA 19543
Phone: (610) 286-6844 Fax: (610) 286-7048
MSW, C&D debris, residual waste, contaminated soil,
asbestos *Please note that if this facility is to be used,
each bin letter will require an additional 10 day (or
more) waiting period on top of the 15 day lab period
designated in the specs to allow for PADEP review.

Stericycle (Formerly Republic Environmental
Systems (aka Philip Services Corporation (PSC)
Republic)
2869 Sandstone Dr.,
Hatfield PA 19440
Phone: (215) 822-8995 Fax: (215) 997-1293
RCRA & TSCA industrial solid & sludge, aqueous
waste, contaminated soil, PCB waste, oil & petroleum
waste, organic waste
Soil Safe, Inc.
378 Route 130, Logan Township,
Bridgeport NJ 08085
Phone: (410) 872-3990 x1120
Fax: (410) 872-9082
Soil contaminated with petroleum or metals, some
industrial waste solids

The Southbridge Recycling & Disposal Park
165 Barefoot Rd.
Southbridge, MA 01550
Phone: (508) 765-9723, (603) 235-3597
Fax: (508) 765-6812
MSW, non-hazardous C & D waste, contaminated soil
for cover

Stablex Canada, Inc.
760 Industrial Blvd.
Blainville Quebec J7C 3V4
Phone: (450) 430-9230 Fax: (450) 430-4642
RCRA liquid and solid, industrial wastes

Ted Ondrick Company, LLC
58 Industrial Road,
Chicopee, MA 01020
Phone: (413) 592-2566 Fax: (413) 592-7451
Petroleum contaminated soil

Tradebe Treatment & Recycling
136 Gracey Ave.

Meriden, CT 06451
Phone: (203) 238-8114 Fax: (203) 238-6772
RCRA, CRW wastewater, oil, hazardous waste fuels,
hazardous and non-hazardous waste water

Phone: (978) 355-6821 Fax: (978) 355-6317
Solid: MSW, non-hazardous waste, C&D, contaminated
soil for use as cover material under MADEP COMM-97
policy

Tunnel Hill Reclamation
2500 Township Road, 205 Route 2
New Lexington, OH 43764
Phone: (914) 713-0203 Fax: (914) 713-0672
Municipal solid waste, non-hazardous waste,
contaminated soils

Turnkey Landfill (Waste Management of NH)
TLR III Refuse Disposal Facility
90 Rochester Neck Road, PO Box 7065
Rochester, NH 03839
Phone: (603) 330-2197 Fax: (603) 330-2130
Solid: MSW, C&D, PCB remediation waste (<50ppm),
virgin petroleum contaminated soil, CRW solid waste

Waste Management
RCI Fitchburg Landfill
Fitchburg Princeton Road,
Westminister, MA 01473

The category of material accepted by each facility listed above is for informational purposes only. The Contractor shall verify facility acceptance of each type of regulated item.

(2) Submittals

Thirty (30) days prior to commencement of work involving the management of regulated items, the Contractor shall submit to the Engineer for approval, the following documentation:

1. Copy of Spill Contractor Permit registration issued by the CTDEEP.
2. Hazard communication training for all employees performing this work.
3. Biohazardous Waste Compliance Work Plan as outline in Section 3(c).
4. Names of the treatment facilities, recycling facilities and/or disposal facilities the Contractor intends to use to receive each type of regulated item.
5. Hazardous Material Transporter USDOT Certificate of Registration for each transporter.
6. Hazardous Waste Transporter Permit for the State of Connecticut, the destination state(s), and all other applicable states for each transporter.

Contractor shall provide the Engineer with a minimum of 48 hours notice in advance of scheduling, changing or canceling work activities.

(3) Regulated Item Management Provisions

(a) General Requirements

The Contractor's OSHA Competent Person shall be in control on the job site at all times during hazardous material management work activities. This person must be capable of identifying existing hazards, possess the authority to implement corrective measures to reduce/eliminate the

hazards, comply with applicable Federal, State and Local regulations that mandate work practices, and be capable of performing the work of this contract. All employees who perform regulated material management related work shall be properly trained and qualified to perform such duties.

All labor, materials, tools, equipment, services, testing, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these specifications, shall be provided by the Contractor.

Ladders and/or scaffolds shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.

Inventory data from investigative surveys throughout the buildings are included herein and are presented for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the quantities or extent of the regulated items to be managed. The Contractor shall be responsible for verification of all field conditions affecting performance of the work. The Contractor shall submit to the Engineer for concurrence any additional items not listed herein that it believes to be regulated items included under this item. However, compliance with applicable requirements is solely the responsibility of the Contractor.

The Engineer will provide a Project Monitor to monitor the activities of the Contractor and inspect the work required. Environmental sampling shall be conducted as deemed necessary by the Engineer. Spill areas shall be cleaned by the Contractor until accepted by the Engineer. The Engineer may sample the spill area to demonstrate Contractor compliance with an acceptable standard.

(b) Personnel Protection

Prior to commencing work, the Contractor shall provide hazard communication training to all employees as necessary in accordance with OSHA 29 CFR 1926.59 and 29 CFR 1910.1200 and instruct all workers in all aspects of personnel protection, work procedures, emergency procedures and use of equipment including procedures unique to this project. Worker health and safety protocols that address potential and/or actual risk of exposure to site specific hazards are solely the responsibility of the Contractor.

The Contractor shall provide respiratory protection that meets the requirements of OSHA as required in 29 CFR 1910.134 and 29 CFR 1926.1000. A formal respiratory protection program, including appropriate medical surveillance, must be implemented in accordance with OSHA standards. The Contractor shall, as necessary, conduct exposure assessment air sampling, analysis and reporting to ensure the workers are afforded appropriate respiratory protection.

The Contractor shall provide and require all workers to wear appropriate personnel protective equipment, including protective clothing and respiratory protection, as required, within regulated work areas which exceed OSHA Personnel Exposure Limits (PELs) or when handling hazardous materials.

(c) Regulated Item Management Work Procedures

The Contractor shall not begin work until the Project Monitor is on-site.

Prior to beginning work on-site, the Contractor shall prepare waste characterization profile forms for each type of waste stream to be generated and forward such forms to the Engineer for review, approval and signature. Upon approval, the Contractor shall forward such forms to the appropriate disposal facilities for acceptance.

The Contractor shall utilize all appropriate engineering controls and safety and protective equipment while performing the work in accordance with OSHA, USEPA, USDOT, CTDEEP and Connecticut Department of Public Health DPH regulations.

The Contractor shall employ work practices so as to minimize the disturbance of the constituents in the regulated items, and prevent breakage and spills. In the event of a spill, the Contractor shall cordon off the area and notify the Engineer. The Contractor is responsible to have spills and the effected areas decontaminated to the acceptance of the Engineer by personnel trained in hazardous waste operator emergency response.

The Contractor shall carefully and properly remove, handle, pack, label and manifest all of the regulated items in waste containers specified and suitable to contain the waste in accordance with all federal and state regulations.

Prior to transportation and recycling and/or disposal, all proper USEPA, OSHA, CTDEEP and USDOT labels and placards shall be affixed to the waste containers and hazardous materials shipping papers such as waste manifests/bills of lading shall be completed.

Prior to construction activity which would disturb such materials, properly remove, handle, pack, label, transport, manifest and recycle or dispose of the regulated items from those listed below:

The following hazardous/regulated materials, wastes and items have been identified at the following Bridge No. 02295 and will be impacted by the rehabilitation work.

- **Biohazardous/Blood Borne Pathogen (BBP) Waste – human fecal waste, sharps, bedding, clothing with potential for contamination with human fluids.**

The Contractor shall submit a Biohazardous Waste Compliance Work Plan to CTDOT outlining the exact procedures that will be used to perform the work and protect the employees performing the biohazardous waste work. No biohazardous work shall be started by the Contractor until the Engineer has been notified and the Work Plan has been approved by the Engineer.

Regular construction/demolition (C&D) or trash from site shall not be mixed in with the potential biohaz materials (sharps/needles. feces, etc.)

No soil removal will be considered for payment under this Item without the approval of the Engineer.

Upon discovery of any previously unidentified regulated items during renovation activities, the Contractor shall immediately notify the Engineer and work shall cease in that area until the Engineer can determine the extent of any impact and proper handling procedures are implemented.

(d) Waste Disposal

Efforts shall be made to recycle the constituents of the regulated items rather than dispose of them in accordance with the waste minimization efforts required under RCRA.

RCRA hazardous waste shall not be stored on the job site in excess of 90 calendar days from the accumulation start date.

Connecticut Regulated Waste shall not be transported to a RCRA or TSCA permitted facility for disposal, unless otherwise allowed by the Engineer in writing.

All non-RCRA hazardous waste materials, regulated waste materials and recyclable waste items shall be manifested separately from RCRA and TSCA hazardous waste, and documented properly on non-hazardous waste manifests, waste shipment records, bills of lading or other appropriate shipping papers for transportation to the recycling and/or disposal facility.

The Contractor shall prepare each lab pack list and shipping document (manifests, waste shipment records, bills of lading, etc.) with all of the required information completed (including types of waste, proper shipping name, categories, packing numbers, amounts of waste, etc.) in accordance with applicable federal and state regulations. The document will be signed by an authorized agent representing ConnDOT as the Generator for each load that is packed to leave the site.

The Contractor shall forward the appropriate original copies of shipping papers to the Engineer the same day the regulated items leave the project site.

All vehicles departing the site transporting hazardous materials shall display proper USDOT placards, as appropriate for the type of waste being transported.

(e) Project Closeout Documents:

Within thirty (30) days after completion of the on-site project work, the Contractor shall submit to the Engineer copies of the following completed documents:

1. Hazardous Waste Manifests
2. Waste Shipment Records/Bills of Lading
3. Recycling Receipts

Documents 1. through 3. must include the signature of an authorized disposal facility representative acknowledging receipt of hazardous materials.

Method of Measurement:

The work of “Handling and Disposal of Regulated Items” shall be provided for in accordance with Article 1.04.05 – Extra Work.

Basis of Payment:

The work of “Handling and Disposal of Regulated Items” shall be paid for in accordance with Article 1.04.05 – Extra Work, which price shall include the management, removal, handling, packing, labeling, transport, manifesting, recycling or disposal of the regulated constituents in the specific equipment/items scheduled for impact at the project site, and all equipment, materials, tools and labor incidental to the work.

Final payment will not be made until completed copies of all Manifest(s), Waste Shipment Records, Bills of Lading and/or Recycling Receipts have been provided to the Engineer. Once completed and facility-signed copies have been received in their entirety, the Engineer will make the final payment.

<u>Pay Item</u>	<u>Pay Unit</u>
Handling and Disposal of Regulated Items	Estimate

ITEM #0201214A - RESET SIGN

Description: This work shall consist of removing, storing and resetting of signs where indicated on the plans or as directed by the Engineer.

Materials: Materials for this work shall conform to the requirements of Articles M.18.14 and M.18.15.

Construction Methods: The Contractor shall exercise particular care in the dismantling, transporting, storage, and resetting of the existing signs designated to be reused. Any sign panel lost, damaged or otherwise made unsuitable for reuse through carelessness or lack of protection by the Contractor shall be replaced at the Contractor's expense.

Existing sign supports, concrete support foundations, and hardware shall be removed and disposed of by the Contractor. Signs shall be stored and protected until such time they are to be reset.

The Construction Methods for Section 12.08 and as specified herein shall apply to the resetting of signs. New hardware shall be used for mounting reset signs.

Where required, the reset signs shall be mounted on new metal sign posts.

Holes resulting from the removal of existing sign supports and foundations shall be backfilled with suitable material to 6 inches below grade before topsoil is placed. Topsoil shall be placed to 1 inch above finished grade and then fertilized and seeded in accordance with Sections 9.44 and 9.50.

Method of Measurement: "Reset Sign" shall be at the Contract lump for each, which will include all signs designated for resetting in the Contract.

Basis of Payment: This work will be paid for at the Contract unit price each for "Reset Sign" which price shall include new mounting hardware, new metal sign supports, and all materials, tools, equipment, labor and work incidental thereto.

Pay Item
Reset Sign

Pay Unit
EA

ITEM #0406277A - REMOVAL OF EXISTING WEARING SURFACE

Description: Work under this item shall consist of the complete removal and disposal of the existing bituminous concrete wearing surface, membrane waterproofing and bond breaker covering the reinforced concrete bridge deck as shown on the plans, as ordered by the Engineer and in accordance with these Specifications.

Construction Methods: The Contractor shall remove the bituminous concrete wearing surface, membrane waterproofing and bond breaker using means acceptable to the Engineer to completely expose the underlying concrete deck, without damaging the deck, roadway materials, and structures which are to remain intact.

Acceptable mechanical methods for removal of bituminous concrete surface on a structure can be one of the following:

Micro-milling - The rotary drum of the machine shall use carbide or diamond tipped tools spaced not more than $\frac{3}{16}$ inches apart, capable of leaving a smooth, uniform pattern of striations with a maximum forward speed of 45 feet/minute.

Fine Milling – The rotary drum of the machine shall use carbide or diamond tipped tools spaced not more than $\frac{5}{16}$ inches apart, capable of leaving a smooth, uniform pattern of striations with a maximum forward speed of 45 feet/minute.

Alternate methods may be submitted to the Engineer for review and acceptance. Demonstration of the alternate removal method shall be performed prior to consideration.

All particles and aggregate adhering to the exposed concrete that could, in the Engineer's opinion, cause failure of, or puncture the new membrane shall be removed. The existing bituminous concrete wearing surface, membrane waterproofing, and bond breaker that are removed shall be disposed of offsite by the Contractor unless otherwise noted in the Contract or as directed by the Engineer.

Prior to removal of bituminous concrete wearing surface the Contractor shall conduct a survey. A minimum of four (4) representative depth measurements shall be taken per span for a span up to 100 feet in length to predetermine the overlay thickness. An additional measurement shall be taken for each 25 feet in span length. If depth of overlay varies across the structure, it shall be clearly marked to aid in the removal operation. Survey locations shall be filled with bituminous material if the milling operation will not be completed within five (5) days or at the direction of the Engineer.

The existing bituminous concrete wearing surface and membrane waterproofing shall be removed in their entireties to the limits shown on the plans. The removal operations shall not begin until the Contractor is prepared to perform the permanent patching or repair to the underlying concrete within five (5) working days. If this is in conflict with "Prosecution and

Progress," "Maintenance and Protection of Traffic," or other Contract requirements, the more stringent specification shall apply.

Protection shall be provided around existing catch basin inlets, bridge scuppers, manholes, utility valve boxes, median barriers, parapets, and other roadway structures. Any damage to such structures as a result of removal operations is the Contractor's responsibility and shall be repaired at the Contractor's expense.

A uniform textured riding surface shall be provided and maintained. The surface shall be free from gouges, longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, improper use of equipment, poor workmanship, or inadequate survey. Any unsatisfactory surfaces caused by the removal operations are the Contractor's responsibility and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer prior to opening the surface to traffic.

Any raised structures shall be delineated with traffic control devices, as directed by the Engineer. Installation of traffic control devices will be included under the costs for "Maintenance and Protection of Traffic," payment for the devices will be under the applicable items.

No vertical face, transverse or longitudinal, shall be left exposed to traffic unless the requirements below are met. This shall include roadway structures (catch basins, manholes, utility valve boxes, etc.). If any vertical face is formed in an area exposed to traffic, a temporary paved transition shall be established according to the requirements shown on the plans. If the milling machine is used to form a temporary transition, the length of the temporary transition shall conform to Special Provision Section 4.06 –Bituminous Concrete, "Transitions for Roadway Surface," the requirements shown on the plans, or as directed by the Engineer. At all permanent limits of removal, a clean vertical face shall be established by saw cutting prior to paving.

Roadway structures shall not have a vertical face of greater than one (1) inch exposed to traffic as a result of milling. All structures within the roadway that are exposed to traffic and greater than one (1) inch above the milled surface shall receive a transition meeting the following requirements:

For roadways with a posted speed limit of 35 mph or less*:

1. Round structures with a vertical face of greater than 1 inch to 2.5 inches shall be transitioned with a hard rubber tapered protection ring of the appropriate inside diameter designed specifically to protect roadway structures.
2. Round structures with a vertical face greater than 2.5 inches shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.
3. All rectangular structures shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.
- 4.

*Bituminous concrete tapers at a minimum 24 to 1 (24:1) taper in all directions may be substituted for the protection rings if approved by the Engineer.

For roadways with a posted speed limit of 40, 45 or 50 mph:

- All structures shall receive a transition of bituminous concrete formed at a minimum 36 to 1 (36:1) taper in all directions of travel. Direction of travel shall include both the leading and trailing sides of a structure. The minimum taper shall be 24 to 1 (24:1) in all other directions.

For roadways with a posted speed limit of greater than 50 mph:

- All structures shall receive a transition of bituminous concrete formed at a minimum 60 to 1 (60:1) taper in the direction of travel. Direction of travel shall include both the leading and trailing sides of a structure. The minimum taper shall be 24 to 1 (24:1) in all other directions.

All roadway structure edges and bituminous concrete tapers shall be clearly marked with fluorescent paint. The paint shall be maintained throughout the exposure to traffic.

Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a sweeper truck. The sweeper truck shall be equipped with a water tank and be capable of removing the millings and loose debris from the surface. The sweeper truck shall operate at a speed that allows for the maximum pickup of millings from the roadway surface. Other sweeping equipment may be provided in lieu of the sweeper where acceptable by the Engineer.

Method of Measurement: This work will be measured for payment by the number of square yards of bituminous concrete wearing surface removed to expose the underlying concrete deck. No area deductions will be made for minor unmilled areas such as scuppers, joints, and any similar structures.

Basis of Payment: This work will be paid for at the contract unit price per square yard for "Removal of Existing Wearing Surface," complete and accepted, which price shall include the depth measurements, removal of wearing surface, removal of membrane waterproofing and bond breaker, saw cutting, and all equipment, tools and labor.

No additional payments will be made for multiple passes with the milling machine to remove the bituminous surface.

No separate payments will be made for cleaning the pavement prior to paving; providing protection and doing handwork removal of bituminous concrete around catch basin inlets, bridge scuppers, manholes, utility valve boxes, median barriers, parapets, joints and any similar structures; repairing surface defects as a result of Contractor negligence; providing protection to underground utilities from the vibration of the milling operation; removal of any temporary milled transition; removal and disposal of millings; furnishing a sweeper truck and sweeping after milling. The costs for these items shall be included in the Contract unit price.

Pay Item
Removal of Existing Wearing Surface

Pay Unit
S.Y.

ITEM #0511204A - EXTEND EXISTING WEEPHOLES

Description:

Work under this item shall consist of installing PVC pipe with flexible hose below the bridge deck, in order to extend the existing broken deck weepholes outward and away from the bridge.

The Contractor shall undertake a survey of the weepholes locations prior to start of any work and inform the Engineer if conditions of existing weepholes do not reflect what is shown on the weephole pipe repair details.

Materials:

PVC plastic pipe shall conform to the requirements of Subarticle M.08.01-20 of Form 817.

Construction Methods:

The new length of PVC pipe with appropriate coupling shall be attached to the existing weepholes to remain. The length of pipe shall be such that the bottom end stops four (4) inches horizontally from all bridge components and shall extend twelve (12) inches below the bottom flange of the girders.

In cases where the protruding stub is not sufficiently long enough to allow installation of a typical PVC coupling, a short length of PVC pipe shall be inserted into the existing pipe in order to extend the pipe.

The joint between the new and old pipes shall be thoroughly cleaned and solvent welded.

Method of Measurement:

This work will be measured for payment by the actual number of weephole pipe extensions installed and accepted.

Basis of Payment:

This work shall be paid for at the contract unit price, per each, for "Extend Existing Weepholes", which price shall include all materials, equipment, tools and labor incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Extend Existing Weepholes	EA.

ITEM #0520036A - ASPHALTIC PLUG EXPANSION JOINT SYSTEM

Description: Work under this item shall consist of furnishing and installing an asphaltic plug expansion joint system (APJ) in conformance with ASTM D6297, as shown on the plans, and as specified herein.

Work under this item shall also consist of the removal and disposal of bituminous concrete, membrane waterproofing, existing joint components and sealing elements, cleaning and sealing median barrier joints, parapet joints, and sidewalk joints.

Work under this item excludes the removal of Portland cement concrete headers.

Materials: The APJ component materials shall conform to ASTM D6297 and the following:

Aggregate: The aggregate shall meet the following requirements:

- a) Loss on abrasion: The material shall show a loss on abrasion of not more than 25% using AASHTO Method T96.
- b) Soundness: The material shall not have a loss of more than 10% at the end of five cycles when tested with a magnesium sulfate solution for soundness using AASHTO Method T 104.
- c) Gradation: The aggregate shall meet the requirements of Table A below:
- d) Dust: aggregate shall not exceed 0.5% of dust passing the #200 sieve when tested in accordance with AASHTO T-11.

Table A

<u>Square Mesh Sieves</u>	1" (25.0 mm)	¾" (19.0 mm)	½" (12.5 mm)	⅜" (9.5 mm)	No. 4 (4.75 mm)
% passing	100	90 - 100	20 - 55	0 - 15	0 - 5

A sample of the aggregate shall be submitted to the Department with a Certified Test Report in accordance with Article 1.06.07 for each 20 tons of loose material or its equivalent number of bags delivered to the job site. The Certified Test report must include a gradation analysis resulting from a physical test performed on the actual material that accompanies the report.

Anti-Tacking Material: This material shall be a fine graded granular material with 100% passing the 3/16" sieve and no more than 5% passing the #200 when tested in accordance with AASHTO T-27.

Backer Rod: All backer rods shall satisfy the requirements of ASTM D5249, Type 1.

Bridging Plate: The bridging plates shall be steel conforming to the requirements of ASTM A36 and be a minimum ¼" thick and 8" wide. For joint openings in excess of 3" the minimum plate dimensions shall be ⅜" thick by 12" wide. Individual sections of plate shall

not exceed 4' in length. Steel locating pins for securing the plates shall be size 16d minimum, hot-dip galvanized, and spaced no more than 12" apart.

Concrete Leveling Material: Shall be a cementitious-based material that conforms to ASTM C928 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repair, for R3 performance requirements in Table 1 and achieve the following:

- a. Final set in 45 Minutes
- b. 2500 psi compressive strength in 24 hours
- c. 5000 psi compressive strength in 7 days

Parapet Sealant: The sealant used in parapet joint openings shall be a single component non-sag silicone sealant that conforms to the requirements of ASTM D5893.

Sidewalk Sealant: The sealant used in sidewalk joint openings shall be a rapid cure, self-leveling, cold applied, two-component silicone sealant. The silicone sealant shall conform to the requirements listed in Table B:

Table B

Properties - As Supplied	Test Method	Requirement
Extrusion Rate	ASTM C1183	200-600 grams/min
Leveling	ASTM C639	Self-Leveling
Specific Gravity	ASTM D792	1.20 to 1.40
Properties - Mixed	Test Method	Requirement
Tack Free Time	ASTM C679	60 min. max.
Joint Elongation – Adhesion to concrete	ASTM D5329 ^{1,2,3}	600% min
Joint Modulus @ 100% elongation	ASTM D5329 ^{1,2,3}	15 psi max
Cure Evaluation	ASTM D5893	Pass @ 5 hours

1. Specimens cured at 77±3⁰F and 50±5% relative humidity for 7 days
2. Specimens size: ½" wide by ½" thick by 2" long
3. Tensile Adhesion test only

The date of manufacture shall be provided with each lot. No sealant shall be used beyond its maximum shelf-life date.

The two-part silicone sealants shown in Table C are known to have met the specified requirements:

Table C

Product	Supplier
Dow Corning 902RCS	Dow Corning Corporation 2200 W Salzburg Road Auburn, Michigan 48611
Wabo SiliconeSeal	BASF/Watson Bowman Acme Corporation 95 Pineview Drive Amherst, New York 14228

Other two-component silicone joint sealants expressly manufactured for use with concrete that conform to the aforementioned ASTM requirements will be considered for use provided they are submitted in advance for approval to the Engineer. Other joint sealants 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 bridge expansion joint applications.

A Materials Certificate and Certified Test Report for the asphaltic binder shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07 certifying that the asphaltic binder satisfies the requirements of the most current version of ASTM D6297.

A Materials Certificate for all other components of the APJ, leveling material, backer rod and sealant used in sealing parapet and sidewalk joint openings, shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07

Construction Methods: The APJ shall be installed at the locations shown on the plans and in stages in accordance with the traffic requirements in the special provisions “Maintenance and Protection of Traffic” and “Prosecution and Progress”.

At least 30 days prior to start of the work, the Contractor shall submit to the Engineer for approval a detailed Quality Control Plan for the installation of the APJ. The submittal shall include:

- a) A list of all manufactured materials and their properties to be incorporated in the joint system, including, but not limited to the asphaltic binder, anti-tack material, backer rod, sealant, leveling material, as well as the aggregate’s source.
- b) A detailed step by step installation procedure and a list of the specific equipment to be used for the installation. The Quality Control Plan must fully comply with the specifications and address all anticipated field conditions, including periods of inclement weather.

The APJ shall not be installed when bituminous concrete overlay or joint cutout is wet. The APJ shall only be installed when the bridge superstructure surface temperature is within the limits specified in Table D and when the ambient air temperature is within the range of 45⁰F to 95⁰F.

The bridge superstructure surface temperature range is determined using the thermal movement range provided on the contract plans for the proposed APJ deck installation location and the selected APJ product.

Table D

Installation Restrictions	
Designed Deck Joint Thermal Movement Range²	Bridge Superstructure Surface Temperature¹
0" to 1"	45° F to 95° F
1-1/8"	45° F to 90° F
1-1/4"	45° F to 80° F
1-3/8"	45° F to 70° F
1-1/2"	45° F to 65° F

- The superstructure surface temperature shall be determined from the average of three or more surface temperature readings taken at different locations on the interior girder surfaces by the Contractor as directed by the Engineer. Temperature measurements of the superstructure shall be taken by the contractor with a calibrated hand held digital infrared laser-sighted thermometer on the surfaces of an interior steel girder, or interior concrete girder protected from direct sunlight. The infrared thermometer to be supplied by the Contractor for this purpose shall meet certification requirements of EN61326-1, EN61010-1, and EN60825-1 maintained by the European Committee for Electrotechnical Standardization (CENELEC). The thermometer shall have a minimum distance-to-spot ratio of 50:1 and shall have adjustable emissivity control. The thermometer shall have a minimum accuracy value of $\pm 1\%$ of reading or $\pm 2^\circ\text{F}$, whichever is greater. The thermometer shall be used in strict accordance with the manufacturer's written directions. An additional infrared thermometer satisfying the same standards to be used in this application shall also be provided to the Engineer for quality assurance purposes.*
- Linear interpolation may be used to determine an allowable surface temperature range for thermal movement ranges in between values shown in the table, as approved by the Engineer.*

Prior to installing the APJ, the Contractor shall determine the exact location of the deck joint beneath the bituminous concrete overly.

The APJ shall be installed symmetrically about the deck joint opening to the dimensions shown on the plans or as directed by the Engineer; not to exceed 24 inches measured perpendicular to the deck joint. The proposed saw cut lines shall be marked on the bituminous concrete overlay by the Contractor and approved by the Engineer, prior to saw-cutting. The saw-cuts delineating the edges of the APJ shall extend full depth of the bituminous concrete overlay.

The existing bituminous concrete overlay, waterproofing membrane and/or existing expansion joint material, within the saw cut limits shall be removed and disposed of by the Contractor to create the joint cutout.

Concrete surfaces that will support the bridging plates shall be smooth and form a plane along and across the deck joint. Rough or damaged concrete surfaces shall be repaired with a leveling compound meeting the requirements of this specification. Deteriorated concrete areas within the joint limits shall be repaired as directed by the Engineer: such repairs, when deemed necessary by the Engineer, shall be compensated for under the applicable concrete deck repair items in the Contract. The existing and repaired concrete surfaces shall provide continuous uniform support for the bridging plate and prevent the plate from rocking and deflecting.

Prior to the installation of the backer rod, all horizontal and vertical surfaces of the joint cutout shall be abrasive blast cleaned using an oil-free, compressed air supply. The entire cutout shall then be cleared of all loose blast media, dust, debris and moisture using an oil-free, hot air lance capable of producing an air stream at 3,000°F with a velocity of 3,000 feet per second.

A single backer rod, with a diameter at least 25% greater than the existing joint opening at the time of installation, shall be installed at an inch below the bridging plate in the existing deck joint opening between the concrete edges.

Asphaltic binder shall be heated to a temperature within the manufacturer's recommended application temperature range which shall be provided in the Quality Control Plan. During application, the temperature of the binder shall be maintained within this range. In no case shall the temperature of the binder go below 350° F nor exceed the manufacturer's recommended maximum heating temperature.

Asphaltic binder shall then be poured into the joint opening until it completely fills the gap above the backer rod. A thin layer of binder shall next be applied to the all horizontal and vertical surfaces of the joint cutout.

Bridging plates shall be abrasive blast-cleaned on-site prior to installation and then placed over the deck joint opening in the joint cutout. The plates shall be centered over the joint opening and secured with locating pins along its centerline. The plates shall be placed end to end, without overlap, such that the gap between plates does not exceed ¼". The plates shall extend to the gutter line and be cut to match the joint's skew angle, where concrete support exists on both sides of the joint. Within APJ installation limits, where concrete support does not exist at both sides of the joint opening (such as where a bridge deck end abuts a bituminous concrete roadway shoulder), bridging plates shall not be installed. Installed bridging plates shall not rock or deflect

in any way. After installation of bridging plates, a thin layer of asphaltic binder shall be applied to all exposed surfaces of the plates.

The remainder of the joint cutout shall then be filled with a mixture of hot asphaltic binder and aggregate prepared in accordance with the submitted Quality Control Plan and the following requirements:

- The aggregate shall be heated in a vented, rotating drum mixer by the use of a hot-compressed air lance to a temperature of between 370° F. to 380° F. This drum mixer shall be dedicated solely for the heating and, if necessary, supplemental cleaning of the aggregate. Venting of the gas and loose dust particles shall be accomplished through ¼” drilled holes spaced no more than 3” on center in any direction along the entire outside surface of the drum
- Once the aggregate has been heated, it shall then be transferred to a secondary drum mixer where it shall be fully coated with asphaltic binder. A minimum of two gallons of binder per 100lbs of stone is required.
- The temperature of the aggregate and binder shall be monitored by the contractor with a calibrated digital infrared thermometer.
- The coated aggregate shall be loosely placed in the joint cutout in lifts not to exceed 2 inches.
- Each lift shall be leveled, compacted and then flooded with hot asphaltic binder to the level of the aggregate to fill all voids in the coated aggregate layer. The surface of each lift shall be flooded until only the tips of the aggregate protrude out of the surface.
- The final lift shall be placed such that no stones shall project above the level of the adjacent overlay surface following compaction of the coated aggregate.
- Following installation of the final lift, sufficient time and material shall be provided to allow all voids in the mixture to fill. This step may be repeated as needed.
- The joint shall then be top-dressed by heating the entire area with a hot-compressed air lance and applying binder. The final joint surface must be smooth with no protruding stones and be absent of voids.
- Once top-dressed, the joint shall have an anti-tack material spread evenly over the entire surface to prevent tracking.

The Contractor shall be responsible for removing all binder material that leaks through the joint and is deposited on any bridge component, including underside of decks, headers, beams, diaphragms, bearings, abutments and piers.

Traffic shall not be permitted over the joint until it has cooled to 130° F when measured with a digital infrared thermometer. Use of water to cool the completed joint is permitted.

Sidewalk, parapet, and/or curb joint openings

Before placement of any sealing materials in parapets, curbs, or sidewalks, the joints shall be thoroughly cleaned of all scale, loose concrete, dirt, dust, or other foreign matter by abrasive blast cleaning. Residual dust and moisture shall then be removed by blasting with oil free compressed air using a hot air lance. Projections of concrete into the joint space shall also be

removed. The backer rod shall be installed in the joint as shown on the plans. The joint shall be clean and dry before the joint sealant is applied. Under no circumstances is the binder material to be used as a substitute for the joint sealant.

Whenever abrasive blast cleaning is performed under this specification, the Contractor shall take adequate measures to ensure that the abrasive blast cleaning will not cause damage to adjacent traffic or other facilities.

The joint sealant shall be prepared and placed in accordance with the manufacturer's instructions and with the equipment prescribed by the manufacturer. Extreme care shall be taken to ensure that the sealant is placed in accordance with the manufacturer's recommended thickness requirements.

The joint sealant shall be tooled, if required, in accordance with the manufacturer's instructions.

Primer, if required, shall be supplied by the sealant manufacturer and applied in accordance with the manufacturer's instructions.

When the sealing operations are completed, the joints shall be effectively sealed against infiltration of water. Any sealant which does not effectively seal against water shall be removed and replaced at the Contractor's expense.

Any installed joint that exhibits evidence of failure, as determined by the Engineer, such as debonding, cracking, rutting, or shoving of the APJ mixture shall be removed and replaced full-width and full-depth to a length determined by the Engineer at no additional cost to the State.

Method of Measurement: This work will be measured for payment by the number of cubic feet of "Asphaltic Plug Expansion Joint System" installed and accepted within approved horizontal limits. No additional measurement will be made for furnishing and installing backer rod and joint sealant in the parapets, concrete medians, curbs and/or sidewalks.

Basis of Payment: This work will be paid for at the contract unit price per cubic foot for "Asphaltic Plug Expansion Joint System," complete in place, which price shall include the saw-cutting, removal and disposal of bituminous concrete, membrane waterproofing, existing joint components and sealing elements, the furnishing and placement of the leveling compound, cleaning of the joint surfaces, furnishing and installing bridging plates, the furnishing and installing of the asphaltic plug joint mixture, the cost of furnishing and installing joint sealant in the parapets, concrete medians, curbs and sidewalks, and all other materials, equipment including, but not limited to, portable lighting, tools, and labor incidental thereto. No additional payment shall be made for the 12" wide bridging plates that are required for deck joint openings with widths in excess of 3".

If directed by the Engineer, additional deck repairs will be addressed and paid for under the applicable concrete deck repair items in the Contract.

ITEM #0520041A – PREFORMED JOINT SEAL

Description: Work under this item shall consist of furnishing and installing a preformed joint seal as shown on the plans and in conformance with these Specifications or as directed by the Engineer. Work shall also include a pre-installation survey for measurement of the existing joint opening width and preparation of the joint opening surfaces as needed to ensure proper performance of the preformed joint seal. The preformed joint seal shall seal the deck surface in accordance with the plans and prevent water from seeping through the joint area.

Materials: The preformed joint seal shall be one of the following:

1. Silicoflex:
RJ Watson, Inc -- Bridge and Structural Engineered Systems
11035 Walden Ave.
Alden, New York 14004
Tel: (716) 901-7020
Website: <http://www.rjwatson.com>

2. V-Seal:
D.S. Brown Company
300 East Cherry Street
North Baltimore, Ohio
Tel: (419) 257-3561
Website: <http://www.dsbrown.com>

3. Bridge Expansion Joint System (B.E.J.S.):
EMSEAL Joint Systems Ltd.
25 Bridle Lane,
Westborough, MA 01581
Tel: (508) 836-0280
Website: <http://www.emseal.com>

A Materials Certificate for all components of the selected preformed joint seal shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07

Construction Methods: All work at each joint location shall be accomplished in conformance with the traffic requirements in the Special Provisions, “Maintenance and Protection of Traffic” and “Prosecution and Progress”.

At all joint locations, the Contractor shall perform a survey of the existing joint openings. This information shall include, but not be limited to:

- a) Joint opening width (taken at distances along the length of the joint not to exceed 6’)
- b) Temperature at time of measurement of joint opening width.
- c) Identification of sharp discontinuities in the joint alignment or its surfaces.

At least 30 days prior to start of the work, the Contractor shall submit a detailed Quality Control Plan to the Engineer for review and comment for the installation of the selected joint system. The submittal shall include:

- a) All information gathered during field survey.
- b) A list of all manufactured materials and their properties to be incorporated in the joint system, including, but not limited to the primer, bonding agent, sealant, and the sealing element.
- c) A detailed step by step installation procedure and a list of the specific equipment to be used for the installation.

The Quality Control Plan must fully comply with the specification's requirements and address all known and anticipated field conditions, including periods of inclement weather.

A technical representative of the selected joint system, approved by the manufacturer, shall be notified of the scheduled installation a minimum of 2 weeks in advance and be present to provide direction and assistance for the first joint installation and succeeding joint installations until the Contractor becomes proficient in the work and to the satisfaction of the Engineer.

Tools, equipment, and techniques used to prepare the joints and materials shall be approved by the Engineer and the manufacturer's technical representative prior to the start of construction.

The minimum temperature for installing any of the qualified preformed joint seals is 40 degrees Fahrenheit and rising, ambient air temperature. When the manufacturer's requirements for minimum installation temperature are greater than 40 degrees, the manufacturer's requirements will govern. The joint surfaces shall be completely dry before installing any of the components of the selected joint seal. The selected joint seal cannot be installed immediately after precipitation or if precipitation is forecasted. Joint preparation and installation of the selected preformed joint seal must be done during the same day.

Any discontinuities, projections, divots or other anomalies in the joint opening surfaces that would negatively affect the performance of the preformed joint seal shall be remedied by the Contractor by methods recommended by the manufacturer and as approved by the Engineer.

All vertical faces adjacent to the joint opening shall be sandblasted prior to application of any of the joint seal components. All remnants of the prior existing joint sealing system (rubberized gland, silicone sealant, etc...) shall be removed from the existing headers to remain. Any discontinuities or sharp projections into the plane of the joint shall be ground smooth prior to sandblasting. Whenever abrasive blast cleaning is performed under this Specification, the Contractor shall take adequate measures to ensure that the abrasive blast cleaning will not cause damage to adjacent traffic or other facilities. Traffic will not be allowed to pass over the joint after sandblasting has occurred.

Following sandblasting, the joint's surfaces shall be wiped down or blown clean as recommended by the manufacturer.

The selected joint sealing system shall be installed continuously with no splices in the preformed seal in the roadway section, as recommended by the manufacture of the selected preformed joint seal.

When the sealing operations are completed, the joint opening shall be effectively sealed against infiltration of water. Any seal that does not effectively seal against water shall be removed and replaced at the Contractor's expense.

Treatment at gutterline and curbs/parapets:

At curbs, the preformed joint sealing element shall run continuously from the roadway section through the upturn at the curb and continue as shown on the plans.

At parapets or walls, the joint sealing element shall be upturned at the parapet/wall for a continuous seal through this transition. The treatment for prefabricated piece to transition the bend at the wall depends on the joint seal selected by the Contractor.

Silicoflex by R. J. Watson and V-Seal by Crafcoc:

The prefabricated piece shall be fabricated a minimum of 24 hours prior to use to "make" the bend at the wall is allowed though field splicing of this prefabricated piece shall not be allowed in the roadway section. Parapets and walls shall be sealed for the entire vertical portion and across the top with the sealing element—bends and splices nine inches above the curbline and higher are allowed to be field fabricated.

BEJS by EMSEAL:

Parapets and walls shall be sealed for the entire vertical portion and across the top with the sealing element—bends and splices nine inches below the curbline and the transition into the deck shall be factory fabricated. Roadway splices as well as bends and splices nine inches above the curbline and higher are allowed to be field fabricated.

Method of Measurement: This work will be measured for payment by the number of linear feet of preformed joint sealing system installed. The measurement will be made at the top surface and along the centerline of the joint and shall include all portions of the installation in the roadway, in the curbs and sidewalk(s), and within parapets and medians.

Basis of Payment: This work will be paid for at the Contract unit price per linear foot for "Preformed Joint Seal," complete in place, including all materials, equipment, tools, and labor incidental thereto.

Included in the contract unit price is the pre-installation survey of the existing joint opening and the cost of assistance from a technical representative of the selected joint system.

ITEM #0520907A - REPLACE JOINT SEAL

Description: Work under this item shall consist of furnishing and installing silicone sealant as shown on the plans, as directed by the Engineer, and in accordance with these specifications.

Materials: Silicone sealant used in joint openings shall be a single component non-sag silicone sealant that conforms to the requirements of ASTM D5893.

A Materials Certificate will be required in accordance with Article 1.06.07 certifying the conformance of the silicone sealant to the requirements set forth in this specification.

Each container of product furnished shall be delivered to the job site in the Manufacturer's original sealed container. Each container shall be labeled to include the name of material, Manufacturer's name, and the Manufacturer's lot/batch number. All materials must be stored in accordance with the Manufacturer's written recommendations, in original, unopened containers at or below 32 degrees C (90 deg. F) and or as approved by the Engineer. Materials whose shelf-life has expired shall not be used in the project.

Backer Rod: The backer rod used in conjunction with the joint sealant shall be a closed cell rod with an impervious skin that will not outgas when ruptured. The Contractor shall select one that meets the requirements of ASTM D5249, Type 3.

Construction Methods: The silicone sealant shall be installed at the locations shown on the plans, in accordance with the traffic requirements in the special provisions "Maintenance and Protection of Traffic" and "Prosecution and Progress" or as directed by Engineer.

Tools, equipment, and techniques used to prepare the joints shall be approved by the Engineer and the Manufacturer's technical representative prior to the start of construction.

Sealant shall not be applied to wet or damp concrete or during inclement weather.

Before installation of the silicone sealant, all existing material shall be removed from the joint. The vertical or horizontal surfaces in the expansion joint opening, to which the silicone sealant will bond shall be cleaned of all dust, dirt, debris and other loose materials as recommended by the Manufacturer. Additionally, the bonding surfaces shall be blast cleaned if recommended by the Manufacturer. Following blast cleaning, when required, the surfaces shall again be wiped clean to remove any remaining dust. A backer rod of diameter 25% larger than the joint opening shall then be inserted into the joint opening such that it holds itself firmly in place. Loose fitting backer rods will be rejected. The backer rod shall be recessed below the top surface of the parapet as shown on the plans and as directed by the Engineer. Joints shall be sealed in a neat and workmanlike manner.

Primer, if required by the Manufacturer, shall be applied to the vertical surfaces of the concrete on which the silicone sealant will bond. The primer shall be allowed to cure undisturbed for a minimum of one hour prior to installation of the silicone sealant or longer if required by the Manufacturer or the Engineer.

The mixing and installation of the silicone sealant shall be done in strict conformance with the Manufacturer's written recommendations including the use of static mixing devices if so indicated.

Any portion of the silicone sealant that is punctured, ruptured, debonded, delaminated, or damaged in any other way shall be removed and replaced by the Contractor at no additional cost to the State.

If self-leveling silicone is used for the sealing of vertical joint openings the Contractor must develop means of preventing the silicone from sagging or leaking out during the cure period. Extreme care shall be taken to insure that the sealant is placed in accordance with the manufacturer's recommended thickness requirements.

Method of Measurement: This work will be measured for payment by the number of linear feet the silicone sealant is installed into the final work, measured along the centerline of the roadway joint, along the face of the parapet indicated on the plans or as ordered by the Engineer.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for "Replace Joint Seal", complete in place, including all removal of existing materials, sandblasting where required, and all other materials, equipment, tools, and labor incidental thereto.

Pay Item
Replace Joint Seal

Pay Unit
L.F.

ITEM #0601070A – CLASS “S” CONCRETE

SECTION 6.01 – CONCRETE FOR STRUCTURES as supplemented and amended to provide for a Class "S" super-plasticized concrete:

Article 6.01 - Description: Class "S" Concrete is to be used to fill and repair voids in horizontal and vertical surfaces of concrete areas of substructure as detailed on the plans or as directed by the Engineer.

Work under this item shall consist of locating and removing loose concrete, deteriorated concrete, and concrete overlaying hollow areas; patching these areas as, well as spalled and scaled areas with Class "S" Concrete formed to the original contour. The work shall include sandblasting, cleaning, and priming any exposed reinforcing steel (if anodes are not used), prior to placing the concrete. Exposed reinforcing steel shall be coated with a cementitious approved primer prior to placing new concrete (if anodes are not used). Locating areas of concrete in need of repair shall be performed during hands-on inspection of the existing structure. Labor, materials, and equipment necessary to complete the hands-on inspection, and to provide access for the Engineer to perform a hands-on inspection to verify the extent of repairs is incidental to this work.

This work includes placement of welded wire fabric or reinforcement in patch areas or splicing new reinforcement or mechanical splicer bar and couplers, to the limits identified on the plans.

The Contractor shall not perform any repair work without prior approval by the Engineer for location, limits and types of repairs. The Contractor's schedule shall include adequate time for the Resident Engineer to verify and approve the proposed work.

The Class “S” Concrete for patching shall be tinted to match existing concrete color at all exterior surfaces

Article 6.01.02-Materials: Materials shall conform to Section M.03 as modified herein below:

M.03.01 – Component Materials

1. Coarse Aggregate: is supplemented with the following

- (c) **Gradation:** Grading Coarse Aggregate for the Class "S" Concrete shall meet the following gradation requirements:

For Class “S”: The required grading shall be obtained by using 100 percent 3/8” coarse aggregate.

3. Cement: Add the following:

Type I or II Portland Cement shall be used for Class "S" Concrete.

5. Admixtures: is amended and supplemented as follows:

Delete Subarticle “(b) Other Chemical Admixtures: ...” in its entirety and substitute with the following:

- (b) **Superplasticizing Admixtures:** The superplasticizer admixture shall be a high-range water reducer (HRWR) capable of increasing the slump of the mix from approximately 2.5 inches to 6.5 inches upon the addition of the amount recommended by the respective manufacturer. The HRWR shall conform to ASTM C494 Type F or Type G and shall be approved by the Engineer. The use of this material shall be in strict accordance with the respective manufacturer's written instructions and procedures.

M.03.02 – Mix Design Requirements: is supplemented to include Class “S” superplasticized concrete.

28 DAY MIN.		PROPORT. BY	WATER PER BAG	
<u>TYPE</u>	<u>COMPR. STR</u>	<u>WT. APPROX.</u>	<u>MAX.</u>	<u>CEM. FACTOR</u>
Class "S"	4000 PSI	1:2.16:2.20	5.7 (Gals.)	7.0 (Bags/C.Y.)

M.03.03 – Producer Equipment and Production Requirements: Is supplemented with the following:

2. Hand Mixed Concrete: Add the following:

For hand mixing of Class “S” Concrete, the Contractor shall provide scale(s) approved by the Engineer in which cement and aggregate can be accurately weighed for the required mix proportions.

The Contractor shall also have measuring graduates marked in ounces for the proportioning of the A.E.A. and the HRWR. Do not mix the A.E.A. and the HRWR together before adding to the mix; the resultant solution will not work. Do not add the A.E.A. and the HRWR at the mixer simultaneously, these admixtures must be added separately in the mixing cycle. All manufactured materials shall be stored, mixed and used in strict accordance with the written recommendations of the respective manufacturers.

M.03.04 - Curing Materials: is amended and supplemented as follows:

3. Liquid Membrane Forming Compound: add the following:

No liquid membrane forming compound shall be used for Class “S” Concrete.

Article 6.01.03 – Construction Methods: is supplemented by adding the following test. Where this specification deviates from the Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, the intent of this special provision shall govern.

4. Acceptance Testing and Test Specimens: is supplemented as follows:

(a) Temperature, Air Content and Slump: Add the following:

Class “S” Concrete shall conform to the requirements as specified in Article M.03.01 as amended herein. Class “S” Concrete shall contain not less than 6.5 percent and not more than 8.5 percent entrained air at the time of placement.

Class "S" Concrete shall have a slump range of 2 inches to 4 inches prior to the addition of the HRWR and from 6 inches to 8 inches slump after the addition of the HRWR. The addition rates of the air-entraining admixture (A.E.A.) and the HRWR will vary. Frequent field testing of the air content and slump prior to and after addition of the HRWR will be the determining factor of actual addition rates for each admixture.

9. Curing Concrete: Add the following:

Concrete shall be cured by leaving forms on for seven (7) days and wetting them frequently.

Add the following new subarticles:

14. Material Storage: The Contractor shall store and maintain the A.E.A. and the HRWR materials in clean original containers as delivered by the manufacturer.

15. Work Procedure: Before any concrete is removed, the Contractor shall determine, in the presence of the inspector, the exact limits and locations of all areas to be worked on under this item. The Contractor shall provide all scaffolding necessary to perform the required work. The limits of each area shall be suitably marked.

The perimeter of each patch shall be saw cut 1-inch deep. Care shall be taken not to cut existing reinforcing.

Loose and deteriorated concrete shall be chipped away back to sound concrete and at least 1 inch beneath the stirrups (typically #4 bars).

All surfaces of exposed concrete and reinforcing steel shall be thoroughly sandblasted and vacuumed immediately prior to forming. Following sandblasting, all surfaces shall be free of oil, solvent, grease, dirt, dust, bitumen, rust, loose particles and foreign matter.

Extreme care shall be taken, where reinforcing steel is uncovered, not to damage the steel. Pneumatic tools shall not be placed in direct contact with reinforcing steel. Maximum 30 lb. size hammers shall be used for general chipping and removal while maximum 15 lb. size shall be used behind reinforcing steel. Exposed reinforcing shall remain in place except where specifically indicated for removal by direction of the Engineer. Exposed reinforcing steel shall be sandblasted in accordance with SSPC-SP-6, Commercial Blast Cleaning, to remove all contaminants, rust and rust scale.

Where the existing reinforcing steel is severely corroded or damaged, it shall be cut out and replaced with new reinforcing steel of the same size and spacing. Where existing steel is determined by the Engineer to have insufficient cover, it shall either be replaced or adjusted as directed. New steel shall be attached behind the existing steel with a minimum length for lap splices as required by AASHTO or as directed by the Engineer. Concrete shall be removed to a minimum depth of 1" behind new steel.

When using sandblasting equipment, all work shall be shielded for the protection of the public.

All compressed air equipment used in cleaning, shall have properly sized and designed oil separators, attached and functional, to assure the delivery of oil-free air at the nozzle.

Adequate measures shall be taken by the Contractor to prevent concrete chips, tools and/or materials from entering into adjacent roadway lanes or dropping to areas below the structure. All debris shall be promptly swept up and removed from the site.

All materials removed shall be satisfactorily disposed of by the Contractor. The Contractor shall design, furnish, install and remove temporary demolition shields to prevent debris from dropping below as directed by the Engineer.

The Contractor shall submit working drawings to the Engineer in accordance with Article 1.05.02. The debris shield shall remain in place during construction until the Engineer determines it is no longer needed. The Contractor is responsible for the integrity and maintenance of the shield during their use.

Forms and support systems shall be properly designed in accordance with subarticle 6.01.03(1). Forms shall be so designed that placement access shall be allowed at the top of the formwork assembly.

No bonding compounds shall be used before or during the placement of this concrete material. Concrete surfaces against which this material is to be placed shall be sound, tight, and thoroughly roughened by the removal and sandblasting procedures specified above. The exposed concrete surfaces shall be dampened with fresh water immediately prior to placement of the fresh concrete by "hosing" down the areas behind the forms as thoroughly as possible. Light rust formations on sandblasted reinforcing steel prior to concrete placement is normal and acceptable.

The minimum ambient and patch area surface temperature shall be 45 deg. Fahrenheit and rising at the time of concrete installation.

Prior to forming up vertical surfaces, reinforcing steel welded wire fabric conforming to the requirements of M.06.01(3) shall be installed at the proper depth to those areas greater than 4 square feet and 1 inch deep as approved by the Engineer. The fabric shall be tied to any exposed reinforcing steel or anchored to sound concrete with powder actuated anchors as approved by the Engineer.

Placement of the fresh concrete shall be in the maximum height lifts possible under the circumstances and all freshly placed concrete shall be consolidated during placement with adequately sized and effective vibrators.

Following curing and stripping, the exposed faces of new concrete shall be finished off with the use of the appropriate tools to blend in the physical appearance to the surrounding areas as much as possible.

Cured patches areas shall be sounded by the Engineer to detect the presence of any hollow spots. Such spots shall be removed and replaced by the Contractor at his own expense until a patch acceptable to the Engineer is in place.

Article 6.01.04 – Method of Measurement: Add the following:

Class "S" Concrete shall be measured for payment by the actual volume in cubic yards of concrete placed, and accepted by the Engineer. Welded wire fabric and reinforcing steel required during performance of this work is incidental and is not measured.

Article 6.01.05 – Basis of Payment: Add the following:

"Class "S" Concrete" will be paid for at the contract unit price per cubic yard, complete in place, which price shall include performing hands-on inspection, providing access to the Engineer for hands-on inspections, locating and removing unsound material, sawcutting or chiseling, sandblasting, cleaning, application of cementitious primer on the existing reinforcing steel, forming, placing, curing, stripping and finishing new concrete, and all materials, equipment, tools, construction access, labor and clean-up incidental thereto. Welded wire fabric, reinforcing, splicing, mechanical splicer bars and couplers, furnishing and installing expansion anchors, as shown on the plans, is incidental to placement of "Class "S" Concrete" patches and is included in the contract unit price.

<u>Pay Item</u>	<u>Pay Unit</u>
Class "S" Concrete	C.Y.

ITEM #0601097A – VARIABLE DEPTH PATCH

Description: Work under this item shall consist of removing loose, deteriorated concrete, and concrete overlaying hollow areas, and applying a cementitious mortar to these areas as well as spalled and scaled areas as shown on the plans, as directed by the Engineer, and in accordance with these specifications.

Materials: The cementitious mortar shall be one of the following, or an approved equal:

5 Star Structural Concrete V/O

Manufactured by: Five Star Products, Inc.
750 Commerce Drive
Fairfield, CT 06825

Re-crete 20 Minute Set

Manufactured by: Dayton Superior Specialty Chemical Corp.
4226 Kansas Avenue
Kansas City, KS 66016

Emaco S88 CI

Manufactured by: BASF Building Systems
889 Valley Park Drive
Shakopee, MN 55379

The cementitious primer shall conform to Federal Specifications, and shall be brush applied in two coats.

Certification: A Materials Certificate shall be required in accordance with Article 1.06.07, certifying the conformance of this material to the requirements set forth in this specification.

Construction Methods: Before any concrete is removed, the Engineer shall perform an inspection to determine the exact limits and locations of all areas to be repaired.

The perimeter of each deteriorated area shall be squared up to a minimum of 1/2-inch deep by chiseling or sawcutting. Care shall be taken not to cut existing reinforcing.

Loose and deteriorated concrete and hollow areas shall be chipped away back to sound concrete. The exposed concrete surfaces shall be thoroughly sandblasted and vacuumed immediately prior to applying the mortar.

All surfaces of exposed concrete and reinforcing steel shall be free of oil, solvent, grease, dirt, dust, bitumen, rust, loose particles, and foreign matter. Prior to sandblasting of concrete and steel surfaces, all petroleum contamination on these surfaces shall be removed by an appropriate solvent or detergent cleaning operation.

All compressed air equipment used in cleaning shall have properly sized and designed oil separators, attached and functional, to assure the delivery of oil-free air at the nozzle.

Particular care shall be taken where reinforcing steel is uncovered, not to damage the steel or its bond in the surrounding concrete. Pneumatic tools shall not be placed in directed contact with reinforcing steel. Maximum 15 lb. size hammers shall be used for general chipping and removal. For Precast Concrete Beams concrete removal shall be performed with hand tools, no power actuated tool removal is allowed. Exposed reinforcing steel shall be sandblasted in accordance with SSPC-SP-6, Commercial Blast Cleaning, to remove all contaminants, rust and rust scale.

All exposed blast-cleaned reinforcing steel shall be coated with two coats of an approved cementitious primer, brush applied (Note: the second coat shall only be applied after the first has dried). Applications of the cementitious primer shall be in accordance with the manufacturer's printed instructions.

If the existing reinforcing steel is severely corroded or damaged, the Engineer all be notified immediately.

Adequate measures shall be taken by the Contractor to prevent concrete chips, tools and materials from entering into adjacent roadway lanes or dropping to areas below the structure. When using sandblasting equipment, all work shall be shielded for the protection of the public. All debris shall be promptly swept up, removed and satisfactorily disposed of by the Contractor from the site.

All mixing and application of the mortar shall be done in strict accordance with the printed instructions supplied by the manufacturer and as directed by the Engineer.

At the time of mortar application, the concrete surfaces against which this material is to be placed shall be sound, tight and thoroughly roughened by the removal and sandblasting procedures specified above. The exposed concrete surfaces shall be dampened with fresh water (saturated surface dry) immediately prior to placement of the mortar. The minimum ambient and patched area surface temperatures shall be 45° F and rising at the tie of mortar application.

The mortar shall be packed into the substrate, filling all pores and voids, then forced against the edges of the repair, working toward the center. After filling the voids, the mortar shall be compacted and the surfaces truck off with a steel trowel to match the original contour of the existing concrete.

A fine spray mist of water shall be used to aid the cure of the patches by preventing the surface from drying for a minimum of 2 hours.

Cured patches shall be sounded by the Engineer to detect the presence of any hollow spots. Such spots shall be removed and replaced by the Contractor at his own expense until an acceptable patch is in place.

Method of Measurement: This work will be measured for payment by the actual number of cubic feet of cementitious mortar incorporated into the completed and accepted work.

Basis of Payment: This work will be paid for at the contract unit price per cubic foot for "Variable Depth Patch", complete in place, which price shall include removal of loose and deteriorated concrete, sawcutting or chiseling, sandblasting, disposal of removed concrete and preparation materials, cementitious primer on the reinforcing steel, welded wire fabric, and all materials, equipment, tools, construction access, labor and work incidental thereto.

Pay Item

Variable Depth Patch

Pay Unit

C.F.

ITEM #0601270A - FULL DEPTH PATCH (HIGH EARLY STRENGTH CONCRETE)

Description: This item shall consist of the saw cutting concrete, removal of all deteriorated concrete for the full depth of the deck slab, furnishing and installing deformed steel bars, and reconstructing the slab with new concrete, where directed by the Engineer and as hereinafter specified.

Work under this item shall also include the providing of a safe access to the structure for the delineation of the repair locations and review of the performed work. The Contractor shall not perform any repair work without prior approval of the Engineer for location, limits and types of repairs.

Materials: The materials shall conform to the following requirements:

1. High Early Strength Concrete – The high early strength concrete shall conform to one of the following:
 - A. The Contractor shall design and submit to the Engineer for approval a high early strength concrete mix. This mix shall be air-entrained, and shall be composed of Portland cement, fine and coarse aggregates, approved admixtures and additives, and water. The mix shall contain between 4% and 7% entrained air, and shall attain a 6-hour compressive strength of 2,500 psi. Additionally, the mix shall contain shrinkage compensating additives such that there will be no separation of the patched area from the parent concrete. This shrinkage-compensating additive shall be utilized so as to produce expansion in the high early strength concrete of no more than 3%.
 - B. In lieu of the above high early strength concrete mix, the Contractor may propose the use of a proprietary type mix that will meet the same physical requirements as those stated above. A mix design shall be submitted for this material, stating the percentage of each component to be utilized.
2. Regardless of the type of high early strength concrete proposed by the Contractor, substantive data that demonstrates the ability of the material to meet the specification requirements shall be submitted with the proposed mix design at least 2 weeks prior to its use.
3. Deformed Steel Bars: Section 6.02.

Construction Methods: Construction methods shall conform to the following requirements:

1. Inspection of the Structural Slab: Before any existing concrete is removed from the structural slab, the Contractor will provide the Engineer clear access to the bridge deck. During this time, the Engineer will perform an inspection of the structural slab and designate areas where concrete removal will be required. Due to the nature of the

operations, the inspection can be performed only after some existing materials, notably overlays and waterproofing systems, have first been removed from the structural slab. It shall be the responsibility of the Contractor to arrange the construction schedule so that the required operations may be performed without causing delay to the work.

No operations will be performed by the Engineer until after the following construction work has been completed:

- a) The existing bituminous overlay or concrete wearing course, if present, has been removed.
- b) The existing waterproofing system, if present, has been removed.

The removal of these materials will be paid for under other applicable items.

It shall be the responsibility of the Contractor to inform the Engineer, in writing, of the date that a structure will be available for inspection operations. Notification shall be given to the Engineer at least 7 days prior to the date that the area in question will be in a condition acceptable to the Engineer.

The Contractor is hereby informed that the following time period will be necessary to perform the required inspection operations:

One (1) working day with suitable weather conditions per each 6,000 square feet, or portion thereof, of structural slab area.

The Contractor will not be allowed to do any further work to the structural slab, until all necessary inspection operations have been performed, unless given permission by the Engineer. The Contractor shall include any costs related to the allowance for this inspection in the general cost of the work.

2. Removal of Deteriorated Concrete: All deteriorated concrete shall be removed within the limits shown on the plans and where ordered by the Engineer. The lateral limits of each area to be repaired will be delineated by the Engineer and suitably marked. Where several areas to be repaired are very close together, the Engineer may combine these individual patches into a large area. The outlines of each such area shall first be cut to a depth of 1/2 inch with an approved power-saw capable of making straight cuts. In the event that reinforcing steel is encountered within the upper 1/2 inch depth during sawing operations, the depth of saw-cut shall immediately be adjusted to a shallower depth so as not to damage the steel bars. If so directed by the Engineer, saw cutting shall again be carried down to the 1/2 inch depth at other locations of repair provided reinforcing steel is not again encountered. Where over-breakage occurs resulting in a featheredge, the featheredge be squared up to a vertical edge in an approved manner. Where sawing is impractical, the areas shall be outlined by chisel or other approved means.

The removal of concrete shall be by hydro-demolition or pneumatic hammer methods and shall be governed by the requirements set forth in the special provision Item “Partial Depth Patch” and as directed by the Engineer.

The Contractor shall take adequate measures to prevent concrete debris from falling to any area below the structure and onto adjacent roadway lanes. All debris shall be promptly cleaned up and removed from the site. All material removed shall be satisfactorily disposed of by the Contractor.

Where existing reinforcing steel is damaged or has insufficient cover as determined by the Engineer, it shall be cut out and replaced with new reinforcing steel the same size, with a minimum length for lap splices as indicated on the plans or as directed by the Engineer.

3. Surface Preparation: Sound reinforcing steel which is in the proper position in the slab shall be left in place and cleaned of all concrete. The smaller fragments shall be removed with hand tools or by water blast cleaning.

The newly exposed reinforcing steel and concrete faces shall be cleaned of loose or powder-like rust, oil solvent, grease, dirt, dust, bitumen, loose particles, and foreign matter just prior to patching.

Existing concrete surfaces against which the new patch will be placed shall be dampened. All free water shall be removed from the surface.

Forms shall conform to the pertinent requirements of Subarticle 6.01.03-1.

The cleaned concrete surface area to receive patching material shall be wetted for a 1 hour period immediately prior to placement of the concrete patch. Any standing water shall be blown out with compressed air prior to application of binding grout and patch material.

After wetting of the deck patch area to receive patching, and removal of the standing water, cement binding grout shall be scrubbed into the concrete patch bonding surface with stiff bristled brushes. All bonding surfaces in the patch area shall receive a coating of bonding grout within a time period not to exceed 5 minutes prior to placement of the concrete patch material.

4. Mixing, Placing, and Finishing: Mixing and placing concrete shall be done in accordance with the applicable portions of Article 6.01.03. Mixing and placing shall not be executed unless the ambient temperature is above 40 °F and rising.

The concrete mix shall be properly placed to insure complete contact around all reinforcing steel and against existing concrete at patch edges and compacted to a level slightly above the surrounding deck surface. Vibrators of the appropriate size shall be used for all consolidation of the concrete, regardless of the size of the patch area, with no hand tamping or rodding allowed. Concrete may be moved horizontally with the aid of hand tools, but not with the use of vibrators (excess vibration shall be avoided).

Vibrating plates or vibrating screed shall be used on the surface of all patches for strike off and consolidation. After the concrete has been spread evenly and compacted to a level slightly above the adjacent concrete surface, the vibrating plate or screed shall be drawn over the surface at a uniform speed without stopping, in order to finish the surface smooth and even with adjacent concrete. The surface shall be float finished. Finishing operations shall be completed before initial set takes place.

5. Curing: Immediately after finishing of the patch area, a sheet of 4 mil polyethylene shall be placed over the repair area, in conjunction with insulating curing material. This material shall be a minimum of 2-inch thick closed cell extruded polystyrene insulation board that conforms with the requirements of ASTM C578. It shall have a minimum certified R-value of 10. The insulating material shall extend a minimum of 12 inches beyond the limits of the patch area, and shall be kept in intimate contact with the surrounding payment surface to prevent lifting of the material. It shall be weighted down with sandbags that weight at least 15 pounds each. The sandbags shall be placed a minimum of 2 feet on center around the patch area.

Cured patches, having a hollow sound when chain dragged or tapped (indicating delamination), shall be replaced by the Contractor at its expense until a patch acceptable to the Engineer is in place.

6. Tolerances in Finished Patch Surfaces: The surface profile of the patched area shall not vary more than 1/8 inch in a distance of 10 feet, when a 10 foot long straightedge is placed on the surface at any angle relative to the centerline of the bridge. Humps in the patch that exceed the 1/8 inch tolerance shall be ground down by approved machinery. Sags or depressions in the surface of the patch area that exceed 1/8 inch tolerance as determined by the Engineer shall be repaired by removal of the concrete in the depression to a depth of 1 inch and repaired in the previously described manner.
7. Testing: The Contractor shall form, cure and test all concrete test cylinders under supervision of a representative of the Department. The dimensions, type of cylinder mold, number of cylinders, and method of curing shall be as directed by the Engineer.

The Contractor shall provide a portable compressive testing machine, on Site, for the purpose of testing all compressive strength cylinders. All testing shall be in accordance with the requirements of ASTM C39. NOTE: This compressive testing machine must be calibrated in accordance with the provisions of Section 5, ASTM C39.

8. Time Schedule: Traffic will not be allowed on any areas where the Contractor has placed and finished concrete until the material has properly cured as specified, and has developed the required strength of 2,500 psi as determined by the compressive strength test, or until the Engineer authorizes its opening to traffic.

All work shall proceed as required by the "Maintenance and Protection of Traffic" and "Prosecution and Progress" specifications elsewhere within the Contract.

Method of Measurement: This work will be measured for payment by the actual volume in cubic yards of replacement concrete, complete and accepted. No deduction will be made for the volume of reinforcing steel. Removal of concrete will not be measured for payment.

Basis of Payment: This work will be paid for at the Contract unit price per cubic yard for “Full Depth Patch (High Early Strength Concrete)” complete in place, which price shall include sawcutting and removal of concrete, surface preparation, furnishing and installing deformed steel bars, concrete replacement, all equipment, tools, labor and work incidental thereto.

Pay Item	Pay Unit
Full Depth Patch (High Early Strength Concrete)	c.y.

ITEM #0601318A - PARTIAL DEPTH PATCH

Description: Work under this item shall consist of the removal of spalled, delaminated or otherwise deteriorated concrete from existing bridge decks, approach slabs and headers by pneumatic hammers or hydro-demolition methods, and replacement with fast setting patching material as shown on the plans, as directed by the Engineer and specified herein.

Where ordered by the Engineer, work under this item shall also include inspecting the underside of the deck concrete for popouts caused by the removal of deteriorated concrete.

Work under this item shall also include the furnishing and installation of wire ties for reinforcing bar and vertical supports on inadequately supported or vibrating reinforcing steel within deck patch areas, as ordered by the Engineer.

Materials: The materials shall meet the following requirements:

- 1) **Patching Material:** The patching material shall be a concrete composed of a quick setting cement, fine aggregate, coarse aggregate and water. This concrete shall harden within 40 minutes, and develop minimum compressive strengths of 1,000 psi within 1 hour after set and 3,000 psi within 3 days.

The Contractor shall design and submit a quick setting mix to the Engineer for acceptance. Said mix design shall meet the strength requirements noted above and shall attain a minimum of 2500 psi prior to allowing traffic on patched surfaces. The mix proportions and method of application shall be in accordance with the manufacturer's recommendations. Sources of supply of all the materials shall be clearly indicated.

Fine aggregate shall meet the requirements of Subarticle M.03.01-2.

The coarse aggregate shall meet the requirements of Subarticle M.03.01-1. The required grading shall be obtained by using 100% of No. 8 size coarse aggregate. Grading of the aggregate shall conform to the gradation for No. 8 stone in Article M.01.01.

Water shall meet the requirements of Subarticle M.03.01-4.

The quick setting cement shall be one of the following materials:

MasterEmaco T 415
BASF
23700 Chagrin Blvd.
Beachwood, OH 44122
216-839-7016

www.master-builders-solutions.basf.us

Perma Patch
Dayton Superior Corporation
7130 Ambassador Dr.
Allentown, PA 18106
800-745-3707

www.daytonsuperior.com

Rapid Set DOT Cement
CTS Cement Manufacturing
11065 Knott Ave. Suite A
Cypress, CA 90630
800-929-3030
www.ctscement.com

Speed Crete Green Line
Tamms Industries
730 Casey Ave.
Wilkes-Barre, PA 18702
800-218-2667
www.dpproducts.com/products/tamms.html

Fastcrete
Silpro Corporation
2 New England Way
Ayer, MA 01432
800-343-1501
www.silpro.com/products/fastcrete.shtml

Gypsum Based Materials will not be allowed.

Construction Methods:

Removal of concrete for partial depth patch will be performed by one of two methods: Hammer Demolition or Hydro-demolition. Prior to beginning any work, the Contractor shall provide submittals outlining intended method, as defined herein.

- 1) Inspection of the Deck: Before any existing concrete is removed, the Contractor shall provide the Engineer clear access to the bridge deck. During this time, the Engineer will perform an inspection of the structural slab and will designate areas where concrete removal shall be required. It shall be the responsibility of the Contractor to arrange the construction schedule so that the required operations may be performed without causing delay to the work.

No operations will be performed by the Engineer until after the following construction work has been completed:

- a) The existing bituminous overlay or concrete wearing course, if present, has been removed.
- b) The existing waterproofing system, if present, has been removed.

Note: The removal of this material will be paid for under other applicable items.

It shall be the responsibility of the Contractor to inform the Engineer, in writing, of the date that a structure will be available for inspection operations. Notification shall be given to the Engineer at least 7 days prior to the date that the area in question will be in a condition acceptable to the Engineer.

The Contractor is hereby informed that the following time period will be necessary to perform the required inspection operations:

One working day with suitable weather conditions per each six thousand (6,000) square feet, or portion thereof, of deck area.

The Contractor will not be allowed to do any further work to the structure, until all necessary inspection operations have been performed, unless given permission by the Engineer.

The Contractor shall include any costs related to the allowance for this inspection in the general cost of the work.

- 2) Hammer Demolition: The maximum allowable noise level caused by equipment used for the removal of deck concrete shall not exceed 90 decibels on the "A" weighted scale, as measured at the nearest residence or occupied building. The Contractor shall demonstrate, to the satisfaction of the Engineer, that the equipment will meet this requirement before the use of such equipment will be allowed.

The weight of pneumatic hammers when used shall not exceed 30 pounds for concrete removal above the top reinforcing steel nor 15 pounds for concrete removal below the top reinforcing steel.

- 3) Hydro-Demolition Water and Equipment: All hydro-demolition equipment shall be capable of selectively removing spalled, delaminated or otherwise deteriorated concrete and cleaning the existing reinforcing steel of all rust and corrosion products by use of high-velocity water jets acting under continuous automatic control.

The hydro-demolition equipment shall consist of filtering and pumping units operating in conjunction with a remote-controlled robotics device.

All hydro-demolition equipment shall be equipped with an angled and rotating water nozzle to prevent interference of the existing reinforcing steel with the removal of concrete.

The maximum allowable noise level caused by equipment used for the removal of deck concrete shall not exceed ninety (90) decibels on the "A" weighted scale, as measured at the nearest residence or occupied building. The Contractor shall demonstrate, to the satisfaction of the Engineer, that the equipment will meet this requirement before the use of such equipment will be allowed.

The make and model numbers of hydro-demolition equipment shall be submitted for acceptance by the Engineer. No hydro-demolition work shall be initiated until this acceptance is granted.

The Contractor shall provide structurally adequate shields approved by the Engineer for protection of adjacent traffic lanes in the vicinity of the removal and cleanup operations.

Water used for the hydro-demolition shall be potable.

The Contractor is advised that the withdrawal of more than 50,000 gallons of water per day from a single source other than from a municipal water system shall require a diversion permit issued by the Department of Energy and Environmental Protection, Water Resources Unit, in accordance with the Connecticut Water Diversion Policy Act PA 84-402, CGS Sections 22a-365 through 22a-378.

4) Hydro-Demolition Drainage Runoff Control: At least 2 weeks prior to the planned initiation of hydro-demolition operations, the Contractor shall submit to the Engineer for acceptance a comprehensive plan for the hydro-demolition operation. This Hydro-Demolition Plan shall include the following:

- a) Equipment
- b) Containment
- c) Filtration
- d) Location of trial areas
- e) Disposal of hydro-demolition runoff and concrete debris in conformance with these specifications
- f)

The Plan shall ensure that all concrete debris and particulate matter will be removed from hydro-demolition runoff water prior to its release to the environment.

The Plan shall include provision for the concurrent vacuuming of all runoff water at the immediate vicinity of the hydro-demolition operation. Runoff water shall be completely contained and vacuumed into a suitably sized water tight mobile tank for transport to a disposal site sedimentation basin acceptable to the Engineer.

Hydro-demolition operations shall proceed only with the simultaneous operation of a runoff water vacuum pickup in the immediate area of the hydro-demolition operation. Runoff water shall not be allowed to flow across adjacent travel lanes, across bridge joints nor through any existing bridge drainage system.

The size and location of the disposal site sedimentation basin shall be detailed in the Hydro-Demolition Plan. The sedimentation basin shall be properly sized so that uncontrolled overflow does not occur. At the conclusion of hydro-demolition operations, the sedimentation basin and all concrete debris shall be removed and the area restored to its original condition.

The Plan shall additionally conform to all applicable requirements of Section 1.10 Environmental Compliance of the Standard Specifications.

The acceptance by the Engineer of the Hydro-Demolition Plan shall in no way relieve the Contractor of any responsibility for its safe and effective performance.

- 5) Calibration and Testing of Hydro-Demolition Equipment: A trial area will be designated by the Engineer to demonstrate that the equipment, personnel and methods of operation are capable of producing satisfactory results. The trial area will consist of 2 patches, each of approximately 20 square feet, one area of deteriorated or defective concrete and one area of “sound” concrete as determined by the Engineer.

Area of sound concrete is defined as: An area free from chemical defects, delamination, spalling, cracks, etc.

In the “sound area of concrete,” the equipment shall be programmed to remove concrete to a depth 1 inch \pm 1/4 inch below the top reinforcing steel mat.

After completion of the sound concrete test area, the equipment shall be located over the deteriorated or defective concrete and, using the same parameters as for sound concrete removal, shall remove all deteriorated or defective concrete. If a satisfactory result is obtained, these parameters may be used as a basis for production removal.

If, after calibrating the hydro-demolition equipment and beginning removal operations in a particular zone or area, insufficient removal of concrete is observed, in the opinion of the Engineer, the Contractor shall recalibrate the hydro-demolition equipment for that zone or area to the satisfaction of the Engineer.

- 6) Removal of Deteriorated Concrete: All deteriorated concrete designated for removal under this construction item shall be removed within the limits shown on the plans and where ordered by the Engineer. The lateral limits of each area to be repaired will be delineated by the Engineer and suitably marked. Where several areas to be repaired are very close together, the Engineer may combine these individual patches into a large area. The outlines of each such area shall first be cut to a depth of 1/2 inch with a powersaw capable of making straight cuts prior to pneumatic demolition. In the event that reinforcing steel is encountered within the upper 1/2 inch depth during sawing operations, the depth of saw-cut shall immediately be adjusted to a shallower depth so as not to damage the steel bars. If so directed by the Engineer, saw cutting shall again be carried down to the 1/2 inch depth at other locations of repair provided reinforcing steel is not again encountered. Where over-breakage occurs resulting in a featheredge, the featheredge shall be squared up to a vertical edge in an acceptable manner. Where sawing is impractical, the area shall be outlined by chisel or other acceptable means.

All deteriorated concrete shall be removed by pneumatic hammers or hydro-demolition methods.

The depth of concrete removal shall be at least 1 inch below the top reinforcing steel mat but shall be such as to include all spalled, delaminated, or otherwise deteriorated concrete. The Engineer will be the sole determiner of what constitutes deteriorated concrete, using sounding methods or other evaluation measures.

Within 1 hour following the initiation of a concrete removal operation in any patch area, all loose concrete debris shall be removed, followed by water flushing of the existing concrete bonding surface to completely remove all traces of concrete debris and cement residue so that rebonding to the surface of the remaining sound concrete will be prevented. If it is not convenient to clean and flush the patch area within this time frame, all steel reinforcing and concrete bonding surfaces shall be cleaned subsequently by high pressure water blasting at a nozzle pressure not less than 3,000 psi with a sufficient volume to completely remove all rebonded debris and laitance.

Where the existing reinforcing steel is damaged or corroded, it shall be cut out and replaced with new reinforcing steel of the same size. Any sound reinforcing steel damaged during the concrete removal operations, shall be repaired or replaced by the Contractor at its expense, as directed by the Engineer. New steel shall be attached beneath or beside existing steel with a minimum splice length as indicated on the plans, or as directed by the Engineer. The concrete shall be removed to a minimum depth of 1 inch below the new steel.

- 7) Surface Preparation: Sound reinforcing steel which is in the proper position in the slab shall be left in place and cleaned of all concrete, the smaller fragments to be removed with hand tools in patch areas where pneumatic hammers were used.

Reinforcing bar wire ties and vertical supports shall be installed on inadequately supported or vibrating reinforcing steel, as directed by the Engineer.

The concrete surface and reinforcing steel to receive patching material shall be either sandblasted or water blasted, followed by air blasting in order to remove all loose particles and dust. All blasting operations shall be performed using techniques acceptable to the Engineer, taking care to protect all pedestrians, traffic, and adjacent property. All compressed air sources shall have properly sized and designed oil separators attached and functional to allow delivered air at the nozzle to be oil-free. The patch area shall be cleaned of all additional loose or powder-like rust, oil, solvent, grease, dirt, dust, bitumen, loose particles, and foreign matter just prior to patching.

If the patch area was not cleaned and flushed with clean water immediately following hydro-demolition, or if run-off from a nearby hydro-demolition operation was allowed to travel through the previously cleaned and flushed patch surface, all affected concrete and steel reinforcing bonding surfaces shall be water blast cleaned at a nozzle pressure not less than 3,000 psi as directed by the Engineer, to assure that all remaining bond inhibiting laitance is completely removed.

The entire concrete surface to be patched shall be dampened. All excess free water shall be removed from the patch area.

- 8) Mixing, Placing, and Finishing: Unless a winter operations plan has been submitted to the Engineer by the Contractor, mixing and placing concrete shall only take place when the

ambient temperature is above 35°F or per manufacturer's recommendations, whichever is higher. All mixing shall be accomplished by means of a standard drum-type portable mixer. A continuous type mobile mixer may be used if permitted by the Engineer. The Contractor shall calibrate the mobile mixer under supervision of the Engineer. Calibration shall be in accordance with the applicable sections of ASTM method C685. The total mix shall be limited to the quantity that can be mixed and placed in 15 minutes. The concrete mix shall be spread evenly and compacted to a level slightly above the pavement surface. Vibration, spading or rodding shall be used to thoroughly compact concrete and fill the entire patch area. Where practical, internal vibration shall be used in cases where concrete has been removed below the reinforcing steel. Hand tamping shall be used to consolidate concrete in smaller patches, including popouts.

Vibrating plates or vibrating screeds shall be used on the surface of all patches for strike off and consolidation. After the concrete has been spread evenly and compacted to a level slightly above the pavement surface, the vibrating plate or screed shall be drawn over the surface at a uniform speed without stopping, in order to finish the surface smooth and even with adjacent concrete.

The surface shall be float finished.

Finishing operations shall be completed before initial set takes place.

Cured patches, having a hollow sound when chain dragged or tapped, (indicating delamination), shall be replaced by the Contractor at its expense until a patch acceptable to the Engineer is in place.

- 9) Tolerances in Finished Patched Surfaces: The surface profile of the patched area shall not vary more than 1/8 inch in a distance of 10 feet, when a 10 foot long straightedge is placed on the surface at any angle relative to the centerline of the bridge. Humps in the patch that exceed the 1/8 inch tolerance shall be ground down by acceptable machinery. Sags or depressions in the surface of the patch area that exceed the 1/8 inch tolerance shall be repaired by removal of the concrete in the depression over an area determined by the Engineer to a depth of 1 inch and repaired in the previously described manner.
- 10) Underside of Bridge Deck Treatment: The Engineer will examine the underside of the bridge deck for popouts caused by the removal of deteriorated concrete. The exposed reinforcing steel shall be coated with epoxy resin where ordered by the Engineer. The exposed reinforcing steel, if any, which is to receive the epoxy resin coating material shall be cleaned of all loose or powder-like rust, oil, dust, dirt, loose particles, and other inhibiting matter just prior to coating.

The epoxy resin shall be mixed in accordance with the manufacturer's instructions. Also in accordance with the manufacturer's instructions, 2 coats of the mixed material shall be applied in uniform coats of approximately 2 to 3 mils dry film thickness each.

If the popouts extend beyond the bottom layer of reinforcing steel, the popouts shall be repaired as ordered by the Engineer.

- 11) Test Cylinders: The Contractor shall make and perform compressive strength tests on representative cylinders under the supervision of the Engineer in accordance with ACI requirements. The dimensions, type of cylinder mold and number of cylinders will be specified by the Engineer. Traffic shall not be permitted on patched surfaces until the patch material attains a strength of 2500 psi, as determined by breaks of the test cylinders.

A portable compression testing machine shall be provided by the Contractor and available on site for cylinder testing. All testing and equipment shall conform to ASTM C39.

Note: The compression machine must be calibrated in accordance with the provisions of Section 5, ASTM C39.

- 12) Time Schedule: Work under this item begun on any specific bridge during a construction season shall be completed, at least, to include this item, membrane waterproofing and placing of first course of wearing surface as soon as possible and specifically before the beginning of the construction season's winter shutdown.

All work shall proceed as required by the "Maintenance and Protection of Traffic" and "Prosecution and Progress" specifications elsewhere within the Contract.

Method of Measurement: This work will be measured for payment by the actual volume in cubic feet of patching material used in acceptable concrete deck patches, except where the Engineer determines that the Contractor has unnecessarily removed sound concrete. Where sound concrete has been unnecessarily removed, the replacement concrete will not be measured for payment. Providing safe access for delineation and inspection of the performed repairs will not be measured for payment.

Replacement of deteriorated epoxy rebar and repair of epoxy coated rebar at popouts, if required, will be measured for payment under other Contract items.

Basis of Payment: This work will be paid for at the Contract unit price per cubic foot of deck concrete repaired under "Partial Depth Patch," complete and accepted in place, which price shall include removal of deteriorated concrete, surface preparation of patch areas, concrete replacement, the furnishing and installation of reinforcing bar wire ties and vertical supports for inadequately supported existing reinforcing steel, inspection access, all materials, equipment, including the portable compression testing machine required for the testing of the repair material, tools, labor and work incidental thereto.

Replacement of deteriorated epoxy rebar, if required, will be paid for under the item "Deformed Steel Bars – Epoxy Coated."

Epoxy resin coating of exposed epoxy rebar at the underside of the deck, if required, will be paid for under the item "Clean and Coat Exposed Reinforcing Steel."

Pay Item	Pay Unit
Partial Depth Patch	c.f.

ITEM #0601918A – THIN POLYMER (EPOXY) OVERLAY

Description: Work included for payment includes; furnish and apply a two course thin polymer (epoxy) overlay wearing surface on an existing bridge deck surface in accordance with the Contract Documents and as directed by the Engineer.

Materials: The overlay systems and aggregate will be one of the approved systems listed below. Other systems will require testing and approval prior to consideration for substitution. Testing methods shall be proposed by the Contractor and Material Supplier, subject to approval by the Engineer.

Thin Polymer (Epoxy) Overlay System: Shall be one of the following approved systems:

BRAND NAME	MANUFACTURER
Flexolith/Flexolith Summer Grade (SG)	The Euclid Chemical Company Cleveland, OH
MARK-163 FLEXOGRID	POLY-CARB, Inc. Roberta, GA
Pro-Poxy Type III DOT	Unitex Chemicals Kansas City, MO
SSI RE-DECK	C.S. Behler, Inc. Lancaster, NY
MasterSeal® 350	BASF Building Systems Shakopee, MN
T-48 Thin Polymer Overlay	Transpo Industries, Inc. New Rochelle, NY

Submittal Requirements: The manufacturer will provide material detail and application requirements for acceptance including:

1. Product Information:
 - Identify Components
 - Storage and handling requirements

2. Surface Preparation:
 - Describe the method of cleaning
 - Identify the required level of cleanliness
 - Identify the bond strength
 - Moisture and temperature requirements (Limitation)
 - Address any structural repairs needed

3. Application Procedures:

- Describe all procedures in mixing, preparation and application

4. Curing:

- Describe curing procedure and anticipated cure times vs. temperature.

Packaging and Shipment: All components shall be shipped in appropriate containers, bearing the manufacturer's label specifying date of manufacture, batch number, brand name, quantity, and date of expiration or shelf life.

Construction Methods:

A. General: The Materials Details and Material Safety Data Sheets (MSDS) for the thin polymer (epoxy) overlay system are to be made available to all personnel involved in the application procedure.

A technical representative from the overlay manufacturer shall be on-site during all phases of the work to make recommendations and to facilitate the overlay installation. This shall include, but not be limited to Personal Protective Equipment, surface preparation, deck surface repairs, overlay application, and overlay cure.

Contractor shall provide adequate shielding to protect traffic and surrounding environment from rebound and dust during surface preparation and shot-blast cleaning work. Any spent shot blast beads, shot blast waste shall be removed from the project by the end of the day.

Contractor shall provide suitable coverings (e.g. heavy duty drop cloths) during overlay application to protect all exposed areas not to be overlaid, such as curbs, sidewalks, parapets, expansion joints, etc. Any damage or defacement resulting from this application shall be thoroughly cleaned and/or repaired to the Engineer's satisfaction and at no additional cost to the State.

B. Storage of Materials: All materials will be stored in accordance with the Materials Details.

C. Installation Procedure:

1. Surface Preparation: The Contractor will perform all necessary deck repair work, and concrete placement, prior to placement of the epoxy overlay. Once the required repair area(s) have been identified, confer with the preapproved selected supplier of the Thin Polymer (Epoxy) Overlay system to ensure that the repair material is compatible with the selected system. Allow for all repair materials to properly cure prior to placement of Thin Polymer (Epoxy) Overlay system. The deck repairs will be made where indicated on the plans or where directed by the Engineer. Repairs will be paid for under the appropriate structural concrete removal item. Concrete patches will be completely cured prior to placement of the epoxy overlay. After deck repairs are completed, cured and prior to placement of the overlay, the Contractor shall shot blast the entire deck surface to remove asphaltic materials, oil, grease, dirt, sealers, rust, laitance, curing compounds, paint and weak concrete materials that would inhibit successful bonding of the epoxy overlay to the deck surface.

Automatic shot-blast units shall use a vacuum to recover spent abrasives. Magnetic rollers or other devices shall be used to remove any spent shot remaining on the deck after vacuuming. Traffic paint lines shall be completely removed prior to placement of the overlay and reapplied upon completion of the overlay. Freshly repaired and cured concrete areas shall be cleaned. Blast clean all surfaces to be in contact with new concrete. Remove all grease and dirt. Remove all rust and mortar which is not firmly bonded to the surface being cleaned. Rust and concrete deposits which are firmly bonded and cannot be removed by blast cleaning may remain. Remove all debris created by blast cleaning. All steel surfaces that will be in contact with the overlay shall be cleaned according to SSPC-SP No.10, Near-White Blast Cleaning. A profile of CSP5-6 is desired.

A new bridge deck surface, and newly placed concrete, must cure for at least 28 calendar days before beginning installation of polymer overlay systems.

The bridge deck surface must be dry prior to the application of the thin polymer (epoxy) overlay system. No visible moisture shall be present on the bridge deck at the time of placement. Prior to overlay application, moisture content reading must be $\leq 5.0\%$ using a moisture meter, or use ASTM D4263 - Indicating Moisture in Concrete by the Plastic Sheet Method for a minimum of 2 hours. If using ASTM D4263, no visible moisture is considered acceptable.

*Do not apply overlay if rain is expected during installation or curing time.
Do not apply if the deck temperature is within 5°F of the dew point.*

Bond Strength to structure: Acceptability of the surface preparation may be determined by the use of a vertical axis pull bond test. Test shall be performed in accordance to ACI 503R-30 or ASTM C1583/C1583M and shall have a minimum bond strength of 250 psi or achieve failure of the concrete. The test shall be performed every 100 linear feet (LF) minimum or 300 LF maximum. Minimum 4 pull-off tests are required per structure. The Engineer will determine the test locations or per manufacturer representative recommendation.

Immediately prior to application of the overlay, the Contractor shall request and receive approval to proceed from the Engineer to assure that the surface is acceptable for application of the thin polymer (epoxy) overlay.

2. Application: The thin polymer (epoxy) overlay shall be applied in accordance with this specification and the Manufacturer Materials Detail Sheets (MDS).

Epoxy Resin Application Rate:

Course #1: Epoxy rate is 30 ft²/gal

Course #2: Epoxy rate is 20 ft²/gal

Aggregate Application Rate: Approximately ~ 1.5 lb/ft² or to refusal per course. The two courses of the thin polymer (epoxy) overlay shall be applied within 24 hours following final surface preparation. If the overlay is not applied within 24 hours, or the accepted prepared surface is opened to traffic and/or contaminated in any way, the surface shall be re-cleaned to the satisfaction of the Engineer at no additional cost to the State.

Expansion and longitudinal joints shall be protected from contaminants by masking or other methods as approved by the Engineer. Consult with manufacturer's representative and approved

Material Details to address details at joints and drainage structures. The Contractor shall demonstrate that these requirements are met to the Engineer's satisfaction.

3. Finishing: The Contractor shall use methods and equipment for finishing the overlay materials in accordance with the Materials Details. The completed overlay surface shall be free of any smooth or "glassy" areas such as those resulting from insufficient quantities of surface aggregate. Contractor shall repair such surfaces as recommended by the manufacturer and approved by the Engineer at no additional cost to the State.

4. Surface and Thickness Requirements: The specified thickness requirements shall be verified by the manufacturer's representative to the Engineer's satisfaction.

D. Curing: The thin polymer (epoxy) overlay shall be cured before subjecting it to traffic or any loads that would damage the overlay. Cure time is dependent upon both ambient and deck temperatures. Material shall not be placed if ambient temperature is less than 50°F or is expected to fall below 50°F during the placement period. The degree of cure and suitability of the overlay for traffic loads shall be determined by the manufacturer representative and approved by the Engineer.

Method of Measurement: This work will be measured as the number of square feet of thin polymer (epoxy) overlay system satisfactorily applied as determined by deck measurements and as shown in the Contract Documents and approved by the Engineer.

Basis of Payment:

The unit price bid per square foot of "Thin Polymer (Epoxy) Overlay" shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work. The unit price bid shall include the cost of having the epoxy overlay manufacturer's representative onsite during the work as required.

<u>Pay Item</u>	<u>Unit</u>
Thin Polymer Overlay	S.F.

ITEM #0602903A – DRILLING HOLES

DESCRIPTION: This work shall consist of drilling through underside of the steel grid decking on the movable bridge spans as shown on the plans, and in accordance with these specifications. The drilled hole shall be used for the proposed F3125 Grade A325 H.S. Bolts which are paid for separately under the Rehabilitation of Existing Structural Steel pay item.

MATERIALS: None.

CONSTRUCTION METHOD: The Contractor shall drill through the steel grid decking at the locations shown on the plans and as approved by the Engineer. The holes are for the purpose of bolting together the existing grid decking panels every 7 feet 8 inches along the existing transverse joints as depicted on the plans. The drilled holes shall have a 13/16” diameter and shall be perpendicular to the existing grid decking members. The Contractor shall avoid damaging existing grid decking bars. The drilling methods used shall not cause damage to the existing grid deck, paint, or structural elements of the bridge. Any damage shall be repaired by the Contractor as directed by the Engineer at no additional cost to the State.

Specialized equipment shall be provided by the Contractor as needed due to the limitations with the available work area beneath the deck. The Contractor shall provide proper containment of all work with no impact to the Channel. The Contractor shall provide access for the work and inspection as required as approved by the Engineer.

METHOD OF MEASUREMENT: This work will be measured for payment by the number of holes drilled, complete and accepted in place.

BASIS OF PAYMENT: This work will be paid for at the contract unit price each for “Drilling Holes” of the diameter required, complete and accepted in place, which price shall include access, specialized equipment, containment, drilling, and all tools, equipment and labor incidental thereto. Payment for bolts shall be made under the item for Rehabilitation of Existing Structural Steel.

ITEM #0602980A - CLEAN AND COAT EXPOSED REINFORCING STEEL

Description: Work under this item shall consist of the removal of loose or delaminated concrete from the underside of existing bridge decks or stay-in-place forms by mechanical methods and the cleaning and coating of exposed reinforcing steel with epoxy resin, as directed by the Engineer.

Materials:

1. Epoxy Resin: The epoxy resin shall be a 2 component, moisture tolerant system with a minimum solids content of 65%, which meets the following requirements:

a) Physical Requirements of (Mixed) Epoxy Resin System: A mixture of both components in the proportions recommended by the manufacturer shall have the following properties and meet the following test requirements:

Viscosity – approximately 2000 centipoises

Pot life – approximately 30 minutes

Modulus of Elasticity – 190 ksi (ASTM D638)

Resistance to Abrasion – 0.03 gm loss after 1000 cycles (Taber Abrader)

Resistance to Cracking – No splitting or loss of bond of a 2.5 mil thickness with 1/8 in mandrel (ASTM D522)

b) Packaging and Marking: The 2 components of the epoxy resin system furnished under these specifications shall be supplied in separate containers, which are non-reactive with the materials contained therein. The size of the container shall be such that the recommended proportions of the final mixture can be obtained by combining 1 container of 1 component with 1 or more whole containers of the other component.

Containers shall be identified as base polymer and reacting system, and shall show the mixing directions and usable temperature range as defined by these specifications. Each container shall be marked with the name of the manufacturer, the lot or batch number, the date of packaging, pigmentation if any, and the quantity contained therein in pounds and gallons.

Printed instructions from the manufacturer for mixing and applying the material shall be included.

Potential hazards shall be so stated on the package in accordance with the Federal Hazardous Products Labeling Act.

2. Sampling: A representative sample of each component sufficient for the test specified shall be taken by a Department representative either from a well-blended bulk lot prior to packaging or by withdrawing 3 fluid ounce samples from no less than 5% by random selection of the containers comprising the lot or shipment. Unless the samples of the same

component taken from containers show evidence of variability, they may be blended into a single composite sample to represent that component. The entire lot of both components may be rejected if samples submitted for testing fail to meet any requirements of this specification.

3. Control of Materials: A Materials Certificate will be required in accordance with Article 1.06.07, certifying the conformance of the epoxy resin to the requirements set forth in this specification.

Construction Methods:

1. Inspection of the Deck Underside: Before any existing concrete is removed from the underside of the deck, the Contractor will provide the Engineer clear access to the underside of the deck. During this time, the Engineer will perform an inspection of the deck and designate areas where concrete removal is required. The inspection will utilize visual assessment as well as sounding for delamination (hammer tapping).

The Contractor must inform the Engineer, in writing, of the date that the bridge deck will be available for inspection operations and the method which will be used for access. Notification shall be given to the Engineer at least 7 days prior to the date so that the Engineer can plan accordingly and verify that the proposed method of access is acceptable.

The Contractor will not perform any work to the deck, until all necessary inspection operations have been performed, unless given permission in writing by the Engineer. The Contractor shall include the time required for inspection in its overall construction schedule and shall include all costs associated with providing access for the Engineer in the bid unit price.

2. Removal of Deteriorated Concrete: All deteriorated concrete designated for removal under this item, shall be removed within the limits shown on the plans and where ordered by the Engineer. The lateral limits of each area of concrete to be removed will be delineated by the Engineer and suitably marked. The Engineer will be sole determiner of what constitutes deteriorated concrete, using sounding methods or other evaluation measures at his discretion.
Hand tools shall be used first to remove loose and hollow sounding concrete. If the concrete cannot be removed with hand tools, the Engineer may authorize the use of pneumatic hammers. The weight of pneumatic hammers, when used shall not exceed 15 pounds. The Contractor shall provide structurally adequate shields approved by the Engineer for protection of waterways, railways, roadways, sidewalks, parking lots or any other areas accessible to the public, which are in the vicinity of the removal operations.
3. Cleaning Exposed Reinforcing Steel: All exposed reinforcing steel on the underside of the deck shall be cleaned and coated, regardless of whether the Contractor exposed it or it was already exposed at the beginning of the Project. The exposed reinforcing steel shall be cleaned of all concrete fragments, loose or powder-like rust, oil, dust, dirt, loose particles, and other bond inhibiting matter. Cleaning methods shall utilize wire brushing at a minimum, but may require more aggressive methods as recommended by the coating

manufacturer or as directed by the Engineer. Cleaning shall be done just prior to coating and shall finish with the cleaned surfaces being wiped down to remove the remaining dust.

4. Coating Exposed Reinforcing Steel: The epoxy resin shall be mixed and applied in accordance with the Manufacturer's instructions. Only the reinforcing steel shall be coated. The surrounding concrete shall not be coated. Care shall be taken to coat all exposed portions of each bar's perimeter and all exposed surfaces where bars overlap or are in contact with each other.

Method of Measurement: This work will be measured for payment by the actual number of linear feet of reinforcing steel cleaned and coated with epoxy resin material and approved by the Engineer. The length of coated reinforcing steel shall be measured along the exposed face of the bar. Where bars are adjacent to each other, the length of each bar shall be measured. No deduction in length shall be made where bars overlap.

Basis of Payment: This work will be paid for at the Contract unit price per linear foot for "Clean and Coat Exposed Reinforcing Steel," complete and accepted, which price shall include all materials, equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
Clean and Coat Exposed Reinforcing Steel	l.f.

ITEM #0603050A – REPAIR DEFECTIVE WELDS

Description: Work under this item shall consist of removing and replacing defective welds at the locations indicated on the plans or as directed by the Engineer.

Construction Methods: Before the Contractor is permitted to repair defective welds the Engineer will conduct a survey of the existing welds at the locations indicated on the plans to determine the exact locations and lengths of defective welds. The Contractor shall provide access to these locations.

Paint Removal: The contractor shall remove localized paint, debris, and rust from suspected areas of weld repair, as directed by the Engineer, for the Engineer's observation. Existing paint shall first be removed because of the possible presence of lead in the existing paint, or as necessary for local surface preparation prior to painting. Prior to applying the heat of welding equipment to localized areas of steel superstructures, the existing paint shall be removed to a minimum of 6 inches from wherever the heat will be applied, and as directed by the Engineer.

Method of Paint Removal: Depending on location within a given span, existing paint shall be removed in accordance with the "Localized Paint Removal and Field Painting of Existing Steel" item.

Welding details, procedures and testing methods shall conform to the latest ANSI/AASHTO/AWS D1.5: Bridge Welding Code, unless otherwise noted.

The defective welds shall be removed at least 2" beyond the end of the crack as designated by the Engineer. The Contractor shall remove the welds by grinding or "arc" gouging without damaging the base metal that is to remain. A minimum of 1/8" of weld metal shall be left in place if arc gouging is the selected removal method and the remaining weld metal shall be removed by grinding. Welders who perform arc gouging shall be SMAW certified. Fire resistant tarps shall be used as required to protect property below.

The Contractor shall then proceed with the re-welding of the arc gouged areas in accordance with the plans. The Contractor is responsible for the stability of the structure and shall take the necessary precautions to ensure the structure remains stable during and after the arc gouging and welding process.

The Contractor shall perform magnetic particle testing to verify that all cracks have been removed and report the results to the Engineer. If directed by the Engineer, additional arc gouging shall be done.

After completion of the welding, the Engineer will inspect the new welds to verify their integrity. Any welds found to be defective as a result of the Engineer's inspection shall be removed and re-welded at the Contractor's expense.

The Contractor shall take measures to keep the areas under the bridges clean and free of debris, and to protect pedestrians from the work operations. The Contractor is responsible for any damage caused to any part of the structure, utilities, pavement below, or vehicular traffic as a result of the work required by this special provision. The Contractor shall repair and/or replace any such damage to the satisfaction of the Engineer at no cost to the State.

Method of Measurement: This work will be measured for payment by the number of linear feet of defective welds repaired to the satisfaction of the Engineer. New welds judged defective by the Engineer, and which require re-welding by the Contractor, will not be measured for payment.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for "Repair Defective Welds", complete in place, which price includes all work described herein, allowing inspection of the ongoing work by the Engineer's representatives, furnishing proper lighting, fire resistant tarps, and all materials, equipment, tools, labor and work incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Repair Defective Welds	l.f.

ITEM #0603614A – BALANCE BASCULE LEAVES

Description:

This work shall include balancing and balance testing the bascule leaves to ensure compliance with the design criteria listed on the Plans and elsewhere herein. Under the item the work includes:

- (a) Balance testing performed using the dynamic strain gage procedure described in this provision.
- (b) Preparation of balance summary tables prior to and during construction.
- (c) The development and documentation of the leaves balance procedure and methods.
- (d) All other work required to complete the leaves balance, including placing and adjusting the balance blocks within the counterweight pockets required for balancing the bascule leaves. This includes placement and removal of temporary balance weight as required during various phases of construction. This also includes repeated readjustment of balance blocks as necessary until the leaves are balanced as specified herein. Documentation is required for all balancing work, including temporary balancing during construction.
- (e) Cleaning and painting each hatch, hatch fasteners and hatch joint.

Contractor is to field verify all indicated measurements herein at the bridge site.

General Requirements:

(1) Submittals

- (a) Qualifications of the strain gage testing company to perform the imbalance measurements shall be submitted to the Department for acceptance. Required qualifications are specified herein.
- (b) Work Procedure: Submit a detail list of the work procedure to be followed. Include testing equipment catalog cuts or description of equipment.
- (c) Submit balance summary tables. Include figures and tables to exhibit method of approach and summarize results.
- (d) Submit a report of all measurements after field adjusting and testing.

(2) Codes and Standards

- (a) Work shall comply with, but not be limited to, all applicable requirements of the following codes and standards and their abbreviations used in this Specification:
 - 1. American Association of State Highway and Transportation Officials (AASHTO)
 - 2. Society for Protective Coatings (SSPC)

3. American Society for Testing and Materials (ASTM)
 4. Underwriters Laboratories, Inc (UL)
- (b) The work shall meet the requirements of all other codes and standards as specified elsewhere in these Specifications. Where codes and standards are mentioned for any pay item, it is intended to call attention to them; it is not intended that any other codes and standards shall be assumed to be omitted if not mentioned.

(3) Measurements and Verification

Dimensions indicated on the Contract Drawings are nominal and are intended for guidance only. Field verify dimensions that interface with existing structure or components prior to submitting shop drawings.

(4) Inspection:

- (a) The Contractor shall give no less than ten (10) working days' notice to the Department of the span test openings to measure leaf imbalance.

(5) Work Procedures

- (a) All labor, materials, tools, equipment, services, testing, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this project.
- (b) Prior to beginning work, the Contractor shall review conditions at the site for verifying measurements, assessing existing conditions, and safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personal protection, work procedures, movable bridge operation, emergency evacuation procedures and use of equipment including procedures unique to this project.
- (c) Shut down and lockout/tagout operating machinery electrical power while working on the movable span.
- (d) Whenever the contractor is not at the bridge site the span is to be balanced and operational unless work is done during an approved navigation or roadway closure.

Materials:

(1) Strain Gages and Cables

- (a) Provide new shear configured strain gages for measuring angular distortion. Gages shall be waterproof and bonded to a stainless-steel foil. Lead wires shall be shielded.
- (b) Provide new 4 conductor heavy duty shielded cables with vinyl jacket. Provide sufficient cable length to wrap around shaft during leaf operation to full open.

(2) Coatings

The paint coating system shall be in accordance with special provision, “Localized Paint Removal and Field Painting of Existing Structural Steel”.

Construction Methods:

(1) Balance Blocks

- (a) Existing spare balance blocks stored in the counterweight pits are to be used for adjusting the leaves imbalance. Spare balance blocks remain the Department’s property.
- (b) Weigh a total of ten balance blocks. Remove water, dirt and loose scale from each block prior to weighing. Use the average measured weight of balance blocks for the balance calculations.

(2) Balance Calculations

- (a) Balance calculations shall be coordinated with structural shop drawings and any other miscellaneous or incidental work to be incorporated on the bascule leaf.
- (b) Balance summary tables for weight adjustments required to achieve proper balance during all phases of construction, prior to the initial imbalance measurement, and prior to any subsequent imbalance measurement shall be submitted to the Department for review. Documentation of the exact locations shall accompany all balance calculation submittals.
- (c) The quantity and location of balance blocks required within the counterweight pockets based on the specified balance requirements shall be computed. These calculations shall be based on weights and locations of final approved materials added to the bascule leaf.
- (d) The balance calculations shall incorporate the distributions of leaf weight in the vertical and horizontal directions.
- (e) For all balance summary table submittals, a narrative shall be included with the outline of the proposed balance phasing, the duration of the imbalance condition, and all other aspects of the work in accordance with the approved construction schedule. This information shall be coordinated with the Contractor’s scheduling requirements. The balance summary tables shall be updated by the Contractor throughout construction and shall be submitted to the Department daily as required to meet the requirements in these Specifications and in the Plans.

(3) Balancing During Construction

Maintain the balance of the span through all phases of structural work on the bascule leaves. Prior to removal of elements which influence the leaf balance, add temporary weight to the span to maintain the span heavy condition.

(4) Final Bridge Balancing

- (a) The Contractor shall place and adjust the balance blocks within the counterweight pockets for adjusting to specified balance in the Plans. This includes repeated readjustment of balance blocks as necessary until the leaves are balanced as required.
- (b) Remove existing debris inside the pockets. Balance blocks shall be packed neatly together without voids, filling the pockets from back (furthest from trunnion) to front of the pocket. Blocks shall not be wedged against the sides of the pocket. There shall be at least 6 inches of clearance behind the hatch.
- (c) Blocks must be equally distributed transversely across the counterweight. A minimum of four hatches shall be opened per leaf. Place blocks in upper or lower row of pockets to adjust the leaf vertical imbalance.
- (d) Center of counterweight pockets to center of leaf roadway deck lever arm ratio is approximately 2.6 to 1.
- (e) It shall be the Contractor's responsibility to provide and safely secure hoisting equipment for moving and placing the blocks and pocket hatches. Do not stack blocks on machinery platform.
- (f) Replace corroded and missing screws for hatches or manhole cover in-kind.
- (g) Clean and paint the hatches, the hatch fasteners and paint around the hatch joint. Clean to SSPC SP-3 and paint as required herein with a 2-coat system.
- (h) Department's review of the balance summary table and quantity and location of balance blocks does not relieve the Contractor from making additional changes in the balance blocks location and quantity installed as deemed necessary to balance the leaf. All changes shall be submitted for acceptance. Bolting or welding ballast plates to the exterior of the counterweight girder is not acceptable.

(5) Final Imbalance Measurements

- (a) The Contractor shall measure the actual imbalance moment and determine the location of the leaf center of gravity a minimum of twice:
 - 1. Initial - After structural work is completed to determine the balance condition and to determine the required adjustments. The Contractor shall compute the amount and location of weight adjustments required to achieve the final imbalance specified in the Plans and in these Specifications and submit the computations to the Department for review. After the Department's review, the Contractor shall make the approved adjustments.
 - 2. Final - After balance block adjustments, to determine if the revised imbalance is within the limits specified in the Plans. Leaf operation for final balance testing shall be performed with the leaf drive machinery. If balance testing indicates that the revised imbalance is not within acceptable limits, further balance block and/or plate adjustments and imbalance measurements are to be performed until the criteria specified are met.

- (b) The imbalance of the movable leaves shall be measured using the dynamic strain gauging technique.
- (c) The Contractor shall employ the services of an established testing company experienced in dynamic strain gage measurement of movable bridge imbalance, subject to acceptance of the Department. Such experience shall be demonstrated by identifying a minimum of six movable bridges including at least three trunnion bascule bridges for which the company has provided complete and satisfactory dynamic strain gage measurements and reporting. The measurements shall be made under the immediate direction of a Professional Engineer registered in the State of Connecticut who has had hands-on experience measuring movable span imbalance by the dynamic strain gage procedure.
- (d) The strain gauge testing company shall furnish and install the required strain gages, all cabling and transmission equipment, data acquisition equipment, and produce fully documented reports detailing the results of the measurements.
- (e) Acceptable testing companies include but are not limited to:
 - 1. Gresham Consulting LLC, Chalfont, PA
 - 2. Stafford Bandlow Engineering, Doylestown, PA
- (f) The accepted testing company shall submit the following items to the Department for approval:
 - 1. Description of experimental procedure including type and method of installation of strain gage rosettes, method of transmission of low level signals, and data acquisition equipment.
 - 2. Layout of leaf drive machinery showing proposed location of strain gages, amplifiers, cable or radio links, data acquisition equipment and all associated cabling.
 - 3. Elementary wiring diagrams of interconnection of strain gages, amplifiers, and data acquisition equipment.
 - 4. Sample computations of: shaft torque from measured strains, leaf imbalance, curve fitting and basis for friction correction.
 - 5. Strain gauge and equipment installation, strain measurement, and torque calculations shall be in accordance with the following:
 - a. Two strain gauges shall be affixed to the lowest speed shaft that is accessible in accordance with the strain gauge manufacturer's installation instructions. The gauges shall be connected such that any bending strains in the shafts will be canceled. The areas of the shafts where the gauges are to be mounted shall be sufficiently cleaned to remove all contaminants.
 - b. The strain gauge leads on each shaft shall be connected to a four-arm amplifier. Transmission of signals from the gauges to the data acquisition equipment shall be either through cable links or amplified and then through wireless transmitters.
 - c. An inclinometer shall be provided to provide continuous leaf angle to either the data logging equipment.

- d. The strains in both shafts shall be recorded simultaneously versus leaf opening angle during opening and closing to a suitable scale. At least 3 opening/closing runs shall be made, when the wind speed is less than 5 MPH and the bridge deck is visibly dry. Wind-up torque in the operating machinery shall be released while calibrating the gages verified by space between the faces of the engaged teeth of main pinion and gears.
- e. The strains induced in the shafts shall be numerically converted to torque by applying fundamental stress-strain relationship calculations for each strain plot for both opening and closing. This data shall be processed to give leaf imbalance (kip-feet) versus opening angle, corrected for friction, at each trunnion. From them, plots of total leaf imbalance shall be prepared.

(g) The reports shall contain the following:

1. Introductory section giving the name of the bridge, the date of the measurements, weather conditions during measurements and any other information requested by the Department.
2. Description of experimental procedure and equipment used.
3. Leaf drive diagram showing location at which strain gages were attached and all applicable gear ratios.
4. Description of relationships and sample calculations for obtaining shaft torque from strains, leaf imbalance from shaft torque, curve fitting and basis for friction correction.
5. Plots of the following parameters versus degree of opening during each opening/closing run and fitted imbalance curves corrected for friction.
 - a. Total imbalance (kip-feet) for each leaf.
 - b. Frictional moment (kip-feet) for each leaf.
6. Tabulation of imbalance moment at seated position for each leaf/run including the average value for each leaf.
7. The location of the leaf center of gravity.

(h) The final imbalance measured by the procedures described within this Specification shall be considered acceptable if the imbalance magnitude and alpha angle is within the specified limits on the Plans.

(i) The alpha angle is defined as the angle of elevation of the center of gravity of the leaf above (minus being below) the horizontal axis through the centerline rotation of the leaf.

(6) Cleaning and Painting

New or refurbished, and existing steel surfaces shall be cleaned and painted in accordance with special provision, "Localized Paint Removal and Field Painting of Existing Structural Steel".

Method of Measurement:

No direct measurement shall be made for the work, as it is paid on a lump sum basis.

Basis of Payment:

- (a) The work shall be paid for at the contract lump sum price for “Balance Bascule Leaves”, which shall include all materials, equipment, and labor necessary to complete the work as identified on the plans and as noted herein.
- (b) This work shall not be compensated until the Department determines that the work has been tested and functions to the satisfaction of the Department.
- (c) Final payment will not be made until all the project closeout data submittals have been completed. Once the completed package has been received in its entirety, the Department will make the final payment to the Contractor.

Pay Item
Balance Bascule Leaves

Pay Unit
L.S.

ITEM #0603631A – OPERATING MACHINERY

Description:

Work consists of repairs to bascule span operating machinery and miscellaneous repairs in the generator room. Refer to the Operation and Maintenance for Operating Machinery manual available from the Department. This manual contains all original equipment documents and drawings. Information contained herein has been obtained from this manual.

The Buy America requirements in Article 1.06.01 shall apply.

Contractor is to field verify all indicated measurement herein at the bridge site.

General Requirements:

(1) Submittals

- (a) Manufacturer's data and/or shop drawings shall be submitted for all manufactured and purchased items of machinery in accordance with Article 1.05.02.
 - 1. Shop drawings shall show all parts completely detailed and dimensioned. Reproduction of the Plans shall not be used as foundation sheets for assembly or erection drawings.
 - 2. The Contractor shall prepare and submit shop drawings to the Department for acceptance in accordance with Subarticle 1.05.02-3 prior to fabricating the material.
 - 3. Shop drawings shall include, but not be limited to, field measurements, installation plans, material lists and material designations. The weight of the detailed elements shall be included on the shop drawings.
 - 4. Materials and material specifications shall be stated for each part. Where ASTM or any other standard specifications are used, the applicable designation of such material specifications shall be given.
 - 5. Submit catalog cuts of new components.
- (b) Work Procedure: Submit a detail list of the work procedure to be followed.
- (c) Submit certified material test reports including all chemical and mechanical properties for each material that is part of the Work.
- (d) Submit a report of all measurements after field adjusting and testing.

(2) Delivery and Storage

- (a) Machinery parts shall be cleaned of dirt, chips, grit, and all other injurious materials prior to shipping and, finished metal surfaces and unpainted metal surfaces that would be damaged by corrosion shall be coated as soon as practicable after finishing with a rust-inhibiting preservative as defined herein, this coating shall be removed from all surfaces prior to lubrication of machinery.

- (b) Any interface between stainless steel or aluminum and structural steel, the steel shall be coated with primer as defined herein prior to assembly.
- (c) Machinery parts shall be completely protected from weather, dirt, and all other injurious conditions during manufacture, shipment, and storage.
- (d) Every precaution shall be taken to ensure that the bearing surfaces are not damaged and that all parts arrive at their destination in satisfactory condition.
- (e) Assembled units shall be mounted on skids or otherwise crated for protection during handling and shipment.
- (f) Spare parts as defined in the Plans shall be protected for shipment and prolonged storage by coating, wrapping, and boxing. All spare parts shall be durably tagged or marked with a clear identification showing the designation used on the approved shop drawing. Boxes for spare parts shall be clearly marked on the outside to show their contents.

(3) Guarantees and Warranties

- (a) Manufacturer's warranties or guarantees on equipment, materials or products purchased for use on the Contract which are consistent with those provided as customary trade practice, shall be obtained by the Contractor and, upon acceptance of the contract, the Contractor shall assign to the owner, all manufacturer's warranties or guarantees on all such equipment, material or products furnished or installed.
- (b) The Contractor shall warrant the satisfactory in-service operation of the mechanical equipment, material, products, and related components. This warranty shall extend for a period of one year following the date of final acceptance of the Project.

(4) Quality Assurance

- (a) Products used in the work shall be produced by manufacturers regularly engaged in the manufacture of the specified products.
- (b) For the fabrication, installation, and testing of work required by the machinery items, the Contractor shall use adequate numbers of skilled, trained, and experienced mechanics and millwrights who are thoroughly familiar with the requirements and methods specified for the proper execution of the specified work. The Contractor shall provide personnel and supervisory personnel with a minimum of two movable bridge jobs as previous experience in the installation of bridge machinery. The installation of the machinery shall be directly supervised by a representative of the machinery manufacturer and supplier having at least ten years of prior similar experience.
- (c) The Contractor shall provide all reasonable facilities, necessary tools and instruments required for the proper performance of the personnel engaged in the execution of the specified work.

(5) Codes and Standards

- (a) Work shall comply with, but not be limited to, all applicable requirements of the following codes and standards and their abbreviations used in this Specification:

1. American Association of State Highway and Transportation Officials (AASHTO)
 2. American Iron and Steel Institute (AISI)
 3. American National Standards Institute (ANSI)
 4. American Society of Mechanical Engineers (ASME)
 5. American Society for Testing and Materials (ASTM)
 6. American Welding Society (AWS)
 7. National Lubricating Grease Institute (NLGI)
 8. Society of Automotive Engineers (SAE)
 9. Steel Structures Painting Council (SSPC)
 10. United States Military Specifications (MIL)
- (b) The work shall meet the requirements of all other codes and standards as specified elsewhere in these Specifications. Where codes and standards are mentioned for any pay item, it is intended to call attention to them; it is not intended that any other codes and standards shall be assumed to be omitted if not mentioned.

(6) Measurements and Verification

Dimensions indicated on the Contract Drawings are nominal and are intended for guidance only. Shop drawings are to be based on dimensions from the "As-Built" shop drawings referenced in the Plans. Field verify dimensions that interface with existing structure or components prior to submitting shop drawings.

(7) Substitutions

- (a) The terms "approved equal", "of equal quality" and "or equal" which may appear on the Contract Drawings and in these Specifications are intended to allow the Contractor to submit for review other manufacturers and model numbers of products of equal quality and rating for those specified.
- (b) Prior to the Contractor's ordering of any substitute product, the Department's acceptance of the equivalence of the substitute product shall be obtained in writing. The acceptance of the substitute products is at the sole discretion of the Department who will establish the basis for equivalence and will review the quality of the materials and products described in detail on the submitted shop drawings and product data.
- (c) Acceptance by the Department of any substitute products submitted by the Contractor shall not relieve the Contractor of responsibility for the proper operation, performance, or functioning of that product.
- (d) Where a product is specified by a manufacturer's name and catalog or part number in this Specification or on the Contract Drawings, it is so specified to establish quality, configuration, and arrangement of parts. An equivalent product made by another manufacturer may be submitted for review for the specified product subject to the acceptance of the Department; however, all necessary changes required by the substitution in related

machinery, structural, architectural and electrical parts, shall be made by the Contractor at no additional cost.

(8) Inspection:

- (a) The Contractor shall give no less than ten (10) working days' notice to the Department of the beginning of work at foundries, forge, and machine shops so that inspection may be provided. No materials shall be cast, forged, or machined before the Department has been notified where the orders have been placed.
- (b) The Contractor shall furnish all facilities for the inspection of material and workmanship in the foundries, forge, and machine shops, and the Inspector designated by the Department shall be allowed free access to necessary parts of the premises. Work done while the Inspector has been refused access or presented in a manner that prevents adequate inspection will automatically be rejected.
- (c) The Inspector will have the authority to reject materials or workmanship which does not fulfill the requirements of these Specifications.
- (d) Inspection at the foundries, forge, and machine shops is intended as a means of facilitating the work and avoiding errors. It is expressly understood that inspection will not relieve the Contractor from any responsibility regarding imperfect material or workmanship and the necessity for replacing defective materials or workmanship which are delivered to the job site.
- (e) The Contractor shall furnish the Department with a copy of all orders covering work performed by subcontractors or suppliers.

(9) Defective Materials and Workmanship:

- (a) The acceptance of any material or finished parts by the Department shall not prohibit their subsequent rejection if found defective. Rejected material and workmanship shall be replaced or made acceptable by the Contractor at no additional cost.
- (b) All machinery rejected during inspection and testing shall be removed from the work site and replaced without additional cost.
- (c) Delays resulting from the rejection of material, equipment or work shall not be the basis of any claim.
- (d) All defects found during the guarantee period resulting from faulty material, components, workmanship, or installation shall be corrected by the Contractor without cost. The Department reserves the right to make necessary corrections with its own forces and charge the resulting costs to the Contractor.

(10) Work Procedures

- (a) All labor, materials, tools, equipment, services, testing, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the

Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this project.

- (b) Prior to beginning work, the Contractor shall review conditions at the site for verifying measurements, assessing existing conditions, and safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personal protection, work procedures, movable bridge operation, emergency evacuation procedures and use of equipment including procedures unique to this project.
- (c) Shut down and lockout/tagout operating machinery electrical power while working on equipment.
- (d) Only work on one component at a time. Whenever the contractor is not at the bridge site the span is to be operational unless work is done during an approved navigation or roadway closure. Whenever disassembling or opening bearings use temporary supports to hold shafts in place.
- (e) Submit a schedule of all work that requires interruption to movable span operation and restrictions to either roadway or channel navigation. Provide work activities for each day and the duration of the restriction.
- (f) Confined Space:
 - 1. Access is necessary inside the trunnion box girders for replacing grease pipe runs, cleaning out the grease ports, and lubricating the trunnion bearings. The Contractor shall develop and maintain a comprehensive permit for confined space program as required by OSHA Standard 29CFR1910.146(d) and applicable Connecticut DOT policies. Include all associated costs in the general cost of the project.

Materials:

(1) Gear Reducers

Gear reducer unit designations: DR – differential reducer, M – main reducer, ER- emergency reducer, and PN/PE – position control reducers for normal and emergency operation

(a) Bearing Cover Screws

- 1. DR and M Input and Intermediate Shaft Bearing Retainer Cover Screws
 - a. Screw size: 5/8"-11 UNC hex head cap screw.
 - b. Provide 16 new in-kind size screws
- 2. DR gear reducer output shaft bearing retainer cover screws
 - a. Screw size: 7/8"-9 UNC hex head cap screw.
 - b. Provide 8 new in-kind size screws
- 3. M Gear reducer output shaft bearing retainer cover screws
 - a. Screw size: 1"-8 UNC hex head cap screw.
 - b. Provide 8 new in-kind size screws

4. All new screws to be AISI stainless steel type 316.

(b) New Breather Filter

1. New Mobile Gate Filter Breather Eaton/ Vickers MBR110
2. Quantity: 2 for DR, 4 for M, 2 for ER, and 4 for PN/PE

(c) New Oil Level Sight Glass Assembly

1. New 3/8"-NPT brass oil level indicator
 - a. Vent 40-micron filter, 9-1/2" breakproof glass window 5/8" diameter
 - b. Male straight NPT thread, Buna-N seals
 - c. Recommend Oil-Rite Corp. item B1145-11
 - d. Quantity: 2 for DR, 4 for M, and 1 for ER-East
2. New 3/8"-NPT pipe nipple, tee fitting, and square drive plugs: Low pressure, brass
 - a. Class 125, brass fittings, ANSI/ASME B16.15
 - b. Schedule 40 pipe, ASTM B687, field verify pipe length
 - c. Quantity: for each level indicator provide one pipe nipple, one tee fitting, and two square drive plugs.
3. New 3/8"-NPT bronze ball valve
 - a. Full port, PTFE seal and seat, 316 stainless steel ball, stem, and stainless steel lockable lever
 - b. Reinforced seats, blowout proof stem design, adjustable packing gland
 - c. MSS SP-110 compliant.
 - d. Recommend Apollo Flow Controls 75-140 series or approved equal
 - e. Quantity: for each level indicator provide one ball valve.

(d) Gear Reducers Oil

1. New Oil: Mobil SHC 629
 - a. ER Gear reducer reservoir capacity: 10 Gallons. Do not fill above bottom of shafts.
 - b. PN/PE Gear reducer reservoir capacity: 3 Gallons. Do not fill above bottom of shafts.

(2) Couplings

(a) New C3 coupling size 1080T10 for main motor, complete assembly with new keys, bolts, seals, and gasket.

1. Bore hubs for an ANSI FN2 fit with motor and gear reducer shafts. Final bore and key dimensions shall be based on field measurements and coordinated in the construction

schedule such that a local machinery shop is available to make the final and precise cut to each bore and keyway for the specified fit.

2. Hub keyseats to match existing motor and gear reducer shaft keyseats. Hubs to have set screw above keyseat.
 3. Quantity: 2 assemblies and 1 spare flexible steel grid
- (b) New C4 coupling size 1060T10 for auxiliary motor, complete assembly with new keys, bolts, seals, and gasket.
1. Bore hubs for an ANSI FN2 fit with motor and gear reducer shafts
 2. Hub keyseats to match existing motor and gear reducer shaft keyseats. Hubs to have set screw above keyseat.
 3. Provide new keys.
 4. Quantity: 2 assemblies and 1 spare flexible steel grid
- (c) Grid-type to be self-aligning, fully torsional flexible couplings.
- (d) The grid-type couplings shall have steel hubs, alloy steel grids and steel or aluminum covers. Bolts in the covers shall be shrouded.
- (e) Coupling hubs shall be bored by the coupling manufacturer to the required size and tolerances, including keyways.
- (f) All coupling hubs shall be provided with tapped holes for a means of removal from the shafts.
- (g) Grid type flexible couplings shall be as manufactured by one of the following companies, or approved equal:
1. Falk Corporation, Milwaukee, WI
 2. Lovejoy, Inc., Downers Grove, IL
 3. Kop-Flex / Regal, Florence, KY
- (h) As defined in the Plans gear couplings “Fast’s” ring seal to be modified by adding square PTFE-impregnated aramid fiber behind the seal ring. Field measure each gap between the seal ring and hub for sizing the packing.

(3) Bearings B1 and B2

- (a) New bushing flange cap screws
1. 3/4”-16UNF-2A hex head cap screws stainless steel AISI 316. Field measure screw length.
 2. 3/4” Split lock washer. Stainless steel AISI 316.
 3. Quantity: 16 screws and washers
- (b) New grease piping extensions and fittings

1. Each bearing has 3 grease pipe extensions. Each pipe extension assembly consists of 1 giant button head grease fitting, 1 seamless tube, and 1 tee fitting with plug. One extra plug is required for the forth port in the side of the bearing housing base.
2. New 9/16" O.D. stainless steel seamless tubing rated for 15,000 psi. Seamless tube to have existing piping length and shape with smooth radiused bends to route tubing from access point to grease port into bearing.
3. Refer to Supplemental Materials herein for giant button head grease fitting requirements.
4. New pipe tee fittings and plugs to be stainless steel AISI Type 316, rated for 4,500 psi. minimum.
 - a. Tee fitting to meet ASTM A182
 - b. Plug: external hex to meet ASTM A479

(4) Trunnion Bearings BRG

(a) New Outer-Guard turned cap screws

1. 1-1/4" ASTM A449 Type 1 cap screw turned shank and cut threads as per Plans.
2. 1-1/4" Split lock washer. Stainless steel AISI 316.
3. Quantity: 8 screws and washers

(b) New Outer-Guard segment joint bolt

1. 5/8" ASTM A449 Type 1 bolt. Field measure required length.
2. 5/8" Split lock washer. Stainless steel AISI 316.
3. Quantity: 8 screws and washers

(c) New grease piping extensions and fittings

1. Each bearing has 11 grease ports with extensions. 7 of the ports have a new pipe nipple with 3 of the nipples having a new giant button head grease fitting. Rest of the nipples have a new plug. There are also 3 ports inside the trunnion girder to have new pipe runs from the trunnion to outside face of the girder web. Each of these runs is made up of new seamless tubing and a new plug. The final port is in the bottom of the bearing hub to have a new flexible hose secured to the pedestal with a new grease fitting on its end.
2. New 1/4"-NPT pipe nipple stainless steel AISI Type 316, to meet ASTM A312,
3. New 9/16" O.D. stainless steel seamless tubing rated for 15,000 psi. Seamless tube to have existing piping length and shape with smooth radiused bends to route tubing from access point to grease port into bearing.
4. New flexible hose, stainless steel braided hose rated for 3,000 psi and suitable for use with grease.
5. Refer to Supplemental Materials herein for giant button head grease fitting requirements.
6. New pipe tee fittings and plugs to be stainless steel AISI Type 316, rated for 4,500 psi. minimum.

- a. Tee fitting to meet ASTM A182
- b. Plug: external hex to meet ASTM A479

(5) Aluminum Exhaust Shutters

- (a) New aluminum exhaust shutters. Air pressure open, gravity close.
 - 1. Extruded 6061 or 6063 aluminum blades
 - 2. Stainless-steel AISI 316 frame

Supplemental Materials:

(1) Fasteners

- (b) High strength bolts shall be connected using nuts meeting the requirements of ASTM A563.
- (c) All finished shanks of turned fasteners shall be 1/16 inch larger in diameter than the diameter of the thread, which shall determine the head and nut dimensions. The shanks of all turned fasteners shall have Class LC3 fit in the finished holes in accordance with ANSI Standard B18.2. The material used for machining turned shank fasteners shall meet the requirements of ASTM A193, Grade B7. Turned bolts shall be connected using nuts meeting the requirements of ASTM A194. Turned fasteners shall be fully detailed on shop drawings.
- (d) Socket flat countersunk head cap screws shall conform to ASTM F879 (Stainless Steel) for diameters less than 7/8" and ASTM F835 (Alloy Steel) for diameters equal or greater than 7/8".
- (e) The dimensions of socket-head cap screws, socket flathead cap screws and socket-set screws shall conform to ANSI Standard B18.3. The screws shall be made of heat-treated alloy steel, cadmium-plated and furnished with a self-locking nylon pellet embedded in the threaded section. Unless otherwise called for on the drawings or specified herein, set screws shall be of the headless safety type, shall have threads of coarse thread series and shall have cup points. Set screws shall neither be used to transmit torsion nor as the fastening or stop for any equipment that contributes to the stability or operation of the bridge.
- (f) Unless otherwise called for, all bolt holes in machinery parts or connecting these parts to the supporting steel work shall be sub-drilled at least 1/4 inch smaller in diameter than the bolt diameter and shall be reamed assembled for the proper fit at assembly or at erection with the steel work after the parts are correctly assembled and aligned.
- (g) All elements connected by bolts shall be drilled or reamed assembled to assure accurate alignment of the holes in each element and accurate clearance over the entire shank length of the bolt.
- (h) Wherever possible, high strength bolts connecting machinery parts to structural parts or other machinery parts shall be inserted through the thinner element into the thicker element.
- (i) High-strength bolts shall be installed with a hardened plain washer meeting ASTM F436 at each end.

- (j) Split lock washers shall conform to the SAE regular dimensions. The material shall meet the SAE tests for temper and toughness.
- (k) All cotters shall conform to the SAE standard dimensions and shall be made of half-round stainless-steel wire, ASTM A276, Type 316.
- (l) All fasteners shall be of United States manufacture and shall be clearly marked with the manufacturer's designation.

(2) Keys and Keyways

- (a) Keys and keyways shall conform to the dimensions and tolerances for square and flat keys of ANSI Standard B17.1, Keys and Keyseats, unless otherwise specified. Fit of keys in their keyseats shall meet class 2 fit unless otherwise specified.
- (b) All keys shall be effectively held in place, preferably by setting them into closed-end keyways milled into the shaft. The ends of all such keys shall be rounded to a half circle equal to the width of the key. Keys in open end keyseats such as with couplings shall be held with a set screw against the top of the key.
- (c) Unless otherwise specified herein or in the drawings, keys shall be machined from carbon steel forgings, ASTM A668, Class K.

(3) Grease Fittings

- (a) Large fitting shall be equal to Alemite part number 1823-1 with associated adapters. Pressure fittings shall be rated at a minimum of 10,000 psi. Fittings shall contain a steel check valve that will receive grease and close against backpressure.
- (b) Provide (4) spare grease fittings or each different type or size.

(4) Shims

- (a) Where shown on the drawings, all machinery shims required for leveling and alignment of equipment neatly trimmed to the dimensions of the assembled parts and drilled for all bolts that pass through the shims. Shims shall provide full bearing between machinery components and structural supports. In general, sufficient thicknesses shall be furnished to secure 1/64" variations of the shim allowance plus one shim equal to the full allowance. For motors thickness shall allow for 0.002" variations. Shims shall be Stainless Steel ASTM A240 Type 316. Shims shall be provided with bolt holes oversized not more than 1/8" greater than the fastener diameter.
- (b) Shims shall be shown and fully dimensioned as details on the working drawings. Shims with open side or U-shaped holes for bolts will not be permitted. No shims shall have less than two holes for bolts. Shims length for motor feet to be across the motor perpendicular to its shaft.
- (c) The use of peel-able laminated shims with solder or resin bonding will be permitted. Plastic or other non-metallic shims will not be permitted.

(5) Coatings

- (a) The paint coating system shall be a 3-coat or 2-coat system consisting of one coat of aluminum epoxy mastic primer and one or two coats of aliphatic acrylic polyurethane.
 - 1. 3-coat system to be used on machinery and structural steel areas greater than 36 square inches which are cleaned to bare metal.
 - 2. Use 2-coat system over small areas of bare metal and existing paint determined to be in good condition by the Department.
 - 3. Use one of the paint manufacturers listed on the NEPCOAT Qualified Products List A or B and accepted by the Department.
 - 4. Machinery parts paint color to meet either federal safety orange for parts that rotate or federal safety green for stationary parts.
 - 5. Structural steel parts to match paint color to existing structural steel color blue Federal Standard 595.
- (b) The threads of all mounting bolts shall be coated with anti-seize compound before assembly of the nuts to prevent corrosion or galling and to facilitate future removal if necessary.
- (c) For general sealing against water intrusion use Permatex Ultra-Blue RTV sealant for oily surfaces. For sealing pipe threads use Permatex Seal + Lock Thread Compound during assembly. For sealing inspection covers use Permatex Ultra Rubber Gasket Sealant and Dressing.
- (d) For screw in tapped holes use permanent assembly thread locker coating on threads. Approved products:
 - 1. Permatex Threadlocker Blue
 - 2. Loctite Threadlocker Blue 242
- (e) Rust inhibiting coatings shall be used for the temporary protection of machined surfaces. Rust inhibitor shall be wax-type petroleum based cosmoline meeting MIL-C-11796C Class C for use on machined metal surfaces.

Construction Methods:

(1) Gear reducers

The following work is to be performed on all gear reducers:

- (a) Position and hold new cut gasket onto the cover using Permatex Ultra Rubber Gasket Sealant and Dressing.
- (b) Remove and replace cover screws with new stainless-steel cap screws.
- (c) Tighten all bearing retainer cover screws into housing to herein specified torque.
 - 1. 5/8" Screw size torque: 115 ft-lbs.
 - 2. 7/8" Screw size torque: 325 ft-lbs.

3. 1" Screw size torque: 430 ft-lbs.
- (d) Chip off loose old paint. Clean and paint all screws and around its area after tightening.
- (e) Check housing split bolts and mounting bolts are snug tight using full strength on a wrench on the nut. Clean and paint bolts and its surrounding area.
- (f) Bolt heads and nuts that have more than 10 percent section loss after cleaning off all loose chips: Remove bolts one at a time, wire brush clean and polish holes, replace bolts with new in-kind bolt size and as specified herein under Fasteners. Housing split bolts to be machinery fit bolts and mounting bolts to be turned bolts.
- (g) Remove and disassemble existing breather assembly into the gearbox housing. Reuse pipe and fittings, and chase threads and polish clean. Apply Permatex Seal + Lock Thread Compound or approved equal during assembly.
- (h) Clean and paint with a 3-coat system all surfaces of gear reducer housing, bolts and nuts.
 1. Wire brush clean areas of rust as specified herein under Cleaning and Painting.
 2. Areas of section loss to be weld repaired.
- (i) Drain oil below the sight glass port into each housing prior to removing the sight glass assembly and opening the inspection cover Install new gasket at each inspection cover and new sight glass assemblies, and fill with new oil to indicated level.
 1. Remove existing sight glass assembly into the gearbox housing. Chase threads and polish clean. Apply Permatex Seal + Lock Thread Compound or approved equal during assembly of new sight glass and fittings.
 2. Liquid Penetrant Testing M Gear Reducer Mounting Feet
 - a. Clean along the welds between the housing and its mounting feet to requirements of SSPC-SP2.
 - b. After completion of cleaning at areas of section loss., liquid penetrant testing of the weld between the housing and its feet shall be done in accordance with ASTM E1417. Notify the Engineer prior to testing.

(2) Couplings

- (a) Remove existing gear couplings and replace with new grid coupling at motor and auxiliary motor. Replace one coupling at a time to limit down-time.
- (b) To remove and install new hubs, unbolt motors while supported and shift away from gear reducer for space. Polish motor and gear reducer shafts to 63 micro-inch rms finish.
- (c) Install new keys into motor and gear reducer shafts.
- (d) When removing old hubs and installing new hubs use dry ice on shafts while hubs are heated. Do not allow shaft temperature to exceed 150 deg. F near the seals. Hub temperature should not exceed 500 deg. F.
- (e) Support floating shafts prior to and during disassembly of C2 couplings.

(f) Couplings are to be packed with new grease prior to re-assembly.

(3) Bearings B1

- (a) Work location does not have an access platform. Erect temporary platform to perform work and remove it prior to operating bascule leaf.
- (b) Remove (3) corroded screws in the bushing flange of bearing B1-S of the east leaf. Drill out and tap for new cap screws. Install and paint cap screws and washers.
- (c) Provide access for the Department to inspect the other three locations and install remaining screws and washers.

(4) Trunnion Bearings BRG

- (a) Remove outer cover segments (4 segments) at each trunnion bearing by removed 16 cap screws and bolts holding segments together. Notify the Department for inspection of the Retaining-Ring.
- (b) Operate the leaf while the outer cover is removed for a total of four cycles. Allow roadway traffic to clear between each cycle
 - 1. Prior to each operation remove the nipples and run 260 brass tube (1/4" OD x 0.22" ID) or flexible PFA clear tubing (1/4" OD x 1/8" ID) through each grease port in the outboard side of the trunnion and out the ports on the inboard side.
 - 2. Plumb the 3 outboard ports and bushing port together and during the leaf operation continuously pump in new grease while leaf is in motion.
- (c) Remove Retaining-Ring at its split-line held with two 1" cap screws, 12-Point head. Screws to be reused and installed using a calibrated torque wrench set to 250 ft-lbs.
 - 1. Clean Retaining-Ring to cleaning requirements herein.
 - 2. While ring is removed measure bearing clearance using long feeler gages in the presence of the Department and provide measurements to the department. Pump grease into fittings.
 - a. Take and record 4 measurements per bearing at the 4 and 8 o'clock positions. Each location has a clearance measurement 10 inches deep and 1/2-inch deep.
 - b. Take and record 1 measurement at the top of the bearing as far as the gage can be inserted. If gage inserts more than 1/2-inch, record clearance and depth where zero clearance occurs, and record clearance at 1/2-inch deep.
 - c. Pump new grease through fitting in bottom of the hub:
 - 1. Perform with one plug in the top of hub removed and other 3 installed until new grease flows out from the open nipple. Repeat for each top nipple keeping only one port open at a time.
 - 2. Re-install the plugs and pump new grease until new grease flows out from bearing interface purging old grease.

- d. Pump new grease through each of the 3 outboard fittings in trunnion while the plugs are removed from nipples on the inboard side until new grease flow out from these nipples.

(d) Steam blast clean and paint trunnion assemblies.

1. Use a high pressure high temperature steam cleaner capable of discharging steam at 320-degrees F. minimum.
2. The area between the bascule girder web and trunnion girder end plate is to be thoroughly cleaned by blasting with steam while leaf is closed and open. Clean for at least 5 minutes while span is open. Allow for opening the leaf twice for cleaning each trunnion assembly.
3. Prime and paint the trunnion assembly as required herein.

(5) Lubrication

- (a) Use a high powered compressed air automatic grease gun capable of 10,000 psi and 16 oz. per minute flow while purging out old grease using new grease.

(6) Cleaning and Painting

- (a) New and refurbished machinery external surfaces shall be cleaned with final surface preparation, prior to painting, done by solvent hand tools, or power tool cleaning to meet the requirements of SSPC- SP 1, 2, or 3 with the following exceptions:
 1. The following excepted machinery or equipment shall be cleaned with solvent to meet the requirements of SSPC-SP 1. Generally, these surfaces are not painted, however remove excess grease for painting non-wearing surfaces of these components.
 - a. Gear and pinion teeth
 - b. Seals and gaskets
 - c. Limit switches
 - d. Bronze, galvanized, and stainless-steel parts
- (b) After proper surface preparation, machinery surfaces shall be coated with a 3-coat system applied as per the manufacture's temperature and humidity requirements for application. Machined surfaces for fit-up with other components to have one primer coat.
- (c) Acceptable coatings are given under Supplemental Materials.
- (d) The Contractor shall take special care to avoid painting of machinery surfaces which are in normal rubbing contact. All nameplates, legend plates, and escutcheons mounted on machinery shall be masked for protection from paint. Lubrication fittings shall be kept clog-free.

(7) Waste Disposal

Unless otherwise specified all refuse, materials and debris resulting from execution of this item shall become the responsibility of the Contractor and removed from the premises. Materials not

scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.

Method of Measurement:

No direct measurement shall be made for the work, as it is paid on a lump sum basis.

Basis of Payment:

- (a) The work will be paid for at the contract lump sum price for “Operating Machinery”, which shall include all materials, equipment, and labor necessary to complete the work as identified on the plans and as noted herein.
- (b) This work shall not be compensated until the Department determines that the work has been tested and functions to the satisfaction of the Department.
- (c) Final payment for operating machinery will not be made until all the project closeout data submittals have been completed. Once the completed package has been received in its entirety, the Department will make the final payment to the Contractor.

Pay Item	Pay Unit
Operating Machinery	L.S.

ITEM #0603651A – LIVE LOAD SHOE ADJUSTMENT

Description:

This work consists of measuring the gap between the rear live load shoe and its strike plate located at the back end of each bascule girder. Fabricate and install a tapered shim to achieve even bearing contact. There are two live load bearings per leaf.

Adjust shims under the live load shoe for zero clearance. Adjustment of the rear live load shoes is to be scheduled during the span closure for the span lock work.

The Contractor shall clean and paint the rear live load shoes and bolts.

Contractor is to field verify all indicated measurement herein at the bridge site.

General Requirements:

(1) Submittals

- (a) Manufacturer's data and/or shop drawings shall be submitted for all manufactured and purchased items in accordance with Article 1.05.02.
 - 1. Shop drawings shall show all parts completely detailed and dimensioned. Reproduction of the Plans shall not be used as foundation sheets for assembly or erection drawings.
 - 2. The Contractor shall prepare and submit shop drawings to the Department for acceptance in accordance with Subarticle 1.05.02-3 prior to fabricating the material.
 - 3. Shop drawings shall include, but not be limited to, field measurements, installation plans, material lists and material designations. The weight of the detailed elements shall be included on the shop drawings.
 - 4. Materials and material specifications shall be stated for each part. Where standard specifications are used, the applicable designation of such material specifications shall be given.
 - 5. Submit catalog cuts of new components.
- (b) Work Procedure: Submit a detail list of the work procedure to be followed.
- (c) Submit a report of all measurements after field adjusting and testing.

(2) Delivery and Storage

- (a) Parts shall be cleaned of dirt, chips, grit, and all other injurious materials prior to shipping, and finished metal surfaces and unpainted metal surfaces that would be damaged by corrosion shall be coated as soon as practicable after finishing with a rust-inhibiting preservative, this coating shall be removed from all surfaces prior to assembly.

- (b) Any interface between stainless steel or aluminum and steel, the steel shall be coated with primer prior to assembly.
- (c) Parts shall be completely protected from weather, dirt, and all other injurious conditions during manufacture, shipment, and storage.
- (d) Every precaution shall be taken to ensure that the bearing surfaces are not damaged and that all parts arrive at their destination in satisfactory condition.

(3) Guarantees and Warranties

- (a) Manufacturer's warranties or guarantees on equipment, materials or products purchased for use on the Contract which are consistent with those provided as customary trade practice, shall be obtained by the Contractor and, upon acceptance of the contract, the Contractor shall assign to the owner, all manufacturer's warranties or guarantees on all such equipment, material or products furnished or installed.
- (b) The Contractor shall warrant the satisfactory in-service operation of the mechanical equipment, material, products, and related components. This warranty shall extend for a period of one year following the date of final acceptance of the Project.

(4) Quality Assurance

- (a) Products used in the work shall be produced by manufacturers regularly engaged in the manufacture of the specified products.
- (b) For the fabrication, installation, and testing of work, the Contractor shall use adequate numbers of skilled, trained, and experienced mechanics and millwrights who are thoroughly familiar with the requirements and methods specified for the proper execution of the specified work. The Contractor shall provide personnel and supervisory personnel with a minimum of two movable bridge jobs as previous experience in the installation of bridge machinery.
- (c) The Contractor shall provide all reasonable facilities, necessary tools and instruments required for the proper performance of the personnel engaged in the execution of the specified work.

(5) Codes and Standards

- (a) Work shall comply with, but not be limited to, all applicable requirements of the following codes and standards and their abbreviations used in this Specification:
 1. American Association of State Highway and Transportation Officials (AASHTO)
 2. American Iron and Steel Institute (AISI)
 3. American National Standards Institute (ANSI)
 4. American Society of Mechanical Engineers (ASME)
 5. American Society for Testing and Materials (ASTM)
 6. American Welding Society (AWS)

7. National Lubricating Grease Institute (NLGI)
8. Society of Automotive Engineers (SAE)
9. Steel Structures Painting Council (SSPC)
10. United States Military Specifications (MIL)

- (b) The work shall meet the requirements of all other codes and standards as specified elsewhere in these Specifications. Where codes and standards are mentioned for any pay item, it is intended to call attention to them; it is not intended that any other codes and standards shall be assumed to be omitted if not mentioned.

(6) Measurements and Verification

Dimensions indicated on the Contract Drawings are nominal and are intended for guidance only. Shop drawings are to be based on dimensions from the "As-Built" shop drawings referenced in the Plans. Field verify dimensions that interface with existing structure or components prior to submitting shop drawings.

(7) Substitutions

- (a) The terms "approved equal", "of equal quality" and "or equal" which may appear on the Contract Drawings and in these Specifications are intended to allow the Contractor to submit for review other manufacturers and model numbers of products of equal quality and rating for those specified.
- (b) Prior to the Contractor's ordering of any substitute product, the Department's acceptance of the equivalence of the substitute product shall be obtained in writing. The acceptance of the substitute products is at the sole discretion of the Department who will establish the basis for equivalence and will review the quality of the materials and products described in detail on the submitted shop drawings and product data.
- (c) Acceptance by the Department of any substitute products submitted by the Contractor shall not relieve the Contractor of responsibility for the proper operation, performance, or functioning of that product.

(8) Inspection:

- (a) The Contractor shall give no less than ten (10) working days' notice to the Department of the beginning of work.
- (b) The Department shall have the authority to reject materials or workmanship which does not fulfill the requirements of these Specifications.
- (c) The Contractor shall furnish the Department with a copy of all orders covering work performed by subcontractors or suppliers.

(9) Defective Materials and Workmanship:

- (a) The acceptance of any material or finished parts by the Department shall not prohibit their subsequent rejection if found defective. Rejected material and workmanship shall be replaced or made acceptable by the Contractor at no additional cost.
- (b) All materials rejected during inspection and testing shall be removed from the work site and replaced without additional cost.
- (c) Delays resulting from the rejection of material, equipment or work shall not be the basis of any claim.
- (d) All defects found during the guarantee period resulting from faulty material, components, workmanship, or installation shall be corrected by the Contractor without cost. The Department reserves the right to make necessary corrections with its own forces and charge the resulting costs to the Contractor.

(10) Work Procedures

- (a) All labor, materials, tools, equipment, services, testing, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this project.
- (b) Prior to beginning work, the Contractor shall review conditions at the site for verifying measurements, assessing existing conditions, and safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personal protection, work procedures, movable bridge operation, emergency evacuation procedures and use of equipment including procedures unique to this project.
- (c) Shut down and lockout/tagout operating machinery electrical power while working on equipment.
- (d) Only work on one component at a time. Whenever the contractor is not at the bridge site the span is to be operational unless work is done during an approved navigation or roadway closure. Whenever disassembling or opening bearings use temporary supports to hold shafts in place.
- (e) Submit a schedule of all work that requires interruption to movable span operation and restrictions to either roadway or channel navigation. Provide work activities for each day and the duration of the restriction.

Materials:

(1) Fasteners

- (a) Bolts shall be ASTM A325 type 1 galvanized of specified size. Field measure assembled gage of bolted connection for required bolt length.

- (b) All elements connected by bolts shall be drilled or reamed assembled to assure accurate alignment of the holes in each element and accurate clearance over the entire shank length of the bolt.
- (c) High-strength bolts shall be installed using nuts meeting the requirements of ASTM A563 grade DH galvanized and hardened galvanized washer meeting ASTM F436 under the nut.
- (d) All fasteners shall be of United States manufacture and shall be clearly marked with the manufacturer's designation.

(2) Shims

- (a) New shim packs shall be neatly trimmed to the dimensions of the assembled parts and drilled for all bolts that pass through the shims. In general, sufficient thicknesses shall be furnished to secure 0.002-inch variations of the shim allowance plus one shim equal to the full allowance. Provide holes 1/16" larger in diameter than the connecting fastener shank diameter.
- (b) Shim material shall be ASTM A240 type 316.
- (c) Shims shall provide full bearing between components and structural supports.
- (d) Shims shall be shown and fully dimensioned as details on the shop drawings. Shims with open side or U-shaped holes for bolts will not be permitted. No shims shall have less than two holes for bolts.
- (e) The use of peel-able laminated shims with solder or resin bonding will be permitted. Plastic or other non-metallic shims will not be permitted.

(3) Coatings

The paint coating system shall be in accordance with special provision, "Localized Paint Removal and Field Painting of Existing Structural Steel".

Construction Methods:

(1) Live Load Shoe Adjustment

- (a) Measure and record bearing gap at its center and 1-inch from each end within a tolerance of +/-0.001-inch and indicate where bearing is in contact and span seated without driving the span locks. Refer to Testing herein.
- (b) Fabricate a stainless-steel tapered shim of at least 1/4-inch thickness from the bearing gap measurements. Install tapered shim.
- (c) Adjust (add or remove) shims based on measurements from wax impression.

(2) Cleaning and Painting

New or refurbished, and existing steel surfaces shall be cleaned and painted in accordance with special provision, "Localized Paint Removal and Field Painting of Existing Structural Steel".

(3) Testing

- (a) Testing is to be done without any live load on the span. The bascule span center joint elevation alignment shall not be more than +/- 1/8-inch while the span locks are pulled.
 - 1. Measure and record the span center joint elevation differential while the span locks are pulled at the center and shoulder of the roadway for a total of three measurements.
 - 2. Measure and record bearing gap at its center and 1-inch from each end within a tolerance of +/-0.001-inch and indicate where bearing is in contact.
 - 3. Acceptance is based upon full bearing contact across its width.

(4) Waste Disposal

Unless otherwise specified all refuse, materials and debris resulting from execution of this item shall become the responsibility of the Contractor and removed from the premises. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.

Method of Measurement:

No direct measurement shall be made for the work, as it is paid on a lump sum basis.

Basis of Payment:

- (a) The work will be paid for at the contract lump sum price for “Live Load Shoe Adjustment”, which shall include all materials, equipment, and labor necessary to complete the work as identified on the plans and as noted herein.
- (b) This work shall not be compensated until the Department determines that the work has been tested and functions to the satisfaction of the Department.
- (c) Final payment will not be made until all the project closeout data submittals have been completed. Once the completed package has been received in its entirety, the Department will make the final payment to the Contractor.

Pay Item
Live Load Shoe Adjustment

Pay Unit
L.S.

ITEM #0603729A - LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL

Description: Work under this item shall consist of paint removal and field painting of the existing steel at designated areas. The work shall include containments, paint removal, collection of paint and associated debris, surface preparation and field painting. Designated areas include: areas specifically designated on the plans and those areas where construction activities require the removal of the existing coatings to accomplish other Contract work (such as, but not limited to, arc gouging or welding). The paint removal is required because of the possible presence of hazardous paint containing lead or other hazardous metals. The paint removal is required to comply with OSHA and DEEP regulations.

Privately-owned utilities, bridge rails, stay-in-place forms, fences, elastomeric bearing pads and bronze components shall be protected from damage by surface preparation and painting operations and are not to be painted.

Submittals: A minimum of 20 calendar days before starting any paint removal, surface preparation and coating application work, the painting Contractor shall submit the following to the Engineer for acceptance:

1. A copy of the firm's written Quality Control Program used to control the quality of surface preparation and coating application including, but not limited to, ambient conditions, surface cleanliness and profile, coating mixing, dry film thickness and final film continuity.
2. A copy of the firm's written surface preparation and application procedures. This written program must contain a description of the equipment that will be used for surface preparation, including the remediation of soluble salts, and for paint mixing and application. Coating repair procedures shall be included.
3. A detailed description of the Contractor's enforcement procedures and the authority of personnel.
4. Containment plans (paint removal/collection of debris, surface preparation, coating applications, coating applications with heat, etc.).
5. If the application of heat is proposed for coating application purposes, provide information on the heat containment and procedures that will be used, with data sheets for the equipment.
Note: If heat is used for coating operations, the heat and containment must be maintained to provide the required temperatures for the duration of the **cure** period.
6. Proof of SSPC-QP1 qualifications, CAS-certification(s) and QP2 qualifications, as applicable.
7. Proof that the finish coat complies with the color and gloss retention performance criteria of

SSPC Paint 36, Level 3, for accelerated weathering.

8. Coating product information, including coating manufacturer, product name, application instructions, technical data, MSDS and color chips.

The Contractor shall not begin any paint removal work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the work in strict accordance with the requirements of Federal, State, or local regulations, this specification, or to adequately protect the health and safety of all workers involved in the Project and any members of the public who may be affected by the Project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Materials: The paint shall be one of the following **2-coat systems**:

Carbomastic 15
Carbothane 133 LV, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

Epoxy Mastic Aluminum II
HS Poly 250, manufactured by: Sherwin Williams
425 Benton Street
Stratford, CT 06615
(203) 377-1711
(800) 474-3794

Carbomastic 90
Carbothane 133 LV, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

All materials for the complete coating system shall be furnished by the same coating material manufacturer with no subcontracted manufacturing allowed. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written recommendations. The coating thickness shall be in accordance with the Manufacturer's printed instructions. All components of the coating system and the mixed paint shall comply with the Volatile Organic Compounds (VOC) Content Limits and Emission Standards stated in the Connecticut Department of Energy and Environmental Protection's

Administration Regulation for the Abatement of Air Pollution, Sections 22a-174-41 through 41a and 22a-174-20(s), respectively.

Control of Materials: A Materials Certificate will be required for the selected paint system in accordance with Article 1.06.07, confirming the conformance of the paint to the requirements set forth in these specifications. The selected Topcoat shall conform (as close as possible) in color to the existing topcoat.

Note: If any of the above and/or following stipulated Contract specifications differ from those of the manufacturer's recommended procedures or ranges, the more restrictive of the requirements shall be adhered to unless directed by the Engineer in writing.

Construction Methods:

Contractor - Subcontractor Qualifications: Contractors and subcontractors doing this work are required to be certified by the SSPC Painting Contractor Certification Program (PCCP) to QP 1 entitled "Standard Procedure for Evaluating Qualifications of Painting Contractors ("Field Application to Complex Structures"). When the work involves the disturbance of lead-containing paint, the Contractor and subcontractor are also required to be certified to SSPC-QP 2 "Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint." The certification(s) must be kept current for the duration of the work. If a Contractor's or subcontractor's certification expires, the firm will not be allowed to do any work related to this item until the certification is reissued. Requests for extension of time for delay to the completion of the Project due to an inactive certification will not be considered and liquidated damages will apply. In addition, if any recoat times are exceeded, the affected areas shall be cleaned to SSPC-SP 15 and coatings reapplied in accordance with these specifications at no additional cost to the State.

Contractors and subcontractors are required to have at least one (1) **Coating Application Specialist (CAS) (SSPC ACS/NACE No. 13)**-certified (Level II-Interim Status-Minimal) craft-worker. CAS-certified (Level II-Interim Status-Minimal) craft-worker(s) are required for all crews/craft-workers up to four (4) crew members. For each crew larger than four (4), an additional CAS-certified (Level II-Interim Status-Minimal) craft-worker shall be present on each surface preparation/painting crew during surface preparation cleaning/removal and spray application (Atmospheric and Immersion Service) operations. A crew-member is a person who is on the job performing hand/power tool cleaning and/or spray application of protective coatings on a steel structure. The certification(s) must be kept current for the duration of the Project work. If a Contractor's, subcontractor's or any craft-worker's certification expires, the firm will not be allowed to do any work on this item until the certification is reissued.

All Contractor activities associated with the work described and specified herein shall be conducted in accordance with all applicable Federal, State of Connecticut and local safety regulations and guidelines.

Quality Control Inspections: The Contractor shall perform first line, in process Quality Control (QC) inspections. The Contractor shall implement a Quality Control Program accepted by the Engineer, including written daily reports, that ensures that the work accomplished complies with these specifications. All Quality Control Reports must be reviewed and signed by either a NACE Coating Inspector Level 2 - Certified (must have completed sessions I, II and III) or SSPC – BCI Level I Inspector (Minimum qualifications). Copies of these reports shall be provided daily to the Engineer. Contractor QC inspections shall include, but not be limited to the following:

- Suitability of protective coverings and containments
- Ambient conditions
- Surface preparation (solvent cleaning or hand/power tool cleaning)
- Coating application (mixing, thinning, and wet/dry film thickness)
- Recoat times and cleanliness between coats
- Coating continuity (freedom from runs, sags, pinholes, shadow-through, skips, misses, etc.)
- Final film acceptance

Limits of Paint Removal and Field Painting: Prior to applying the heat of welding equipment to localized areas of existing steel superstructures, the existing paint shall be removed to a width of 6 inches from wherever the heat will be applied, or as directed by the Engineer. The locations of the paint removal and field painting shall be reviewed and accepted by the Engineer prior to commencement of the work. Such acceptance by the Engineer does not relieve the Contractor of his responsibility for complying with applicable OSHA and DEEP regulations.

Containment for Paint Removal and Collection of Debris: The containment(s) shall be designed and erected to contain, as well as facilitate the collection of debris from the paint removal operations. Drawings and details of the containment(s) shall be submitted to the Engineer for review and comments prior to any paint removal. Review of the containment by the Engineer shall in no way relieve the Contractor of his responsibility for the containment. The containment shall conform to the requirements found within the SSPC Guide 6. The class of the containment shall be a minimum of Class 3P, modified to include the following:

- A. The containment materials shall be air and water impenetrable and fire resistant.
- B. With the exception of the entryways, all seams in the containment enclosure shall be lapped a minimum of 24 inches and shall be tied off at intervals not to exceed 18 inches.
- C. All attachments to bridge parapets or the underside of the bridge deck shall be sealed to prevent the escape of dust and debris.

The above specified containment must be used for **all** paint removal and collection of debris operations. The containment must remain in place until all associated debris has been collected.

Storage and Disposal of Collected Debris: All of the debris resulting from the paint removal operations shall be contained and collected. Debris within containment enclosures shall be removed by HEPA vacuum collection prior to disassembly of the enclosures. All the debris, rust and paint

chips shall be stored in leak-proof storage containers at the Project site. Debris storage shall be in accordance with Connecticut Hazardous Waste Management Regulations. The storage containers and storage locations shall be reviewed by the Engineer and shall be located in areas not subject to ponding. Storage containers shall be placed on pallets and closed and covered with tarps at all times except during placement, sampling, and disposal of the debris.

Prior to generation of any hazardous waste, the Contractor shall notify the Engineer of its selected hazardous waste transporter and disposal facility. The Contractor must submit to the Engineer: (1) the transporter's current U.S DOT Certificate of Registration and (2) the transporter's current Hazardous Waste Transporter Permits for the State of Connecticut, the hazardous waste destination state and any other applicable states. The Engineer will then obtain an EPA ID number that will be forwarded to the Contractor. Any changes in transporter or facility shall be immediately forwarded to the Engineer for review.

The Contractor shall conform to the latest requirements of the Hazardous Waste Management Regulations prepared by the DEEP's Hazardous Waste Management Section, subject to regulations of Section 22a-449(c) of the Connecticut General Statutes.

Disposal of the debris shall be in strict conformance with all Federal E.P.A. and DEEP regulations for hazardous materials.

All necessary forms, including the "Uniform Hazardous Waste Manifest" obtained from the Hazardous Waste Management Section of DEEP, must be filled out, approved and signed by the Department's Project Engineer (Construction), and appropriate copies returned to the Department's Division of Environmental Compliance.

A licensed hazardous waste transporter and a licensed hazardous waste treatment/disposal facility must be secured from lists available from the DEEP and approved by the Department's Division of Environmental Compliance.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of their failure to be in compliance with this special provision and all Federal, State and Local laws.

Paint Removal/Surface Preparation: The existing structural steel shall be power tool cleaned according to SSPC-SP 15 "Commercial Grade Power Tool Cleaning." The power tools (needle guns, grinders, etc.) shall be equipped with HEPA vacuum attachments. Before the power tool cleaning, all dissolvable foreign matter, such as oil, grease, and dust shall be removed by wiping or scrubbing the surface with rags or brushes wetted with solvent in accordance with the provisions of SSPC-SP 1 "Solvent Cleaning." Clean solvent and clean rags or brushes shall be used for the final wiping. The cleaned surface shall be accepted by the Engineer. If the surface is determined to meet the requirements of SSPC-SP 15, painting operations can commence.

Note: Chemical stripping and abrasive blast cleaning will not be permitted.

Existing Steel Surfaces to be Painted: After the designated areas have been inspected and accepted according to the surface preparation specification, SSPC SP 15, the steel surfaces which are to receive the field touch-up paint shall be cleaned immediately prior to coating operations by wiping or scrubbing the surface with rags or brushes wetted with solvent. Use clean solvent and clean rags for the final wiping.

- Solvent must be compatible with the specified coatings. Solvent cleaned surfaces shall be primed before any detrimental recontamination or corrosion occurs. Follow manufacturer's safety recommendations when using any solvent.
- All foreign materials such as dirt, dust, loose rust scale, sand, bird droppings, and all materials loosened or deposited on the steel surface by cleaning operations shall also be completely removed by vacuuming before any painting operations commence.
- Failure by the Contractor to properly prepare and clean surfaces to be painted in accordance with the specifications shall be cause for rejection by the Engineer. All surfaces that are rejected shall be cleaned and painted to the satisfaction of the Engineer in accordance with the specifications, at no additional cost to the State.

Application of Field Paint: The method for coating application shall be by brush and roller equipment. The containment for paint application shall consist of drop cloths and a solid platform bottom.

Storage, opening, mixing, thinning and application of the paint shall be accomplished in strict accordance with the specified Contract requirements and procedures published by the paint manufacturer and supplier. The Contractor shall have at the Project site, at all times, the current copies of all technical data, recommendations and procedures published by the paint manufacturer. All coatings shall be supplied in sealed containers bearing the manufacturers name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used. Paint shall be furnished in the manufacturer's original sealed and undamaged containers. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not allowed. The paint shall be applied to produce a uniform smooth coat without runs, streaks sags, wrinkles, or other defects.

The Contractor shall provide a suitable facility for the storage of paint, which is in accordance with the latest Federal and State regulations. This facility must provide protection from the elements and insure that the paint is not subjected to temperatures outside the manufacturer's recommended extremes. Storage for paint must be located in reasonable proximity to the painting locations. The Engineer shall be provided access to the stored paint at any time, for inspection and to witness removal of the materials. The Contractor's facility for the storage of paint is subject to the approval of the Engineer.

Ambient Conditions: Solvent cleaning just prior to coating application or coating application work shall be performed when the conditions are as follows:

- The relative humidity is at or below 80% and when there is no falling rain or dew present, or anticipated, before a prepared surface can be coated.

- The substrate is not damp or covered by frost or ice.
- The surface temperature and air temperature are between 50°F and 100°F.
- The surface temperatures of the steel and air are more than 5°F above the dew point temperature, as determined by a surface temperature thermometer and electric or sling psychrometer.

If the requirements of the coating manufacturer differ from the ranges provided above, comply with the most restrictive requirements unless directed otherwise by the Engineer in writing.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of his failure to be in compliance with this special provision and all federal, state, and local laws.

Method of Measurement: This work will be measured by the actual square foot of existing steel at designated areas where paint was removed, surfaces cleaned, re-painted and accepted. **Note:** In some instances when **new steel** is being added to the designated areas where the paint was removed, the removal area may not equal the area to be re-painted. Measurement in these cases will be by the actual square foot of existing steel where the paint was removed and accepted.

Basis of Payment: This work will be paid for at the Contract unit price per square foot for "Localized Paint Removal and Field Painting of Existing Steel," complete in place, which price shall include all materials, containments, collection and disposal of non-hazardous debris, containers, equipment, tools, labor, heating devices, services of the technical advisor and for any incidental work. No direct payment will be made for the cost of storage or hauling the paint and other materials, including paint chips and associated debris, to and/or from the bridge site, but the cost thereof shall be included in the Contract unit price.

Pay Item	Pay Unit
Localized Paint Removal and Field Painting Of Existing Steel	s.f.

ITEM #0603858A – REHABILITATION OF EXISTING STRUCTURAL STEEL

Description: Work under this item shall consist of the repair and replacement of miscellaneous structural steel of the bridge superstructure in accordance with the plans and as directed by the Engineer

Materials: Materials for this work shall conform to the following requirements: Structural Steel shall be AASHTO M270, Grade 50 and shall conform to the requirements of Section 6.03. All bolts shall be ASTM F3125 Grade A325 and shall conform to the requirements of Section 6.03. Welding electrodes shall conform to the requirements of Section M.06.04.

Any structural steel material specified on the plans as being galvanized shall conform to the requirements of ASTM A123. Structural steel members and components shall be hot-dip galvanized after fabrication. Galvanized bolts, nuts and washers shall conform to the requirements of ASTM A153.

Epoxy-Based Filler shall conform to ASTM C881, Grade 3. The epoxy based filler material shall be Flexolith Gel as manufactured by Tamms, Kop-Coat A-788 as manufactured by Carboline, Steel-Seam FT910 as manufactured by Sherman Williams, or Engineer approved equivalent product.

Construction Methods: This work shall conform to the requirements of Section 6.03, supplemented and amended as follows:

Surface Preparation at Sharp Edges: All sharp edges on existing members, which do not otherwise require repair, shall be ground back to a minimum of 1/8" thick prior to painting.

Shop Drawings / Working Drawings: Submittal of steel shop drawings is required. The Contractor shall also submit erection plans and falsework plans as Working Drawings to the Engineer for review in accordance with Article 1.05.02-2.

The dimensioning of structural steel for fabrication shall match existing conditions, as applicable, with field measuring by the Contractor as necessary.

Observations by Engineer: The Contractor shall provide access for the Engineer's observation of existing conditions and of repairs. The provisions for access shall be consistent with that required under special provision for Item "Localized Paint Removal and Field Painting of Existing Steel".

Paint Removal: The contractor shall remove localized paint, debris, and rust from steel, in suspected areas of repair, as directed by the Engineer, for the Engineer's observation. Wherever arc gouging, flame cutting, or welding will be used, existing paint shall first be removed because of the possible presence of lead in the existing paint, or as necessary for local surface preparation

prior to painting. Prior to applying the heat of welding equipment to localized areas of steel superstructures, the existing paint shall be removed to a minimum of 6 inches from wherever the heat will be applied, and as directed by the Engineer.

Method of Paint Removal: Depending on location within a given span, existing paint shall be in accordance with the “Localized Paint Removal and Field Painting of Existing Steel” item.

Welding: Welding details, procedures and testing methods shall conform to ANSI/AASHTO/AWS D1.5 – 2008 – Bridge Welding Code, unless otherwise noted on the plans.

Multiple pass welds, inspected by the magnetic particle method shall have each pass or layer inspected and accepted before proceeding to the next layer, as determined by the Engineer. All testing of welds shall be the responsibility of the Contractor and the cost shall be considered incidental to the work. All test results shall be forwarded to the Engineer for quality assurance and documentation purposes.

Scaffolding: The Contractor shall submit working drawings, stamped by a Professional Engineer registered in the State of Connecticut, in accordance with Subsection 1.05.02; Plans, and Working Drawings, of the proposed design to the Engineer for his review and approval prior to installation. The Contractor shall be responsible for obtaining and all information necessary to properly complete the design, at no additional cost to the State.

Method of Measurement: This item will be measured for payment by the hundredweight (cwt.) of miscellaneous steel permanently added to the acceptance of the Engineer.

Basis of Payment: This work will be paid for at the contract unit price per hundredweight for "Rehabilitation of Existing Structural Steel", which price shall include all materials, testing, equipment, tools and labor incidental thereto.

The cost of any required access, OSHA compliant work platforms, scaffolding, debris shield, needed for performance of structural steel repair shall be included in this contract unit price.

<u>Pay Item</u>	<u>Pay Unit</u>
Rehabilitation of Existing Structural Steel	CWT

ITEM #0604526A - BRIDGE ELECTRICAL AND CONTROL SYSTEM

Description

The work under this Section shall consist of furnishing all labor, materials, plant and equipment, and performing all work necessary to repair existing electrical equipment of the bascule span and to provide and install new equipment as specified herein and indicated on the plans. The new equipment to be installed and/or rehabilitated for operation of the span and its auxiliaries, shall consist of, but not be limited to:

1. Remove existing, provide and install new seated proximity switches
2. Provide and install new clutch hand crank limit switches
3. Remove existing, provide and install new brake limit switches. Provide and install new brake set pilot lights.
4. Provide and install new anemometer and display.
5. Remove existing, provide and install new heat pump for control room.
6. Provide and install new parapet light hand hole cover.
7. Remove existing, provide and install new engraved, laminated nameplates for control desk. Provide and install new engraved, laminated nameplates for all disconnect switches.
8. Remove existing, provide and install new updated laminated circuit schedules for all panelboards.
9. Remove existing, provide and install new grounding conductor.
10. Remove existing, provide and install new conductors from local terminal box to brake terminal boxes, rotary cam limit and span position transmitter.
11. Remove existing, provide and install new conduits and conductors for between terminal boxes and disconnect switches for span locks.
12. Remove existing, provide and install new droop cable between fixed and movable terminal boxes.
13. Provide and install new terminal blocks as required in Motor Control Center.
14. Repair chain link fence at utility transformer.
15. Repair/replace genset fuel oil high level alarm light.
16. Clean terminal blocks and properly terminate all warning gate conductors.
17. Remove existing, provide and install new warning gate hand crank and door limit switches.
18. Remove existing, provide and install new door hardware for warning gates.
19. Remove existing, provide and install new arm for NW warning gate. Provide spare arm with lights.
20. Repair/replace NW warning gate lowered pilot light.
21. Recommissioning bridge electrical system after new conductors and cables are installed

The Contractor's attention is also directed to the requirements for electrical work appearing in other portions of this contract. The Contractor shall coordinate the work specified under this section with any other electrical, mechanical and structural work that may be in progress.

It is the intent and purpose of these Specifications to cover and include all apparatus and appliances to properly install, wire, connect, equip, test, adjust, and put into the Engineer and Department's accepted working order the electrical work herein specified. Any incidental apparatus, appliance, material, or labor not herein specifically mentioned or included that may be found necessary to comply with the requirements of the related documents and referenced standards or codes shall be furnished by the Contractor.

The Contractor shall designate a person or persons to be responsible for the initial survey of the existing bridge electrical systems, for the laying out of the new conductor pulls, and for recommissioning the bridge electrical system after all electrical, structural and mechanical work is completed. The credentials of the proposed person(s) shall be submitted for the Engineer's review.

The Buy America requirements in Article 1.06.01 shall apply.

Materials

All electrical equipment and its installation shall conform to the requirements of the latest revision of the following codes and standards, except as may be otherwise provided herein:

- American Association of State Highway and Transportation Officials (AASHTO)
- National Electrical Code (NEC)
- American Society for Testing and Materials (ASTM)
- American National Standards Institute (ANSI)
- National Electrical Manufacturers Association (NEMA)
- Underwriters Laboratories, Inc. (UL)
- Insulated Cable Engineers Association (ICEA)

The Contractor shall obtain any and all required permits and approvals of all Departments or Agencies having jurisdiction.

Equipment and Material Provisions

All equipment and materials shall be new unless otherwise specified elsewhere. All equipment, materials, and workmanship shall be first-class, and shall be manufactured and erected to the satisfaction of the Engineer. The Contractor shall warrant the in-service working of the electrical installations for one year or the manufacturer's warranty period, whichever is greater, following project acceptance by the Department. If the Contractor has any objection to any feature of the electrical equipment as designed or arranged, he must state his objection in writing to the Engineer prior to fabrication and/or installation, otherwise his objection will not be accepted if offered as an excuse for malfunctioning of the equipment or for defective or broken apparatus.

Each piece of electrical equipment and apparatus such as junction boxes, terminal boxes, limit switches, etc. shall have a corrosion-resisting metal nameplate on which is stamped the name of the manufacturer, serial and catalog numbers and the rating or capacity of the equipment or apparatus.

All metal parts of the installation, except structural steel, shall be of corrosion-resisting material, such as bronze or stainless steel. Cast-iron, malleable iron, or steel with a hot-dip galvanized finish shall be used where specified herein. Structural steel shall conform to the requirements given under the machinery support drawing.

In general, all mounting hardware shall be vibration proof.

If the Contractor deems any departures from the Contract Plans or Specifications necessary, details of such departures, and the reasons for such departures shall be submitted for approval as soon as possible, but prior to the first submittal. No such departures shall be made, nor work started without the written approval of the Engineer.

Upon completion of the work, the Contractor shall correct all electrical shop or working drawings to show the work as constructed and provide a .pdf copy of all drawings along with AutoCAD or Micro Station files.

The Contractor shall submit for inspection and test, if directed by the Engineer, samples of any apparatus or device that he/she proposes to use as a part of the electrical installation.

The Contractor shall prepare and submit for review within 30 days after the award of the Contract a completed schedule of electrical submissions that outline when all the following electrical submittals will be made.

The Contractor shall be fully responsible for developing all point-to-point electrical conduit and wiring runs for all portions of the electrical system being modified. Coordination with all other disciplines is required as part of the development of the drawings. The required drawings shall include, but not be limited, to:

1. Complete schematic conduit diagram showing the interconnection of all devices and equipment, including terminal and junction boxes installed and/or modified under this contract. The size of each conduit, insulation type, and the wire number and size of each conductor in conduit shall be shown on the diagrams. Each conduit shall be suitably numbered or lettered, and percent wire fill shall be shown.
2. A complete set of layout and installation drawings for the electrical work showing the location and installation, including support and mounting details, of all electrical apparatus and equipment. These drawings shall be made to scale and shall show the exact location of all conduits, cables, boxes, motors, brakes, limit switches, disconnect switches, and other electrical equipment and the method of supporting them on the structure.
3. Construction drawings of all flexible multi-conductor cables, including the sizes of conductors, type and thickness of insulation, jackets and other components, and giving the outer diameter of each finished cable.

4. Detail drawings showing the construction of cabinets, brackets, and special supports required for the installation of the flexible multi-conductor cables for circuit connections between the movable span terminal box and fixed terminal box including conduit installation and expansion/deflection conduit fittings.
5. Outline drawings, catalog cut sheets, materials certificates, and mounting details shall be submitted for the following equipment:
 - a. Wiring Devices
 - b. Grounding Equipment
 - c. Conduit
 - d. Boxes
 - e. Wire and Cable
 - f. Lugs
 - g. Wire and Conduit Tags
 - h. Limit Switches
 - i. Terminals
6. Any other drawings, which may, in the opinion of the Engineer, be necessary to show the electrical work as constructed.

Miscellaneous Control Components

1. Lever-less mechanical limit switches shall be provided for span seated indication and interlocking. They shall be enclosed in a stainless steel housing rated NEMA 4X and 6P. They shall be provided with double pole, double throw end sensing contacts rated for 10 amperes. The contacts shall be silver cadmium oxide, gold flashed, and shall have a temperature rating of -40 to 221 degrees F. They shall have a repeatability of 0.002", and a response time of 8ms. They shall be provided with six-foot epoxy potted cordsets. They shall have a nominal sensing distance of 1/4" and shall be provided with a magnetic sensor that will provide for a 3/4" sensing distance. The lever-less limit switches shall be Model 81 GO switch with model AMP3 magnetic target as manufactured by Topworx or Engineer approved equal.

2. Provide and install three lever type limit switches on each brake. One shall indicate that the brake is fully set, one that the brake is fully released and one for hand released. The limit switches shall be provided with two sets of normally open and two sets of normally closed contacts. Brackets for the new brake set limit switches shall be similar to the brackets for the existing brake released limit switches. Switches shall be Cutler-Hammer Series E50, NEMA 6P+ with epoxy potted cord sets or approved equal.
3. Indicating Lights: Indicating shall be heavy-duty, oil-tight pilot lights with one or two fields as required as per the plans. They shall be provided with LED lamps the color of the lamp lens and shall be rated at 120 VAC. The lights shall be provided with a push to test feature. All lenses shall be glass, with color and marking as shown on the Plans.
4. Control Relays: Auxiliary control relays shall be multi contact magnetic machine tool relays with contacts rated at 10 amperes, 600 volts, on a continuous basis. Relays known to meet the specified requirements are the Square D class 8501 type X or approved equal.
5. Terminal Blocks: Terminal blocks for conductors #10 AWG and smaller shall be DIN rail mounted feed through bolt connection terminal blocks with separators as required, Phoenix Contact RBO5 3058059 or approved equal. Install machine- printed terminal markers on block. Rated voltage shall be 800 V and rated current shall be 67A, minimum.
6. Nameplates: Nameplates shall be provided for all devices and the control desk pilot devices and shall be made of laminated phenolic plastic with white front and back and black core and shall be not less than 0.09 inches thick. The lettering shall be etched through the front layer to show black engraved letters on a white background. Lettering shall be not less than 0.24 inches high, unless otherwise detailed on the Plans. Nameplates shall be securely fastened to the equipment with stainless steel screws.
7. Terminal Connectors: Terminal connectors shall be seamless, heavy-duty compression flanged fork terminals manufactured from pure electrolytic copper tubing. Terminals shall be tin plated and provided with a double-thick tongue and insulation grip. Terminals and compression tools must be approved by the Engineer.
8. The gate arm shall be 4" (102mm) square, 6005-T5 aluminum extruded tubing with 3" square end section of high-strength UV-resistant fiberglass. Arm length shall be as required to match existing. Stainless steel truss cables and a damping type bumper rod shall be furnished with longer arms at the discretion of the manufacturer. Front and rear arm surfaces shall be covered with alternating red and white high intensity reflective sheeting. Stripes shall be 16" (406mm) wide, and vertical according to MUTCD. Remaining exposed surfaces shall be painted white. Gate arm lights shall match existing using LED lamps. Arms shall be manufactured by B&B Roadway or approved equal.
9. The anemometer shall be an ultrasonic anemometer with no moving parts. It shall have a velocity range of 0 – 60 m/s (116 knots), with an accuracy +/- 2% Resolution 0.01 m/s (0.02 knots). It shall have a direction range 0 to 359° – no dead band with an accuracy +/- 3°, resolution 1°, traceable to national standards. It shall be provided with a power supply

rated 9 - 30Vdc @ 14.5mA typical. Start up time <1 second. The enclosure shall have an ingress protection rating of IP65. It shall be rated for an operating temperature -35°C to +70°C and an operating humidity <5% to 100% EMC EN 61000-6-2 : 2001 EN 61000-6-3 : 2001 . The external construction shall be of LURAN S KR 2861/1C ASA/PC. The anemometer shall have a two-year warranty. The anemometer shall be a WindSonic as manufactured by Gill Instruments or engineer approved equal.

Conduit Systems and Fittings

1. All single wires shall be installed in conduit. All conduits shall be standard weight, threaded, rigid steel conduit conforming to the requirements of ANSI Standard C80.1. All conduits shall be made of rigid, hot-dip galvanized, steel. Conduit couplings and fittings shall be made of hot-dip galvanized malleable iron or steel.
2. All conduits to be installed in outdoor locations shall be plastic coated as hereinafter specified. Conduit fittings, including couplings, unions, elbows, expansion and deflection fittings, and other items, shall also be plastic coated. Conduits and fittings, which are to be plastic coated, shall be provided with a factory-applied polyvinyl chloride (PVC) coating in the following manner. The exterior of the galvanized rigid steel conduit or fitting shall be coated with an epoxy acrylic, heat-polymerizing adhesive not to exceed 0.004 inches. A PVC plastic coating, 0.03 inches to 0.04 inches thick shall be bonded to the outside metal surface the full length of the pipe, except for the threads. The plastic coating shall have an 85+ Shore A Durometer rating and conform to NEMA RNI-1998 (Type A), ASTM D746, and Federal Specifications LP406b, Method 2051, Amendment 1 or 25 September 1952. A two-part red urethane, chemically cured coat shall be applied to the interior of all conduit and fittings. This internal coating shall be at the nominal 2-mil thickness and shall be sufficiently flexible to permit field bending without cracking or flaking. The Plasti-bond, PVC coated, hot-dip galvanized steel conduit shall be UL labeled and listed.
3. Unions to connect sections of conduit that cannot be joined to each other or to boxes in the regular manner shall be of hot-dip galvanized malleable iron or steel.
4. Conduits shall not be less than $\frac{3}{4}$ inches in diameter. The interior surfaces shall have a smooth finish and be free of burrs or projections, which might cause injury to the cables. All conduits shall be free from blisters, cracks, or injurious defects and shall be reamed at each end after being threaded. Sections shall be connected to each other with screw couplings made up so that the ends of both conduits will butt squarely against each other inside of the coupling. Conduits shall be installed to be continuous and watertight between boxes or equipment. Conduits shall be protected at all times from the entrance of water or other foreign matter by being well-plugged overnight or when the work is temporarily suspended.
5. All bends shall be made with factory-bent, standard or large radius conduit elbows. When approved by the Engineer, bends and offsets can be made with a hydraulic or power pipe bender, provided with standard shoes for conduit as required. Field bends shall be made

without kinking or damaging the exterior surface or smooth bore of the conduit. The radius of curvature of pipe bends made in the field shall not be less than eight times the inside diameter of conduit. All bends shall be long sweep, free from kinks, and of such easy curvatures as to permit the drawing of conductors without injury. The use of a pipe tee or vise for bending conduit will not be permitted. Conduit that has been crushed, deformed or damaged shall be discarded. Conduit runs shall be made with as few couplings as standard lengths will permit, and the total angle of all bends between any two boxes or cabinets shall not exceed 180 degrees, unless otherwise approved by the Engineer. Long running threads will not be permitted. Junction boxes shall be used whenever necessary to facilitate the installation of the wire.

6. The use of condulets or conduit bodies for pulling conductors, for making turns in conduit runs, or for branching conductors shall not be permitted unless specifically allowed on the Contract Plans or authorized by the Engineer in writing.
7. After the conduits are installed, any openings shall be caulked with an elastic compound and escutcheon plates provided on the interior walls, ceilings, and floors. Conduits shall be securely clamped and supported at intervals not exceeding 5 feet in length.
8. Conduit runs exposed on the steel structure shall be securely clamped to the steelwork. The conduit clamps, in general, shall consist of U-bolts attached to structural steel supports bolted to the members. The minimum thickness of the structural supports shall be 3/8 inches. Supports shall be arranged so that conduits rest on top of the support and conduit U-bolts rest on top of the conduits. The use of J-bolts to fasten structural supports or to clamp conduits will not be permitted.
9. All U-bolts and bracket hangers shall be provided with medium-series lock washers and hexagonal nuts. Unless specified on the Contract Plans, the bolts, nuts, and washers shall be of stainless steel conforming to the requirements of the Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes, ASTM Designation A276, Type 316.
10. Where conduits are to be mounted exposed on non-steel surfaces, they shall be securely clamped to the surface using bent plate pipe supports with back spacers held by not less than two bolts. The stock size for the bent steel plate supports shall be 3/8 inch thick by 2 inches wide. Back plates shall be of 3/8-inch thick steel. Supports and spacers shall be type 316 stainless steel or structural steel hot-dip galvanized after fabrication. Bolts shall be not less than 1/2 inch in diameter and shall be of stainless steel conforming to the requirements specified for U-bolts.
11. Exposed conduits shall be installed parallel to, or at right angles to ceilings, walls and partitions. Where changes in direction of exposed conduit cannot be made with neat and orderly bends, pull boxes shall be used. Exposed conduits shall be securely clamped and supported at intervals not exceeding five (5) feet in length. All boxes shall be provided with structural supports independent of associated conduits. No boxes shall be

cantilevered from nor supported by conduits. Box and conduit supports shall be as shown on the drawings.

12. At any point where a conduit crosses an expansion joint longitudinally or where movement between adjacent sections of conduit can be expected, conduit expansion fittings shall be installed. The fittings shall be bronze expansion fittings and shall be provided with flexible bonding jumpers to maintain the electrical continuity across the joints. The fittings shall permit a total conduit movement of 8 inches and shall be approved equal to the O.Z./Gedney Type AXDX or the Crouse-Hinds Type XJGD.
13. At any point where a conduit crosses a joint laterally or where an offsetting type movement between adjacent sections of conduit can be expected, expansion and deflection fittings shall be installed. The fittings shall permit a movement of $\frac{3}{4}$ inch from the normal in any direction. The fittings shall be the O.Z./Gedney Type DX, Spring City Type EDF, Adalet Type STX, or Engineer approved equal. Flexible bonding jumpers shall be required to maintain bonding integrity whenever expansion fittings are required.
14. Flexible conduits for the connections between the rigid conduit system, terminal boxes and all limit switches, and other equipment subject to vibration shall be made with sections of approved flexible metallic conduit. Approved liquid-tight connectors shall be provided for connections between rigid conduits or terminal boxes and flexible metallic conduit. Each flexible, liquid-tight metallic conduit section shall not exceed eighteen (18) inches in length without prior approval of the Engineer.
15. Watertight conduit hubs shall be provided at the ends of all conduits entering boxes and enclosures furnished with slip holes. Hubs shall be stainless steel when used in conjunction with stainless steel enclosures.
16. The ends of all conduits projecting into boxes and equipment enclosures shall be provided with bronze insulated grounding bushings. The insulated portion shall be of molded phenolic compound, and each fitting shall have a screw type combination lug for bonding. Insulated bushings shall be the O.Z./Gedney Type RBLG, Spring City Type GB, or Appleton Type GIB or approved equal. All bushings in any box or enclosure shall be bonded together with No. 8 AWG bare copper wire.

Boxes

1. Junction/Pull boxes shall be used whenever necessary to facilitate the installation of the wire. Conduit bodies shall not be used for pulling conductors, for making turns in conduit runs, nor for branching conductors, unless specifically permitted by the Engineer or directly specified on the plans. If the Contractor wishes to furnish and install conduit bodies anywhere else besides at locations shown on the drawings, he shall petition the Engineer in writing as to the exact proposed locations of installation and reasons for use.
2. All junction and terminal boxes and cabinets, shall be 14-gauge, type 316 stainless steel enclosures with hinged, 14-gauge, stainless steel doors supported by a continuous

stainless steel hinge with removable pin. Seams shall be continuously welded and ground smooth. Each enclosure shall be provided with stainless steel fast operating door clamp assemblies and oil-resistant gasket to insure a watertight seal. Junction and terminal boxes shall be rated NEMA 4X and shall be as manufactured by Hoffman Engineering Company, Henessey or Wiegmann or approved equal. Submarine terminal cabinets shall be rated NEMA 12 and shall be approved equal to Hoffman A426012WFSSALP.

3. Surface mounted interior and exterior boxes shall be provided with external mounting lugs. No box shall be drilled for more conduits or cables than actually enter it. Exterior boxes shall be provided with ½ inch combination drain and breather fittings.
4. Combination drain, and breather fittings shall be OZ Gedney type DB, Crouse Hinds ECD or Appleton ECBD.
5. Terminal boxes shall be of sufficient size to provide ample room for the terminal blocks and interior wiring, and for the installation of conduit terminations and multi-conductor cable fittings. Interior mounting buttons with tapped holes shall be provided for mounting the terminal blocks. Terminal blocks shall be provided in each terminal box for the connection of all conductors including spare conductors entering the box plus at least twenty percent spare terminals for any control conductors and ten percent for any power conductors. All terminal blocks and boards shall be mounted on suitable straps or structural steel brackets in such a manner as to permit routing the conductors behind the terminal blocks. Terminal blocks shall be one-piece blocks suitable for use in highly corrosive atmospheres and shall conform to the requirements herein specified.
6. Power terminal blocks shall be included in each terminal box as required for such conductors. Each terminal shall be a one-piece power distribution block of molded phenolic compound and shall conform to the requirements hereinafter specified. A cover of insulating material shall be provided for each block.
7. Terminal blocks for conductors of Size No. 8 AWG and smaller shall be one-piece blocks of phenolic material recognized under the UL Component Recognition Program. Barriers shall be not less than 1/2-inch-high and 1/8 inch thick and shall be spaced 5/8 inch center-to-center. Straps and screws shall be of brass, nickel plated for use in highly corrosive atmospheres, and shall be rated for 50 amperes.
8. The blocks shall provide a withstand voltage rating of 600 volts per IEEE switchgear standards. The terminal blocks shall provide strap screws suitable for use with ring tongue wire connectors. Connectors shall be seamless, heavy-duty compression ring tongue terminals manufactured from pure electrolytic copper tubing. Lugs shall be tin-plated and shall have a double-thick tongue. Terminals (barrels) shall be compressed on conductors per lug manufacturer recommendations using the proper tools approved by the same manufacturer. Lugs and compression tools must be approved by the Engineer. Corrosion resistant marking strips shall be provided for conductor identification. At least

ten percent spare terminals shall be provided. Terminal blocks shall be Buchanan Type 2B112, General Electric Series CR 151B, Marathon 1500 Series or approved equal.

9. The interior of all boxes shall be provided with insulated supports from which bundled cables may be supported.

Hardware and Supports

1. The Contractor is responsible for developing all conduit and equipment mounting details consistent with applicable codes and these specifications.
2. Mounting bolts, nuts, washers and other detail parts used for fastening boxes, disconnect switches, limit switches, conduit clamps, cable supports, brackets and other electrical equipment shall be of stainless steel conforming to the requirements of ASTM A276, Type 316. Bolt heads and nuts shall be hexagonal and shall be provided with medium series lock washers. Bolts smaller than ½ inch in diameter shall not be used except as may be necessary to fit the mounting holes in small limit switches, boxes and similar standard devices.
3. Supports for conduits, cables, boxes, cabinets, disconnect switches, limit switches and other separately mounted items of electrical equipment shall be fabricated from steel not less than 3/8 inch in thickness. Channels, angles, bent plates, clip angles, other structural steel supporting members, hardware and gaskets for supporting electrical equipment shall be paid for under this item. Structural steel brackets, boxes and other equipment mounted on concrete surfaces shall be provided with a full neoprene gasket not less than 1/8-inch thick, between the equipment and the surface of the concrete. All supports to be of type 316 stainless steel or structural steel hot dip galvanized after fabrication.
4. Anchors for fastening equipment or brackets to concrete surfaces shall be stainless steel threaded inserts. All parts of the anchors shall be of Type 316 stainless steel. Threaded inserts embedment shall be minimum 6-inch deep.
5. Motors, brakes, and limit switches shall be fastened to structural steel supports with approved shim packs and fasteners as specified under the machinery specifications.
6. Each electrical device and enclosure shall be provided with a rigid structural steel support. No enclosure or device shall be permitted to cantilever from conduit unless specifically permitted by the Engineer.
7. Preformed metal framing channels, such as Kindorf, Unistrut and Superstrut shall only be used with expressive permission of the Engineer. The use of J-bolts or beam clamps to fasten structural supports or to clamp conduits, boxes, or other electrical equipment will not be permitted.
8. If the Contractor elects to field drill certain electrical supports, the Engineer, prior to any installation actually taking place, must approve all details and locations.

Wire and Cable

1. Except where otherwise noted, wiring in conduits shall be single-conductor. All wire and cable shall conform to the requirements of NEMA Pub. No. WC70/ICEA S-95-658-1999. Installation of conductors in conduit shall conform to the latest edition of NEC and according to any other applicable code under local jurisdiction.
2. All conductors shall be soft annealed copper wire conforming to the requirements of NEMA Pub. No. WC70-1999. All conductors shall have Class K stranding.
3. The insulation shall be a chemically cross-linked polyethylene compound conforming to the requirements of Section 3.6 of NEMA Pub. No. WC70-1999. The wire type for all conductors except shop wiring installed within the confines of the control cabinets or control desk shall be XHHW-2 as listed under NEC Table 310-13 "Conductor Application and Insulations". The wire type for all shop-wired conductors installed within the confines of the control cabinets and control desk shall be SIS as listed under NEC Table 310-13 "Conductor Application and Insulations".
4. All wire and cable shall be of a nationally recognized brand, acceptable to the Engineer, and shall have marks always used on the particular brand for identifying it. Before wire and cable orders are placed with any manufacturer, the Contractor shall submit for approval, typical published test data for the type of insulation proposed, showing that it meets the requirements of NEMA Pub. No. WC70-1999. Single conductor wiring, including the insulating material, shall be factory-tested to demonstrate that it meets specified requirements. The testing shall be done as stipulated in NEMA Pub. No. WC70-1999, Section 6. Wire and cable shall not be shipped from the plant of the manufacturer until the Engineer has approved certified test reports on the cable properties.
5. Equipment ground conductors shall be bare, stranded, coated copper conforming to the requirements of NEMA Pub. No. WC70-1999, Section 2. When required by the National Electrical Code (NEC), equipment ground conductors shall be provided with approved insulation.
6. Flexible cable for specified connections shall be rubber insulated, multiple-conductor type SOOW portable cords conforming to the requirements of NEMA Pub. No. WC3, Part 7.7 or NEMA Pub. No. WC8, Part 7.4 for hard service. Each cable shall be provided with a heavy-duty neoprene jacket conforming to the requirements NEMA Pub. No. WC3, Part 7.7.5.1 or NEMA Pub. No. WC8, Part 7.4.5.1. Flexible cables shall conform to the National Electrical Code, Article 400 for hard service and shall be as shown on the drawings.
7. The flexible multi-conductor cables to be installed between the fixed and movable span terminal boxes shall be non-twisting type cables, as shown and described on the Contract Plans.

8. Wire tags for marking the conductors shall be heavy duty, waterproof, permanently marked, and resistant to ultraviolet light deterioration. Numbers and letters shall be black or blue on a white background. Each wire and cable shall be preprinted with labels for each wire and/or cables entire length. Each preprinted label shall match the interconnection diagram shop drawing. The Contractor shall submit the proposed wire marking system and a sample of the wire markers to be installed to the Engineer for approval.

Construction Methods

Demolition

1. The removal work at the bridge under this subsection shall be done in conformance with all requirements governing the sequencing and scheduling of construction.
2. Any existing conduit encased in concrete, which are to be abandoned, shall be cut back to the concrete surface, threaded and plugged with a steel plug.
3. In general, all apparatus to be removed shall be disconnected by removing existing bolts, nuts and screws. The work shall include removal of all brackets, hangers, clamps, fittings and other hardware no longer needed.
4. All existing facilities, apparatus, cables, wiring and other equipment which are to remain in place on the bridge, shall be protected at all times from damage or defacement caused by the Contractor's operations. Any such damage or defacement shall be promptly repaired or cleaned to the satisfaction of the Engineer at no extra cost. If, in the opinion of the Engineer, the Contractor's operations require the temporary removal of existing equipment for proper protection, such removal and remounting shall be done at no extra cost.
5. Upon completion of the work, the contractor shall repair all damaged or defaced areas exposed by the removal of equipment, or caused by his operations, in a workmanlike manner satisfactory to the Engineer. Small bolt holes in concrete surfaces shall be filled with epoxy mortar. Holes in the walls ceilings or floors of the houses shall be filled with grout and finished to match the existing surfaces. Any damage to windows, window framing, sash, sills, frames or any other architectural trim shall be repaired, and painted surfaces shall be repainted after being repaired. Any holes in the ground shall be filled with earth topsoil and suitably landscape to match the surrounding areas.
6. All existing materials and equipment removed under this item shall become the property of the contractor unless otherwise specified and shall be removed from the site and disposed of properly.

Conduit Installation

1. All cutting, and threading of conduit shall be performed as recommended by the conduit manufacturer. After being threaded, conduits shall be reamed at each end. All threads shall be degreased and then liberally coated with a zinc-rich sealer/de-oxidizer before connection. The sealer/de-oxidizer shall not damage the specified conductor insulation. All field cut threads shall be National Pipe Taper. Running threads will not be permitted.
2. Conduit lengths shall be connected to each other with approved screw couplings assembled hand-tight and then, using strap wrenches, tightened two more turns. Wrench marks or chuck marks shall be touched up with the appropriate touch-up compound. Conduit runs shall be made with as few couplings as standard lengths will permit. No conduit runs with a total angle of bends between any two boxes shall exceed (180) one hundred eighty degrees, unless otherwise approved by the Engineer.
3. Ends of spare conduits and empty conduits and stubs shall be capped during and after construction, and care shall be taken to ensure that no moisture or other matter is in or enters the conduits.
4. All conduits shall be pitched not less than 1 inch in 10 feet (except by special permission). Where conduits cannot be drained to pull boxes, a drain "T" with drain fitting shall be installed at the low point and drained to a 1-cubic foot dry well of broken stone. Drain fittings shall be of stainless steel and shall be capable of passing 25 cc of water per minute. This detail shall be shown on the conduit drawings to be submitted.
5. All conduit, enclosures, and fittings shall be mechanically joined and electrically bonded together to form a continuous electrical conductor to provide effective electrical continuity. An equipment ground conductor shall be provided in every conduit and enclosure throughout the raceway. Conduits shall be installed so as to be continuous and watertight between boxes or equipment. All conduits shall be pitched not less than one (1) inch in ten feet (except by special permission) and drained to pull boxes. Conduits shall be protected at all times from the entrance of water or other foreign matter by being well plugged overnight or when the work is temporarily suspended.
6. Both ends of each conduit run shall be provided with a brass tag having the same number stamped thereon in accordance with the conduit diagrams, and these tags shall be securely fastened to the conduit ends with No. 20 AWG brass wire.
7. All conduits and fittings shall be carefully examined and cleaned both before and after installation. Upon completion of the conduit and box installation, the Contractor shall clear each conduit by snaking with a steel band, to which shall be attached an approved tube cleaner equipped with a mandrel of a diameter not less than 85% of the nominal inside diameter of the conduit and with a wire brush of the same diameter as the conduit, and shall then draw in the cables. All conduits shall be free from blisters, cracks, deformations and defects. Conduits with any damage or injurious defects as judged by the

Engineer shall be removed from the site and replaced by the Contractor at no extra cost to The Department.

8. The minimum size of conduits shall be as indicated on the Contract Plans. If no size is indicated or conduit fill varies from that shown on the Plans, conduit shall be sized to accommodate the conductors to be installed therein in conformance with the National Electrical Code. No conduit smaller than $\frac{3}{4}$ inch shall be installed. Conduit shall be installed in accordance with the manufacturer's installation manual. The manufacturer's installation manual shall be kept on the job site and made available to the Engineer at all times.
9. As required under Working Drawings and Samples of this item, layout and installation drawings for the electrical work, which includes the conduit system, shall be submitted prior to pertinent structural and mechanical shop drawings so that the conduit installation details may be incorporated by the structural and mechanical fabricators and erectors. A drawing showing the assembly and complete construction details of the conduit system shall be prepared and submitted for approval prior to fabrication. The Contractor shall follow the assembly and details of the system as shown on the plans.
10. The Contractor shall be fully responsible for coordination of the raceway system installation with all other trades as part of this Contract.

Bonding and Grounding

1. In general, bonding and grounding shall be made by molded fusion exothermic welds unless specified otherwise. Exothermic welds for bonding of equipment shall be molded fusion-type, with molds as required, as manufactured by Cadweld, Thermoweld, Metalweld or approved equal. Where physical limitations prevent exothermic welding, approved mechanical, solderless bonding lugs shall be installed.
2. Ground system conductors shall be continuous un-spliced connections between welds and terminal lugs. Paint, rust, and scale shall be removed over the entire contact area. All connections shall be made up as tightly as possible, and any bare metal or paint undercoat remaining exposed shall be spot painted to restore the surface with the same coating and number of coats as applied to the adjacent metal.
3. Structural steel, all metal framing, cases, and enclosures of the electrical equipment, such as control cabinets, limit switches, conduits, boxes, and all other metal parts in the proximity of current carrying conductors or equipment installed on the bridge shall be bonded and solidly connected together via equipment ground conductors. Equipment ground conductors shall be provided in each conduit and flexible cable or cord.
4. For the flexible multi-conductor cable installation at the bridge, one conductor of the motor feeder shall be utilized as the equipment ground and be bonded as recommended by the drive manufacturer. The equipment ground conductors in all cables shall be bonded to their respective terminal boxes.

5. Grounding system terminals, where specified, shall be solderless lugs made from high copper content alloy and shall be secured by means of hexagonal-head, copper plated, steel machine bolts with lock washers or lock nuts.

Conductor Installation

1. The size of conductors shall be as indicated on the Contract Plans. It shall be the Contractor's responsibility to provide conductors of sufficient size and number in order to accommodate the circuits to be installed. These conductors shall be sized in conformance with the National Electrical Code and any other applicable codes. The Contractor shall provide wiring and cables of sufficient ampacity and number as may be required for the installation in accordance with the wiring diagrams on his approved working drawings and these specifications without extra cost to the Department.
2. In each conduit and multi-conductor cable, at least two spare conductors shall be provided for every ten conductors of control wire and at least one conductor shall be provided for every ten conductors of power (or fraction thereof) actually used.
3. Wiring shall not be installed in any conduit before all joints are made up tightly, and the conduits rigidly secured in place. The drawing of conductors into conduits shall be done without injury to the wire, insulation or jacket. No lubricant of any kind shall be used for the pulling of wires unless specifically authorized by the Engineer in writing.
4. For all conductors No. 8 AWG or smaller, approved ring-tongue terminal lugs shall be installed on each end of said conductors. Terminal lugs shall be installed per lug manufacturer recommendations using the proper tools approved by the manufacturer. The terminal lugs for all outgoing wires (No. 8 AWG or smaller) in terminal boxes, control cabinets, control stations and other enclosures shall be connected to terminal blocks herein specified. Each terminal of all terminal blocks shall be permanently marked to show the same number or designation as appears on the wire connected thereto.
5. Splicing of wires will not be permitted. Wherever it becomes necessary to join or branch conductors, terminal blocks shall be used, and wires shall be clearly tagged. The tagging of each wire shall be accomplished in such a way to properly identify the terminal number at wire origin, equipment nomenclature at wire destination and terminal number at wire destination. The three identifiers, each separated by a hyphen, shall be marked on the wiring tag as follows: The first shall show the number on the terminal block from which the wire is originated. The second shall display the nomenclature (as appeared on the "as-built" drawings) of the enclosure inside which the said wire will terminate. The third shall exhibit the number on the terminal block inside the enclosure.
6. Sufficient slack shall be left in all cables to permit proper connections in boxes, cabinets and enclosures. Conductors inside terminal boxes, control cabinets, control stations and other enclosures shall be neatly formed into cables and laced with approved cable ties with the individual conductors leaving the bundled cable at their respective termination

points. Each conductor shall be looped to allow not less than three (3) inches of free conductor when disconnected from its respective terminal. The bundled cables shall be held securely away from the terminals and from contact with the enclosure by means of approved insulating supports and ties.

7. Equipment ground conductors shall be installed in all conduits and multi-conductor cables per the National Electrical Code latest edition, and all other applicable local codes.
8. Both ends of every single length of conductor shall be permanently and clearly tagged in accordance with the same numbers or designations appearing on the approved wiring diagrams.
9. All wiring shall be carefully tested after installation. The Contractor shall administer continuity tests, insulation resistance tests and any other required test for any conductor run as directed by the Engineer at no additional cost to the Department.
10. All flexible multi-conductor cables shall be provided with locknut and insulated grounding sealing bushings from the inside and watertight cable connector from the outside where they enter terminal cabinets or junction boxes.
11. Strain relief bushings shall grip the cable jacket to provide a watertight seal at the point of cable entry. Strain relief bushings shall be OZ Gedney Type CSBG or approved equal.
12. Strain relief devices such as stainless-steel cable support grips shall hold the cable jacket with an entwining cable mesh to support the weight of the cable where it enters the terminal box. Strain relief devices shall be Kellem cable grips or approved equal.

Recommissioning of Bridge Electrical System

1. The contractor shall submit for approval a field-testing procedure to test all materials and equipment installed as part of this contract. Upon completion of the electrical work for the bridge, the Contractor shall arrange for and provide all the necessary field tests, as directed by the Engineer, to demonstrate that installation of conduit, wiring and other components in this Contract is achieved and is in accordance with all Plans and Specifications.

2. Should the tests show that any piece of Contractor supplied equipment, cable or wiring connection, in the judgment of the Engineer, is defective or functions improperly, such adjustments and/or replacements shall be accomplished by the Contractor as to make the installation satisfactory to the Engineer at no additional cost to the Department.

Method of Measurement

No measurement will be paid for the work in this section. The work will be paid as a lump sum.

Basis of Payment

The completed work as measured for "Bridge Electrical and Control System" will be paid for at the Contract lump sum price. The lump sum price bid for this item shall include the cost of all materials, labor, equipment, plant, testing and equipment necessary for a complete installation, ready for operation.

The Contractor shall submit to the Department a detailed breakdown of his costs, including equipment and methodology, not to exceed the bid price for this item, within 30 working days of award of the contract. The cost breakdown, once accepted by the Department, will serve as a method of measurement of work completed so that partial payments may be made to the Contractor by the Department. The cost breakdown shall include separate prices for the following items:

1. Furnishing and storing of all materials and products, including those with long lead-time at the bridge site or at a facility approved by the Department.

2. Installation of said materials.

The Department will evaluate this breakdown and an equitable basis of payment will be established. Payments to the Contractor shall not be made until the cost breakdown is submitted and accepted by the Department. Progress payments for work satisfactorily completed will be made in accordance with the Standard Specifications.

Pay Item	Pay Unit
Bridge Electrical and Control System	L.S.

ITEM #0604535A– CONTROL HOUSE RENOVATIONS

Description:

Work consists of replacing the control house rooftop heat pump system with a new in-kind system and incidental repair and replacement with new parts that interface with the heat pump.

The Buy America requirements in Article 1.06.01 shall apply.

Refer to electrical item “Bridge Electrical and Control System” for electrical connections requirements.

Contractor is to field verify all indicated measurement herein at the bridge site.

General Requirements:

(1) Submittals

- (a) Manufacturer's data and/or shop drawings shall be submitted for all manufactured and purchased items of equipment in accordance with Article 1.05.02.
 - 1. The Contractor shall prepare and submit shop drawings to the Department for acceptance in accordance with Subarticle 1.05.02-3 prior to purchasing equipment.
 - 2. Product Data: Include manufacturers technical data for each model indicated, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.
 - 3. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection. Prepare the following by or under the supervision of a qualified professional engineer:
 - 4. Wiring Diagrams: Power, signal, and control wiring.
- (b) Manufacturer’s installation manual
- (c) Work Procedure: Submit a detailed list of the work procedure to be followed.
- (d) Field quality-control test reports of all measurements after field adjusting and testing.
- (e) Operation and maintenance manual for air conditioning unit.

(2) Delivery and Storage

Assembled unit shall be mounted on skids or otherwise crated for protection during handling and shipment.

(3) Guarantees and Warranties

- (a) Manufacturer's warranties or guarantees on equipment, materials or products purchased for use on the Contract which are consistent with those provided as customary trade practice, shall be obtained by the Contractor and, upon acceptance of the contract, the Contractor shall assign to the owner, all manufacturer's warranties or guarantees on all such equipment, material or products furnished or installed.
- (b) The Contractor shall warrant the satisfactory in-service operation of the equipment and related components. This warranty shall extend for a period of one (1) year following the date of equipment testing and acceptance.

(4) Quality Assurance

- (a) Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 440, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- (b) Fabricate and label refrigeration system to comply with ASHRAE 15.
- (c) Energy-Efficiency Ratio: Equal to or greater than prescribed by ASHRAE 90.1.
- (d) Coefficient of Performance: Equal to or greater than prescribed by ASHRAE 90.1.
- (e) Unit cabinet shall be capable of withstanding Federal Test Standard No. 141 (method 6061) 500-hour salt spray test.

(5) Codes and Standards

- (a) Work shall comply with, but not be limited to, all applicable requirements of the following codes and standards and their abbreviations used in this Specification:
 - 1. Connecticut State Building Code (SBC)
 - 2. Air-Conditioning & Refrigeration Institute (ARI):
 - a. 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
 - b. 270- Sound Rating of Outdoor Unitary Equipment.
 - c. 340/360 - Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment.
 - 3. Air Moving and Control Association (AMCA).
 - 4. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):
 - a. 15-Safety Code for Mechanical Refrigeration.
 - b. 90.1 - Energy Efficient Design of New Buildings except Low-Rise Residential Buildings (ANSI).
 - 5. National Fire Protection Association (NFPA):
 - a. 70- National Electrical Code.
 - b. 90A Standard for the Installation of Air-Conditioning and Ventilating Systems

6. Underwriters Laboratories Inc. (UL) 486A - Wire Connectors and Soldering Lugs for Use with Copper Conductors.

The work shall meet the requirements of all other codes and standards as specified elsewhere in these Specifications. Where codes and standards are mentioned for any pay item, it is intended to call attention to them; it is not intended that any other codes and standards shall be assumed to be omitted if not mentioned.

(6) Measurements and Verification

Field verify dimensions that interface with existing structure or components prior to submitting shop drawings.

(7) Substitutions

- (a) The terms "approved equal", "of equal quality" and "or equal" which may appear on the Contract Drawings and in these Specifications are intended to allow the Contractor to submit for review other manufacturers and model numbers of products of equal quality and rating for those specified.
- (b) Prior to the Contractor's ordering of any substitute product, the Department's acceptance of the equivalence of the substitute product shall be obtained in writing. The acceptance of the substitute products is at the sole discretion of the Department who will establish the basis for equivalence and will review the quality of the materials and products described in detail on the submitted shop drawings and product data.
- (c) Acceptance by the Department of any substitute products submitted by the Contractor shall not relieve the Contractor of responsibility for the proper operation, performance, or functioning of that product.
- (d) Where a product is specified by a manufacturer's name and catalog or part number in this Specification or on the Contract Drawings, it is so specified to establish quality, configuration, and arrangement of parts. An equivalent product made by another manufacturer may be submitted for review for the specified product subject to the acceptance of the Department; however, all necessary changes required by the substitution in related equipment, architectural and electrical parts, shall be made by the Contractor at no additional cost.

(8) Inspection:

- (a) The Contractor shall give no less than ten (10) working days' notice to the Department of the beginning of work so that inspection may be provided. No materials shall be delivered before the Department has reviewed the equipment submittals.
- (b) The Inspector will have the authority to reject materials or workmanship which does not fulfill the requirements of these Specifications.
- (c) The Contractor shall furnish the Department with a copy of all orders covering work performed by subcontractors or suppliers.

(9) Defective Materials and Workmanship:

- (a) The acceptance of any material or finished parts by the Department shall not prohibit their subsequent rejection if found defective. Rejected material and workmanship shall be replaced or made acceptable by the Contractor at no additional cost.
- (b) All equipment rejected during inspection and testing shall be removed from the work site and replaced without additional cost.
- (c) Delays resulting from the rejection of material, equipment or work shall not be the basis of any claim.
- (d) All defects found during the guarantee period resulting from faulty material, components, workmanship, or installation shall be corrected by the Contractor without cost. The Department reserves the right to make necessary corrections with its own forces and charge the resulting costs to the Contractor.

(10) Work Procedures

- (a) All labor, materials, tools, equipment, services, testing, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the Contractor.
- (b) Prior to beginning work, the Contractor shall review conditions at the site for verifying measurements, assessing existing conditions, and safety precautions. In addition, the Contractor shall instruct all workers in all aspects of personal protection, work procedures, movable bridge operation, emergency evacuation procedures and use of equipment including procedures unique to this project.
- (c) Shut down and lockout/tagout electrical power while working on equipment.
- (d) Field verify existing equipment power supply, refrigerant lines, drain line, and geometry. Coordinate mounting layout and clearance of existing and new equipment. Measure existing insulation thicknesses.

Materials:

(1) Heat Pump

- (a) New single packaged roof mounted unit in-kind to existing unit.
 - 1. 3 Ton cooling/heating, plus 15 kW electric heater dual enthalpy economizer.
 - 2. R-410A refrigerant
 - 3. High efficiency rated SEER greater than 15.0 and HSPF greater than 8.0, sound level below 70dBA
 - 4. Multi-speed blower, two stages cooling/heating, dehumidification feature.
 - 5. Scroll compressors to have; hermetically sealed against contamination, vibration isolation, high pressure and overcurrent protection.

6. Outdoor condenser coil saltwater protective coating of polyurethane meeting requirements of ASTM B117, and is UV resistant.
7. Programmable thermostat compatible with all heat pump functions.
 - a. 7 day programming with 4 program periods per day
 - b. Wi-Fi enabled for remote access
 - c. Preprogrammed energy saving schedule
 - d. ENERGY STAR certified
8. Five (5) year manufacturer's warranty.

(2) New insulation

- (a) Batt fiberglass insulation. R-19 minimum with foil vapor barrier.

(3) Anchorage Fasteners

- (a) Equipment shall be secured to roof with hurricane rated anchors made from stainless-steel AISI type 316.
- (b) All fasteners shall be of United States manufacture and shall be clearly marked with the manufacturer's designation.

Construction Methods:

(1) Heat pump Installation

- (a) Field verify existing heat pump system prior to submittal of new heat pump documents for review.
- (b) Remove existing equipment, and roof anchors. Remove loose grout and concrete at existing curb, anchorage holes and penetrations. Re-grout around roof penetrations and fill existing holes in curb and roof with grout.
- (c) Install new aluminum flashing around penetrations and patch roof with asphalt coated fiberglass mat.
- (d) Clean out all dust and mold from existing ductwork throughout system. Repair and install new insulation around penetrations, ductwork and roof.
- (e) Protect equipment and rig for hoisting using manufacturer provided lifting eyes.
- (f) Install heat pump stand and heat pump in accordance with manufacturers' recommendations. Secure equipment using new fasteners.
- (g) All connections to be made by electricians and plumbers licensed in the state of Connecticut.
- (h) Remove existing thermostat and install new thermostat.
- (i) Test operate equipment and adjust settings.

(2) Waste Disposal

Unless otherwise specified all refuse, materials and debris resulting from execution of this item shall become the responsibility of the Contractor and removed from the premises. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.

Method of Measurement:

No direct measurement shall be made for the work, as it is paid on a lump sum basis.

Basis of Payment:

- (a) The work will be paid for at the contract lump sum price for “Control House Renovations”, which shall include all materials, equipment, and labor necessary to complete the work as identified on the plans and as noted herein.
- (b) This work shall not be compensated until the Department determines that the work has been tested and functions to the satisfaction of the Department.
- (c) Final payment will not be made until all the project closeout data submittals have been completed. Once the completed package has been received in its entirety, the Department will make the final payment to the Contractor.

Pay Item	Pay Unit
Control House Renovations	L.S.

ITEM #0701020A – FENDER SYSTEM

Description:

Work for this item shall consist of repairing the deteriorated and damaged timber and wire rope components on the existing fender system to remain, as indicated on the Plans, or as ordered by the Engineer, for the purpose of replacing the deteriorated or damaged timber with new material, in kind. Also included in this item shall be all access necessary for construction and inspection of the work.

Wales which are loose, pulled out, or rotten shall be repaired or replaced. Random boards at the platforms which are detached or damaged shall be repaired or replaced. Top portion of the existing rotted timber piles dolphins shall be repaired. All work shall be as directed by the Engineer.

Materials:

CCA treated marine environment hardwood shall be in accordance with AWPA-C2 and AWPA-P5.

Bolts, nuts and washers shall be material conforming to ASTM A307 and be galvanized in accordance with ASTM A153 or shall be stainless steel conforming to ASTM F593 Group 1, Condition CW, with nuts conforming to ASTM F594, Group 1 Condition CW.

Galvanized wire rope shall match the existing conditions as directed by the Engineer.

Construction Methods:

The Contractor shall remove damaged portions of the timber fender system, or the damaged or deteriorated timber components from the existing fender system to remain, as indicated on the Plans, and as directed by the Engineer.

The Contractor shall remove the damaged or deteriorated timber wales or plank walkway components from the portion of existing fender system to remain, as indicated on the Plans or as ordered by the Engineer.

Walers to be replaced shall be removed between existing splices, after removing the bolts from the side of the splice to be removed. Bolts passing through wood shall have washers underhead and nut. Bolt heads shall be countersunk to match the existing condition. Discarded timbers shall be properly disposed of by the Contractor to the satisfaction of the Engineer.

Bolts that are in good condition and can be reused for the repair of the existing fender system shall be retained. The condition of the bolts will be determined by the Engineer. Those bolts removed by the Contractor and not approved by the Engineer for removal, shall be replaced at no

expense to the State. The bolts not to be reused shall be cut and removed and replaced with same size galvanized or stainless steel high strength bolts.

Marine growth affecting the installation of the new fender system components or repairs of the existing fender system, shall be removed immediately prior to the installation of the new fender system to the satisfaction of the Engineer.

Loose bottom cluster of 10 turns galvanized wire rope at each dolphin shall be tightened to restore to its original condition.

Top portion of existing rotted and deteriorated timber piles at each dolphin location shall be treated and injected with cement grout under pressure to fill the voids of deteriorated piles, port holes, 1/4-inches in diameter shall be drilled into the pile with 3/8-inch diameter vent holes drilled directly above. Prior to injecting, the piles shall be flushed of any remaining particles with water and compressed air, and nails with washers shall be driven into the pile where the wall thickness is 3 inches or less to function as shear connectors between the timber and grout. Grout shall be injected at approximately 100 psi. Where leaks formed, a quick-set grout shall be used to pack the cracks and set before resuming grout injection.

Existing timber fenders, hardware and all other material removed shall become property of the Contractor and be removed from the site and disposed of as required.

The Contractor shall be required to repair any damaged areas caused by his removal operations at no expense to the State subject to the approval of the Engineer.

The existing navigation channel shall remain open during construction. This work will require coordination with the U.S. Coast Guard channel, and shall be in accordance with the permit requirements contained elsewhere in these Contract documents.

Method of Measurement:

Work under this item, being paid for on a lump sum basis, shall not be measured for payment.

Basis of Payment:

This work shall be paid for at the contract lump sum price for "Fender System", completed and accepted, which price shall include furnishing, fabrication, transporting, storing, and installing all materials and all access necessary for the construction and inspection of this work. This item shall include the cost of all labor, material and equipment necessary to complete the work. Demolition, removal and disposal of all deteriorated materials, as directed by the Engineer, shall also be included under this item.

If additional repair areas are detected during inspection by the Contractor and/or the Engineer, the estimated additional repair shall be paid for as extra work.

ITEM #0707009A – MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)

Description: Work under this item consists of furnishing and installing a seamless elastomeric waterproofing membrane system applied to a concrete or steel surface as shown on the plans, in accordance with this specification and as directed by the Engineer. Work shall also include conditioning of the surface to be coated and all quality-control testing noted herein.

The completed membrane system shall be comprised of a primer coat followed by the membrane coating which is applied in one or two layers for a minimum total thickness of 80 mil (2 mm), an additional 40 mil (1mm) membrane layer with aggregate broadcast into the material while still wet, and a bond coat of bitumen-based adhesive material.

Materials: The Contractor shall select a waterproofing membrane system from the Department's current Qualified Product List (QPL) for Spray-Applied Membrane Waterproofing System. All materials incorporated in the works shall meet the Manufacturer's specification for the chosen system. The Engineer will reject any system that is not on the QPL.

Materials Certificate: The Contractor shall submit to the Engineer a Materials Certificate for the primer and membrane and bond coat material in accordance with the requirements of Article 1.06.07.

Construction Methods: At least ten days prior to installation of the membrane system, the Contractor shall submit to the Engineer, the manufacturer's recommended procedure for preparing the deck surface, pre-treatment or preparing at cracks and gaps, treatment at curbs, vertical surfaces or discontinuities, applying the primer and membrane, and placing of aggregated coat. Procedures shall also include recommended repairs of system non-compliant issues identified during application. The system shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

A technical representative, in the direct employ of the manufacturer, shall be present on-site immediately prior to and during application of the membrane. The representative shall inspect and approve the surface prior to priming, and provide guidance on the handling, mixing and addition of components and observe application of the primer and membrane. The representative shall perform all required quality-control testing and remain on the Project site until the membrane has fully cured.

All quality-control testing, including verbal direction or observations on the day of the installation, shall be recorded and submitted to the Engineer for inclusion in the Project's records. A submittal of the quality-control testing data shall be received by project personnel prior to any paving over the finished membrane or within 24 hours following completion of any staged portion of the work.

1. **Applicator Approval:** The Contractor's membrane Applicator shall be fully trained and licensed by the membrane manufacturer and shall have successfully completed at least three spray membrane projects in the past five years. The Contractor shall furnish references from those projects, including names of contact persons and the names, addresses and phone numbers of persons who supervised the projects. This information shall be submitted to the Engineer prior to the start of construction. The Engineer shall have sole authority to determine the adequacy and compliance of the submitted information. Inadequate proof of ability to perform the work will be grounds to reject proposed applicators.

2. **Job Conditions:**

(a) **Environmental Requirements:** Air and substrate temperatures shall be between 32°F (0°C) and 104°F (40°C) providing the substrate is above the dew point. Outside of this range, the Manufacturer shall be consulted.

The Applicator shall be provided with adequate disposal facilities for non hazardous waste generated during installation of the membrane system. The applicator shall follow safety instructions regarding respirators and safety equipment.

(b) **Safety Requirements:** All open flames and spark producing equipment shall be removed from the work area prior to commencement of application.

"No Smoking" signs shall be visibly posted at the job site during application of the membrane waterproofing.

Personnel not involved in membrane application shall be kept out of the work area.

3. **Delivery, Storage and Handling:**

(a) **Packaging and Shipping:** All components of the membrane system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the products type and batch number.

(b) **Storage and Protection:** The Applicator shall be provided with a storage area for all components. The area shall be cool, dry and out of direct sunlight and shall be in accordance with the Manufacturer's recommendations and relevant health and safety regulations.

Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

- (c) Shelf Life - Membrane Components: Packaging of all membrane components shall include a shelf life date sealed by the Manufacturer. No membrane components whose shelf life has expired shall be used.

4. Surface Preparation:

- (a) Protection: The Applicator shall be responsible for the protection of equipment and adjacent areas from over spray or other contamination. Parapets and bridge joints shall be masked prior to application of the materials.
- (b) Surface Preparation: Sharp peaks and discontinuities shall be ground smooth. The surface profile of the prepared substrate is not to exceed 1/4 inch (6 mm) (peak to valley) and areas of minor surface deterioration of 1/2 inch (13 mm) and greater in depth shall also be repaired. The extent and location of the surface patches require the approval of the Engineer before the membrane system is applied.

Surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae, growth, laitance, friable matter, dirt, bituminous products, and previous waterproofing materials. If required, degreasing shall be done by detergent washing in accordance with ASTM D4258.

The surface shall be abrasively cleaned, in accordance with ASTM D4259, to provide a sound substrate free from laitance.

Voids, honeycombed areas, and blow holes on vertical surfaces shall be repaired in the same manner.

All steel components to receive membrane waterproofing shall be blast cleaned in accordance with SSPC SP6 and coated with the membrane waterproofing system within the same work shift.

5. Inspection and Testing: Prior to priming of the surface, the Engineer, Applicator and Manufacturer's technical representative shall inspect and approve the prepared substrate.

- (a) Random tests for deck moisture content shall be conducted on the substrate by the Applicator at the job site using a "Sovereign Portable Electronic Moisture Master Meter," a "Tramex CMEXpertII Concrete Moisture Meter" or approved equal. The minimum frequency shall be one test per 1000 s.f. (100 sq.m) but not less than three tests per day per bridge. Additional tests may be required if atmospheric conditions change and retest of the substrate moisture content is warranted.

The membrane system shall not be installed on substrate with a moisture content greater than that recommended by the system's manufacturer, but shall not be greater than 6%, whichever is less.

- (b) Random tests for adequate tensile bond strength shall be conducted on the substrate using an adhesion tester in accordance with the requirements of ASTM D4541. The minimum frequency shall be one test per 5,000 s.f. (500 sq.m) but not less than three adhesion tests per bridge.

Adequate surface preparation will be indicated by tensile bond strengths of primer to the substrate greater than or equal to 150 psi (1.0 MPa) or failure in a concrete surface and greater than or equal to 300 psi (2.1 MPa) for steel surfaces.

If the tensile bond strength is lower than the minimum specified, the Engineer may request additional substrate preparation. Any primer not adequately applied shall be removed and a new primer applied at the Contractor's expense, as directed by Engineer.

- (c) Cracks and grouted joints shall be treated in accordance with the Manufacturer's recommendations, as approved or directed by the Engineer.

6. Application:

- (a) The System shall be applied in four distinct steps as follows:
 - 1) Substrate preparation and gap/joint bridging preparation
 - 2) Priming
 - 3) Membrane application
 - 4) Membrane with aggregate
- (b) Immediately prior to the application of any components of the System, the surface shall be dry (see Section 5a of this specification) and any remaining dust or loose particles shall be removed using clean, dry oil-free compressed air or industrial vacuum.
- (c) Where the area to be treated is bound by a vertical surface (e.g. curb or wall), the membrane system may be continued up the vertical, as shown on the plans or as directed by the Engineer.
- (d) The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results, in accordance with the Manufacturer's recommendations or as approved or directed by the Engineer.
- (e) A neat finish with well defined boundaries and straight edges shall be provided by the Applicator.
- (f) Primer: The primer shall consist of one coat with an overall coverage rate of 125 to 175 s.f./gal (3.0 to 4.3sq.m/1) unless otherwise recommended in the manufacturer's written instructions.

All components shall be measured and mixed in accordance with the Manufacturer's recommendations.

The primer shall be spray applied using a single component spray system approved for use by the Manufacturer. If required by site conditions and allowed by the manufacturer, brush or roller application will be allowed.

The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer's instructions, whichever time is greater, prior to application of the first lift of waterproofing membrane.

Porous concrete (brick) may require a second coat of primer should the first coat be absorbed.

- (g) Membrane: The waterproofing membrane shall consist of one or two coats for a total dry film thickness of 80 mils (2 mm). If applied in two coats, the second coat shall be of a contrasting color to aid in quality assurance and inspection.

The membrane shall be comprised of Components A and B and a hardener powder which is to be added to Component B in accordance with the Manufacturer's recommendations.

The substrate shall be coated in a methodical manner.

Thickness checks: For each layer, checks for wet film thickness using a gauge pin or standard comb-type thickness gauge shall be carried out typically once every 100 s.f. (9 sq.m). Where rapid set time of the membrane does not allow for wet film thickness checks, ultrasonic testing (steel surfaces only), calibrated point-penetrating (destructive) testing, in-situ sampling (cutout of small sections for measuring thicknesses), or other methods approved by the Engineer shall be employed for determination of dry film thickness. The measured thickness of each and every individual test of the membrane shall be greater than or equal to the required thickness.

Bond Strength: Random tests for adequate tensile bond strength shall be conducted on the membrane in accordance with the requirements of ASTM D4541. The minimum test frequency shall be one test per 5,000 s.f. (500 sq.m) but no less than three adhesion tests per bridge. Adequate adhesion will be indicated by tensile bond strengths of the membrane to the substrate of greater than or equal to 150 psi (0.7 MPa) or failure in a concrete surface and greater than or equal to 300 psi (2.1 MPa) for steel surfaces.

Spark Testing: Following application of the membrane, test for pin holes in the cured membrane system over the entire application area in accordance with ASTM D4787- "Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates."

Conduct the test at voltages recommended by the manufacturer to prevent damage to the membrane.

Repair the membrane system following destructive testing and correct any deficiencies in the membrane system or substrate noted during quality-control testing in accordance with the manufacturer's recommendations to the satisfaction of the Engineer at no additional cost to the State.

- (h) Repairs: If an area is left untreated or the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the system. The damaged areas shall be cut back to sound materials and wiped with solvent (e.g. acetone) up to a width of at least four inches (100 mm) on the periphery, removing any contaminants unless otherwise recommended by the manufacturer. The substrate shall be primed as necessary, followed by the membrane. A continuous layer shall be obtained over the substrate with a four inches (100 mm) overlap onto existing membrane.

Where the membrane is to be joined to existing cured material, the new application shall overlap the existing by at least four inches (100 mm). Cleaning and surface preparation on areas to be lapped shall be as recommended in the manufacturer's written instructions.

- (i) Aggregated Finish:
- 1) Apply an additional 40 mil (1 mm) thick layer of the membrane material immediately followed by an aggregate coating, before the membrane cures, at a rate to fully cover the exposed area. The membrane and aggregate shall be fully integrated after the aggregate has been applied and the membrane cured.
 - 2) Localized areas not fully coated shall be touched-up with additional membrane and aggregate as needed.
 - 3) Remove loose and excess aggregate from the surface to the satisfaction of the Engineer and dispose of properly after application prior to allowing traffic onto finished surface or application of tack coat.

- (j) Bond Coat:
Prior to application of a bituminous concrete overlay, the aggregated finish shall be coated with a bonding material. The bonding material shall be per the membrane waterproofing manufacturer's recommendations.

7. Final Review: The Engineer and the Applicator shall jointly review the area(s) over which the completed System has been installed. Any irregularities or other items that do not meet the requirements of the Engineer shall be addressed at this time.

Method of Measurement: The quantity to be paid for under this item shall be the number of square yards (square meters) of waterproofed surface completed and accepted.

Basis of Payment: This item will be paid for at the contract unit price per square yard (square meter) of “Membrane Waterproofing (Cold Liquid Elastomeric),” complete in place, which price shall include all surface preparation, furnishing, storing and applying the system, technical representative and quality control tests, and any necessary repairs and remediation work as well as all materials, equipment, tools, labor incidental to this work.

<u>Pay Item</u>	<u>Pay Unit</u>
Membrane Waterproofing (Cold Liquid Elastomeric)	s.y. (sq.m)

ITEM #0819002A – PENETRATING SEALER PROTECTIVE COMPOUND

Description: Work under this item shall consist of cleaning concrete surfaces of dirt, dust and debris, and furnishing and applying a clear, penetrating sealer where shown on the plans, to provide a hydrophobic barrier against the intrusion of moisture. This work also includes furnishing, installing and removing platforms, scaffolding, ladders and other means of access as well as shields, as required, to protect adjacent areas from overspray. Penetrating sealer shall not be applied to concrete surfaces that have been previously treated with coatings or curing compounds that would hinder penetration of the sealer into the concrete.

Materials: The penetrating sealer shall be a single component, 100% silane or silane siloxane from the list of materials below. The material shall be selected in anticipation of the expected ambient and surface temperature at the time of installation.

The following products may be used when ambient and surface temperatures are 40°F and above:

SIL-ACT ATS-100 (Silane)
Advanced Chemical Technologies, Inc.
9608 North Robinson Ave.
Oklahoma City, OK 73114
405-843-2585
www.advchemtech.com

Armor SX 5000 EXT-100 or SX 5000 WB (Silane Siloxane)
Foundation Armor, LLC.
472 Amherst St. STE 14
Nashua, NH 03063
866-306-0246
www.foundationarmor.com

Aquinil Plus 100 (Silane)
ChemMasters
300 Edwards Street
Madison, OH 44057
440-428-2105, 800-486-7866
www.chemmasters.net/Aquanil100.php

The following product may be used when ambient and surface temperatures are 20°F and above:

Certi-Vex Penseal 244 100% (Silane)
Vexcon Chemicals
7240 State Road
Philadelphia, PA 19135
888-839-2661
www.Vexcon.com

Construction Methods:

Submittals: The Contractor shall submit to the Engineer Safety Data Sheets (SDS) and product literature for the selected product. The literature shall include written instructions how to apply the product to vertical and horizontal surfaces, and where required, overhead surfaces.

The Contractor shall submit to the Engineer, in accordance with Article 1.05.02, written procedures for cleaning the concrete surfaces. The submittal shall include proposed equipment and materials and shall address how adjacent traffic and other areas shall be protected from dust, debris and overspray during the cleaning and application processes. It shall also indicate how vegetation shall be protected from overspray. The submittal shall address the conditions under which work may proceed, including wind speed, temperature and precipitation. It shall also include procedures to be followed to protect the work should unfavorable weather conditions occur before the product has been absorbed.

The Contractor shall inspect the surfaces to be sealed to identify surface cleaning needs before submitting the procedures. The Contractor shall identify conditions that need repair or surfaces that may require special attention or cleaning procedures. Such observations shall be addressed in the written procedures.

Surface Preparation: Concrete surfaces to which penetrating sealer will be applied shall be dry, clean and free of grease, oil and other surface contaminants. New concrete and newly placed repair concrete shall be allowed to cure for at least 28 days before applying sealer. After rain or water cleaning, allow existing concrete surfaces to dry for at least 8 hours before applying sealer. Dry surfaces may be cleaned by sweeping with brushes or brooms, and blowing clean with oil-free, compressed air. The Contractor shall take care not to damage the concrete surface finish during cleaning operations. Care shall be taken so that cleaning methods do not damage joint sealant or other components of the structure.

Application: Application of the sealer can only begin after the Engineer evaluates the concrete surfaces for cleanliness and moisture, and determines that conditions are appropriate for application.

The sealer shall saturate the concrete surface with a rate of application of 200 square feet per gallon of sealer. The dispersion shall run six to eight inches down a vertical surface from the spray pattern. The maximum run-down is 12 inches. The Contractor shall monitor and record the number of square feet per gallon of sealer used to verify that the required application rate is being met. Additional sealer may be needed if surfaces are porous, rough or textured.

The Engineer will inspect the concrete surface during application and after the sealer has had adequate time to penetrate. As a test, water sprayed from a bottle on the sealed surface shall bead up and not be absorbed. Should water be absorbed into the concrete at a test area, additional areas shall be tested to determine which areas should receive additional application of

sealer. The Contractor shall apply additional sealer to the identified areas until absorption of water is prevented.

Method of Measurement: This work will be measured for payment by the actual number of square yards of concrete, coated completely and accepted, within the designated limits. The area will be measured once, regardless of the number of applications required.

Basis of Payment: This work will be paid for at the Contract unit price per square yard for “Penetrating Sealer Protective Compound,” complete, which price shall include all equipment tools, labor and materials, incidental thereto, including the preparation of the concrete surfaces and proper disposal of debris.

Pay Item	Pay Unit
Penetrating Sealer Protective Compound	s.y.

ITEM #0904103A – REPAIR METAL BRIDGE RAIL

Description: Work under this item shall consist of repairing the existing aluminum bridge railing. Repairs shall include repairing cracked welds and replacing missing or broken bolts and/or nuts.

The Contractor shall undertake a survey of the existing metal bridge rail deficiency location prior to start any work.

Materials: The work will be completed using the existing rail posts and rail elements. Replacement bolts, nuts or washers shall match the existing hardware in-kind.

Bolts, nuts and washers shall be of aluminum alloy 2024-T4, 6061-T6, 6062-T9 and/or 7075-T6.

Stainless steel fasteners in contact with aluminum shall conform to the requirements of ASTM F593, Group 1 (AISI Type 304). Socket head cap screws shall be stainless steel and conform to the requirements of ASTM F837, Group 1 (ANSI Type 304). Washers shall be stainless steel and conform to the requirements of ASTM A480 Types 302 through 305.

Construction Methods: All cracked welds shall be repaired by re-welding in accordance with the American Welding Society “Structural Welding Code, Aluminum” AWS D1.2. All nuts, bolts and washers shall be installed to match the existing connection.

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

Basis of Payment: The work shall be paid for at the contract lump sum price for "Repair Metal Bridge Rail," and shall include all work, materials, equipment, and labor to satisfactorily complete all repairs.

ITEM #0921018A - BRICK PAVING

Description:

Work under this item shall consist of removing, storing and resetting brick pavers on the raised island, at the location shown on the plans or as directed by the Engineer in conformance with these specifications.

Materials:

Gravel for base shall conform to Article M.02.01 for granular fill. Leveling base material shall be sand conforming to Article M.02.07-Free-Draining Materials.

Construction Methods:

Existing brick pavers shall be carefully removed and stored. If any pavers are broken during removal, the Contractor shall be responsible for replacing them. Upon reconstruction of the raised island by resetting the granite curbing, the granular fill shall be placed within the curb limits in layers not over 6 inches deep and to such a depth that after compaction it shall be the required depth below the finished grade of the raised island. The leveling base shall be screeded loose to a thickness of approximately 2 inches. The leveling shall be treated with a soil sterilizer, of a type to be approved by the Engineer, prior to the placement of the brick pavers. The exact thickness of the leveling base is to be determined at the job site.

Care shall be taken by the Contractor to insure the screeded leveling base is loose and undisturbed placement. Pavers are to be installed "Hand-tight" with care being taken not to disturb the leveling bed. Mason string lines shall be used to insure proper lines and grades. Pavers are to be vibrated into the leveling base with a vibratory plate capable of achieving a 3500 to 5000 pounds compaction force. Such vibratory compaction shall be accomplished on all pavers prior to the end of operations on each working day. Compaction of the bricks shall continue until finish grade, as directed by the Engineer, is achieved. All joints shall be filled after final compaction with the same material used for the leveling base.

Method of Measurement:

This work will be measured for payment by the actual number of square feet of complete and accepted brick paver raised island.

Basis of Payment:

This work will be paid for at the contract unit price per square foot for "Brick Paving" complete and accepted in place which price shall include removing, storing and reconstruction of brick pavers, and all material, labor, equipment and work incidental thereto.

ITEM #0969062A - CONSTRUCTION FIELD OFFICE, MEDIUM

Description: Under the item included in the bid document, adequate weatherproof office quarters with related furnishings, materials, equipment and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, furnishings, materials, equipment, and services are for the exclusive use of CTDOT forces and others who may be engaged to augment CTDOT forces with relation to the Contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02. This office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

Furnishings/Materials/Supplies/Equipment: All furnishings, materials, equipment and supplies shall be in like new condition for the purpose intended and require approval of the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below:

Description \ Office Size	Medium
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400
Minimum number of exterior entrances.	2
Minimum number of parking spaces.	7

Office Layout: The office shall have a minimum square footage as indicated in the table above, and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by CTDOT personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women), in separately enclosed rooms that are properly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the CTDOT and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel, wiring, outlets, etc., to serve the electrical requirements of the field office, including: lighting, general outlets, computer outlets, calculators etc., and meet the following minimum specifications:

- A. 120/240 volt, 1 phase, 3 wire
- B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
- C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
- D. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each desk and personal computer table (workstation) location.
- E. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.
- F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
- G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120 volt, straight blade.
- H. After work is complete and prior to energizing, the State's CTDOT electrical inspector, must be contacted at 860-594-2240. (Do Not Call Local Town Officials)
- I. Prior to field office removal, the CTDOT Office of Information Systems (CTDOT OIS) must be notified to deactivate the communications equipment.

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient heating, air conditioning and ventilation equipment to maintain a temperature range of 68°-80° Fahrenheit within the field office.

Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium and Large field office this shall consist of the installation of two (2) telephone lines: one (1) line for phone/voice service and one (1) line dedicated for the facsimile machine. For an Extra-Large field office this shall consist of four (4) telephone lines: three (3) lines for phone/voice service and one (1) line dedicated for facsimile machine. The Contractor shall pay all charges.

Data Communications Facility Wiring: Contractor shall install a Category 6 568B patch panel in a central wiring location and Cat 6 cable from the patch panel to each PC station, Smart Board location, Multifunction Laser Printer/Copier/Scanner/Fax, terminating in a (Category 6 568B) wall or surface mount data jack. The central wiring location shall also house either the data circuit with appropriate power requirements or a category 5 cable run to the location of the installed data circuit. The central wiring location will be determined by the CTDOT OIS staff in coordination with the designated field office personnel as soon as the facility is in place.

For Small, Medium and Large field offices the Contractor shall run a CAT 6 LAN cable a minimum length of 25 feet for each CTDOT networked device (including but not limited to: smartboards and Multi-Function Laser Printer/Copier/Scanner/Fax) to LAN switch area leaving an additional 10 feet of cable length on each side with terminated RJ45 connectors. For an Extra-Large field office the Contractor shall run CAT 6 LAN cables from workstations, install patch panel in data circuit demark area and terminate runs with RJ45 jacks at each device location. Terminate runs to patch panel in LAN switch area. Each run / jack shall be clearly labeled with an identifying Jack Number.

The Contractor shall supply cables to connect the Wi-Fi printer to the Contractor supplied internet router and to workstations/devices as needed. These cables shall be separate from the LAN cables and data Jacks detailed above for the CTDOT network.

The number of networked devices anticipated shall be at least equal to the number of personal computer tables, Multi-Function Laser Printer/Copier/Scanner/Fax, and smartboards listed below.

The installation of a data communication circuit between the field office and the CTDOT OIS in Newington will be coordinated between the CTDOT District staff, CTDOT OIS staff and the local utility company once the Contractor supplies the field office phone numbers and anticipated installation date. The Contractor shall provide the field office telephone number(s) to the CTDOT Project Engineer within 10 calendar days after the signing of the Contract as required by Article 1.08.02. This is required to facilitate data line and computer installations.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:

Furnishing Description	Office Size Medium
	Quantity
Office desk (2.5 ft. x 5 ft.) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	3
Standard secretarial type desk and matching desk chair that has pneumatic seat height adjustment and dual wheel casters on the base.	-
Personal computer tables (4 ft. x 2.5 ft.).	3
Drafting type tables (3 ft. x 6 ft.) and supported by wall brackets and legs; and matching drafters stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1
Conference table, 3 ft. x 12 ft.	-
Table – 3 ft. x 6 ft.	-
Office Chairs.	4
Mail slot bin – legal size.	-
Non-fire resistant cabinet.	-
Fire resistant cabinet (legal size/4 drawer), locking.	1
Storage racks to hold 3 ft. x 5 ft. display charts.	-
Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.	1
Double door supply cabinet with 4 shelves and a lock – 6 ft. x 4 ft.	-
Case of cardboard banker boxes (Min 10 boxes/case)	1
Open bookcase – 3 shelves – 3 ft. long.	-
White Dry-Erase Board, 36" x 48" min. with markers and eraser.	1
Interior partitions – 6 ft. x 6 ft., soundproof type, portable and freestanding.	-
Coat rack with 20 coat capacity.	-
Wastebaskets - 30 gal., including plastic waste bags.	1
Wastebaskets - 5 gal., including plastic waste bags.	3
Electric wall clock.	-
Telephone.	1
Full size stapler 20 (sheet capacity, with staples)	2
Desktop tape dispensers (with Tape)	2
8 Outlet Power Strip with Surge Protection	4
Rain Gauge	1
Business telephone system for three lines with ten handsets,	-

Furnishing Description	Office Size Medium
	Quantity
intercom capability, and one speaker phone for conference table.	
Mini refrigerator - 3.2 c.f. min.	1
Hot and cold water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1
Microwave, 1.2 c.f. , 1000W min.	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*
Electric pencil sharpeners.	2
Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.	1
Small Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Related Hardware and Software</u> .	1
Large Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Related Hardware and Software</u> .	-
Field Office Wi-Fi Connection as specified below under <u>Computer Related Hardware and Software</u>	1
Wi-Fi Printer as specified below under <u>Computer Related Hardware and Software</u> .	1
Digital Camera as specified below under <u>Computer Related Hardware and Software</u> .	1
Video Projector as specified below under <u>Computer Related Hardware and Software</u> .	-
Smart Board as specified below under <u>Computer Related Hardware and Software</u> .	-
Infrared Thermometer, including annual third party certified calibration, case, and cleaning wipes.	1
Concrete Curing Box as specified below under Concrete Testing Equipment.	1
Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.	1

Furnishing Description	Office Size Medium
	Quantity
Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.	1
First Aid Kit	1
Flip Phones as specified under <u>Computer Related Hardware and Software</u> .	-
Smart Phones as specified under <u>Computer Related Hardware and Software</u> .	-

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

Computer Related Hardware and Software: The CTDOT will supply by its own means the actual Personal Computers for the CTDOT representatives. The Contractor shall supply the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors, and Smart Board(s) as well as associated hardware and software, must meet the requirements of this specification as well as the latest minimum specifications posted, as of the project advertising date, at CTDOTs web site <http://www.ct.gov/dot/cwp/view.asp?a=1410&q=563904>

Within 10 calendar days after the signing of the Contract but before ordering/purchasing the Wi-Fi Printer (separate from the Multifunction Laser Printer/Copier/Scanner/Fax), Field Office Wi-Fi, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projector(s) and Smart Board(s) as well as associated hardware, the Contractor must submit a copy of their proposed order(s) with catalog cuts and specifications to the Administering CTDOT District for review and approval. The Wi-Fi Printer, Wi-Fi Router, Flip Phones, Smart Phones, digital cameras, Projector(s) and Smart Board(s) will be reviewed by CTDOT District personnel. The Multifunction Laser Printer/Copier/Scanner/Fax will be reviewed by the CTDOT OIS. The Contractor shall not purchase the hardware, software, or services until the Administering CTDOT District informs them that the proposed equipment, software, and services are approved. The Contractor will be solely responsible for the costs of any hardware, software, or services purchased without approval.

The Contractor and/or their internet service provider shall be responsible for the installation and setup of the field office Wi-Fi, Wi-Fi printer, and the configuration of the wireless router as directed by the CTDOT. Installation will be coordinated with CTDOT District and Project personnel.

After the approval of the hardware and software, the Contractor shall contact the designated representatives of the CTDOT administering District, a minimum of 2 working days in advance

of the proposed delivery or installation of the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors and Smart Board(s), as well as associated hardware, software, supplies, and support documentation.

The Contractor shall provide all supplies, paper, maintenance, service and repairs (including labor and parts) for the Wi-Fi printers, copiers, field office Wi-Fi, fax machines and other equipment and facilities required by this specification for the duration of the Contract. All repairs must be performed with-in 48 hours. If the repairs require more than a 48 hours then an equal or better replacement must be provided.

Once the Contract has been completed, the hardware and software will remain the property of the Contractor.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Rain Gauge: The Contractor shall supply install and maintain a rain gauge for the duration of the project, meeting these minimum requirements. The rain gauge shall be installed on the top of a post such that the opening of the rain gauge is above the top of the post an adequate distance to avoid splashing of rain water from the top of the post into the rain gauge. The Location of the rain gauge and post shall be approved by the Engineer. The rain gauge shall be made of a durable material and have graduations of 0.1 inches or less with a minimum total column height of 5 inches. If the rain gauge is damaged the Contractor shall replace it prior to the next forecasted storm event at no additional cost.

Concrete Testing Equipment: If the Contract includes items that require compressive strength cylinders for concrete, in accordance with the Schedule of Minimum Testing Requirements for Sampling Materials for Test, the Contractor shall provide the following equipment.

- A) Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.
- B) Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.
- C) Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T119, Standard Test Method for Slump of Hydraulic-Cement Concrete.

All testing equipment will remain the property of the Contractor at the completion of the project.

Insurance Policy: The Contractor shall provide a separate insurance policy, with no deductible, in the minimum amount of five thousand dollars (\$5,000) in order to insure all State-owned data

equipment and supplies used in the office against all losses. The Contractor shall be named insured on that policy, and the CTDOT shall be an additional named insured on the policy. These losses shall include, but not be limited to: theft, fire, and physical damage. The CTDOT will be responsible for all maintenance costs of CTDOT owned computer hardware. In the event of loss, the Contractor shall provide replacement equipment in accordance with current CTDOT equipment specifications, within seven days of notice of the loss. If the Contractor is unable to provide the required replacement equipment within seven days, the CTDOT may provide replacement equipment and deduct the cost of the equipment from monies due or which may become due the Contractor under the Contract or under any other contract. The Contractor's financial liability under this paragraph shall be limited to the amount of the insurance coverage required by this paragraph. If the cost of equipment replacement required by this paragraph should exceed the required amount of the insurance coverage, the CTDOT will reimburse the Contractor for replacement costs exceeding the amount of the required coverage.

Maintenance: During the occupancy by the CTDOT, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, cleaning restrooms, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

There will not be any price adjustment due to any change in the minimum computer related hardware and software requirements.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for "Construction Field Office, Medium," which price shall include all material, equipment, labor, service contracts, licenses, software, repair or replacement of hardware and software, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements of this specified this specification.

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Field Office, Medium	Month

ITEM #0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description is supplemented by the following:

The Contractor shall maintain and protect traffic as described by the following and as limited in the Special Provision "Prosecution and Progress":

Route 136 (Washington Street)

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction, each lane on a paved travel path not less than 10.5 feet in width.

Where turn lanes exist, the Contractor shall provide an additional 10 feet of paved travel path to be used for turning vehicles only. This additional 10 feet of travel path shall be a minimum length of 150 feet. It shall be implemented so that sufficient storage, taper length, and turning radius are provided.

The Contractor will be allowed to close the Washington Street Bridge to through traffic and detour traffic as shown on the Detour Plan contained in the contract plans.

Excepted therefrom when Stage construction is in place, the Contractor shall maintain and protect traffic as shown on the M&PT plans contained in the contract plans.

All Other Roadways

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction, each lane on a paved travel path not less than 10.5 feet in width.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall maintain and protect at least an alternating one-way traffic operation, on a paved travel path not less than 10.5 feet in width. The length of the alternating one-way traffic operation shall not exceed 300 feet and there shall be no more than one alternating one-way traffic operation within the project limits without prior approval of the Engineer.

Commercial and Residential Driveways

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the project limits. The Contractor will be allowed to close said driveways to perform the required work during those periods when the businesses are closed, unless permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor shall coordinate with the owner to determine the time period of the closure.

Article 9.71.03 - Construction Method is supplemented as follows:

General

The Contractor is required to delineate any raised structures within the travel lanes, so that the structures are visible day and night, unless there are specific contract plans and provisions to temporarily lower these structures prior to the completion of work.

The Contractor shall schedule operations so that pavement removal and roadway resurfacing shall be completed full width across a roadway (bridge) section by the end of a workday (work night), or as directed by the Engineer.

When the installation of all intermediate courses of bituminous concrete pavement is completed for the entire roadway, the Contractor shall install the final course of bituminous concrete pavement.

When the Contractor is excavating adjacent to the roadway, the Contractor shall provide a 3-foot shoulder between the work area and travel lanes, with traffic drums spaced every 50 feet. At the end of the workday, if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary traversable slope of 4:1 or flatter that is acceptable to the Engineer.

The Contractor shall not store any material on-site which would present a safety hazard to motorists or pedestrians (e.g. fixed object or obstruct sight lines).

The field installation of a signing pattern shall constitute interference with existing traffic operations and shall not be allowed, except during the allowable periods.

Existing Signing

The Contractor shall maintain all existing overhead and side-mounted signs throughout the project limits during the duration of the project. The Contractor shall temporarily relocate signs and sign supports as many times as deemed necessary, and install temporary sign supports if necessary and as directed by the Engineer.

Requirements for Winter

The Contractor shall schedule a meeting with representatives from the Department including the offices of Maintenance and Traffic, and the Town/City to determine what interim traffic control measures the Contractor shall accomplish for the winter to provide safety to the motorists and permit adequate snow removal procedures. This meeting shall be held prior to October 31 of each year and will include, but not be limited to, discussion of the status and schedule of the following items: lane and shoulder widths, pavement restoration, traffic signal work, pavement markings, and signing.

Signing Patterns

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory.

Pavement Markings -Non-Limited Access Multilane Roadways Secondary and Local Roadways

During construction, the Contractor shall maintain all pavement markings on paved surfaces on all roadways throughout the limits of the project.

Interim Pavement Markings

The Contractor shall install painted pavement markings, which shall include centerlines, edge lines, lane lines (broken lines), lane-use arrows, and stop bars, on each intermediate course of bituminous concrete pavement and on any milled surface by the end of the work day/night. If the next course of bituminous concrete pavement will be placed within seven days, edge lines are not required. The painted pavement markings will be paid under the appropriate items.

If the Contractor will install another course of bituminous concrete pavement within 24 hours, the Contractor may install Temporary Plastic Pavement Marking Tape in place of the painted pavement markings by the end of the work day/night. These temporary pavement markings shall include centerlines, lane lines (broken lines) and stop bars; edge lines are not required. Centerlines shall consist of two 4 inch wide yellow markings, 2 feet in length, side by side, 4 to 6 inches apart, at 40-foot intervals. No passing zones should be posted with signs in those areas where the final centerlines have not been established on two-way roadways. Stop bars may consist of two 6 inch wide white markings or three 4 inch wide white markings placed side by side. The Contractor shall remove and dispose of the Temporary Plastic Pavement Marking Tape when another course of bituminous concrete pavement is installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

If an intermediate course of bituminous concrete pavement will be exposed throughout the winter, then Epoxy Resin Pavement Markings should be installed unless directed otherwise by the Engineer.

Final Pavement Markings

The Contractor should install painted pavement markings on the final course of bituminous concrete pavement by the end of the work day/night. If the painted pavement markings are not installed by the end of the work day/night, then Temporary Plastic Pavement Marking Tape shall be installed as described above and the painted pavement markings shall be installed by the end of the work day/night on Friday of that week.

If Temporary Plastic Pavement Marking Tape is installed, the Contractor shall remove and dispose of these markings when the painted pavement markings are installed. The cost of

furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

The Contractor shall install permanent Epoxy Resin Pavement Markings in accordance with Section 12.10 entitled "Epoxy Resin Pavement Markings" after such time as determined by the Engineer.

TRAFFIC CONTROL DURING CONSTRUCTION OPERATIONS

The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for the safe and efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

TRAFFIC CONTROL PATTERNS

Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder. For each situation, the installation of traffic control devices shall be based on the following:

- Speed and volume of traffic
- Duration of operation
- Exposure to hazards

Traffic control patterns shall be uniform, neat and orderly so as to command respect from the motorist.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

If a lane reduction taper is required to shift traffic, the entire length of the taper should be installed on a tangent section of roadway so that the entire taper area can be seen by the motorist.

Any existing signs that are in conflict with the traffic control patterns shall be removed, covered, or turned so that they are not readable by oncoming traffic.

When installing a traffic control pattern, a Buffer Area should be provided and this area shall be free of equipment, workers, materials and parked vehicles.

Typical traffic control plans 19 through 25 may be used for moving operations such as line striping, pot hole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

Traffic control patterns will not be required when vehicles are on an emergency patrol type activity or when a short duration stop is made and the equipment can be contained within the shoulder. Flashing lights and appropriate trafficperson shall be used when required.

Although each situation must be dealt with individually, conformity with the typical traffic control plans contained herein is required. In a situation not adequately covered by the typical traffic control plans, the Contractor must contact the Engineer for assistance prior to setting up a traffic control pattern.

PLACEMENT OF SIGNS

Signs must be placed in such a position to allow motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. On multi-lane divided highways, advance warning signs shall be installed on both sides of the highway. On directional roadways (on-ramps, off-ramps, one-way roads), where the sight distance to signs is restricted, these signs should be installed on both sides of the roadway.

ALLOWABLE ADJUSTMENT OF SIGNS AND DEVICES SHOWN ON THE TRAFFIC CONTROL PLANS

The traffic control plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans whenever possible.

The proper application of the traffic control plans and installation of traffic control devices depends on actual field conditions.

Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations. Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

The Engineer may require that the traffic control pattern be located significantly in advance of the work area to provide better sight line to the signing and safer traffic operations through the work zone.

Table I indicates the minimum taper length required for a lane closure based on the posted speed limit of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the traffic control plans cannot be achieved.

TABLE I – MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT MILES PER HOUR	MINIMUM TAPER LENGTH IN FEET FOR A SINGLE LANE CLOSURE
30 OR LESS	180
35	250
40	320
45	540
50	600
55	660
65	780

SECTION 1. WORK ZONE SAFETY MEETINGS

- 1.a) Prior to the commencement of work, a work zone safety meeting will be conducted with representatives of DOT Construction, Connecticut State Police (Local Barracks), Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the project. Other work zone safety meetings during the course of the project should be scheduled as needed.
- 1.b) A Work Zone Safety Meeting Agenda shall be developed and used at the meeting to outline the anticipated traffic control issues during the construction of this project. Any issues that can't be resolved at these meetings will be brought to the attention of the District Engineer and the Office of Construction. The agenda should include:
- Review Project scope of work and time
 - Review Section 1.08, Prosecution and Progress
 - Review Section 9.70, Trafficpersons
 - Review Section 9.71, Maintenance and Protection of Traffic
 - Review Contractor's schedule and method of operations.
 - Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.
 - Open discussion of work zone questions and issues
 - Discussion of review and approval process for changes in contract requirements as they relate to work zone areas

SECTION 2. GENERAL

- 2.a) If the required minimum number of signs and equipment (i.e. one High Mounted Internally Illuminated Flashing Arrow for each lane closed, two TMAs, Changeable Message Sign, etc.) are not available; the traffic control pattern shall not be installed.

- 2.b) The Contractor shall have back-up equipment (TMAs, High Mounted Internally Illuminated Flashing Arrow, Changeable Message Sign, construction signs, cones/drums, etc.) available at all times in case of mechanical failures, etc. The only exception to this is in the case of sudden equipment breakdowns in which the pattern may be installed but the Contractor must provide replacement equipment within 24 hours.
- 2.c) Failure of the Contractor to have the required minimum number of signs, personnel and equipment, which results in the pattern not being installed, shall not be a reason for a time extension or claim for loss time.
- 2.d) In cases of legitimate differences of opinion between the Contractor and the Inspection staff, the Inspection staff shall err on the side of safety. The matter shall be brought to the District Office for resolution immediately or, in the case of work after regular business hours, on the next business day.

SECTION 3. INSTALLING AND REMOVING TRAFFIC CONTROL PATTERNS

- 3.a) Lane Closures shall be installed beginning with the advance warning signs and proceeding forward toward the work area.
- 3.b) Lane Closures shall be removed in the reverse order, beginning at the work area, or end of the traffic control pattern, and proceeding back toward the advance warning signs.
- 3.c) Stopping traffic may be allowed:
 - As per the contract for such activities as blasting, steel erection, etc.
 - During paving, milling operations, etc. where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway and traffic should not travel across the longitudinal joint or difference in roadway elevation.
 - To move slow moving equipment across live traffic lanes into the work area.
- 3.d) Temporary road closures using Rolling Road Blocks (RRB) may be allowed on limited access highways for operations associated with the installation and removal of temporary lane closures. RRB may be allowed for the installation and removal of lead signs and lane tapers only and shall meet the following requirements:
 - RRB may not start prior to the time allowed in the contract Limitations of Operation for sign pattern installation. Sign pattern removal must be complete prior to the time indicated in the Limitations of Operation for restoring the lanes to traffic.
 - On limited access highways with 4 lanes or more, a RRB may not start until the Limitations of Operation Chart allows a 2 lane closure. In areas with good sight lines and full shoulders, opposite side lead signs should be installed in a separate operation.

- Truck-Mounted Impact Attenuators (TMAs) equipped with arrow boards shall be used to slow traffic to implement the RRB. State Police Officers in marked vehicles may be used to support the implementation of the RRB. The RRB shall start by having all vehicles, including Truck-Mounted Impact Attenuators TMAs and police vehicles leave the shoulder or on-ramp and accelerate to a normal roadway speeds in each lane, then the vehicles will position themselves side by side and decelerate to the RRB speed on the highway.
 - An additional Truck-Mounted Impact Attenuator TMAs equipped with a Portable Changeable Message Sign shall be utilized to advise the motorists that sign pattern installation / removal is underway. The Pre-Warning Vehicle (PWV) should be initially positioned in the right shoulder ½ mile prior to the RRB operation. If a traffic queue reaches the PWV's initial location, the contractor shall slowly reverse the PWV along the shoulder to position itself prior to the new back of queue. A Pre-Warning Vehicle, as specified elsewhere in the contract, shall be utilized to advise the motorists that sign pattern installation / removal is underway.
 - The RRB duration shall not exceed 15 minutes from start of the traffic block until all lanes are opened as designated in the Limitation of Operation chart. If the RRB duration exceeds 15 minutes on 2 successive shifts, no further RRB will be allowed until the Contractor obtains approval for a revised installation procedure from the respective construction District.
 - RRB should not be utilized to expand a lane closure pattern to an additional lane during the shift. The workers and equipment required to implement the additional lane closure should be staged from within the closed lane. Attenuator trucks (and State Police if available) should be used to protect the workers installing the taper in the additional lane.
 - Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days should be allowed for review and approval by the District.
 - The RRB procedures (including any approved exceptions) will be reviewed and discussed by the inspection team and the Contractor in advance of the work. The implementation of the agreed upon plan will be reviewed with the State Police during the Work Zone Safety meeting held before each shift involving temporary lane closures. If the State Police determine that alternative procedures should be implemented for traffic control during the work shift, the Department and Contractor will attempt to resolve any discrepancies with the duty sergeant at the Troop. If the discrepancies are unable to be resolved prior to the start of the shift, the work will proceed as recommended by the Department Trooper. Any unresolved issues will be addressed the following day.
- 3.e) The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.
- 3.f) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging/exiting with/from the

main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

- 3.g) Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.
- 3.h) On limited access roadways, workers are prohibited from crossing the travel lanes to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

SECTION 4. USE OF HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

- 4.a) On limited access roadways, one Flashing Arrow shall be used for each lane that is closed. The Flashing Arrow shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the traffic control plan. For multiple lane closures, one Flashing Arrow is required for each lane closed. If conditions warrant, additional Flashing Arrows should be employed (i.e.: curves, major ramps, etc.).
- 4.b) On non-limited access roadways, the use of a Flashing Arrow for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the Flashing Arrow.
- 4.c) The Flashing Arrow shall not be used on two lane, two-way roadways for temporary alternating one-way traffic operations.
- 4.d) The Flashing Arrow board display shall be in the “arrow” mode for lane closure tapers and in the “caution” mode (four corners) for shoulder work, blocking the shoulder, or roadside work near the shoulder. The Flashing Arrow shall be in the “caution” mode when it is positioned in the closed lane.
- 4.e) The Flashing Arrow shall not be used on a multi-lane roadway to laterally shift all lanes of traffic, because unnecessary lane changing may result.

SECTION 5. USE OF TRUCK MOUNTED OR TRAILER MOUNTED IMPACT ATTENUATOR VEHICLES (TMAs)

- 5.a) For lane closures on limited access roadways, a minimum of two TMAs shall be used to install and remove traffic control patterns. If two TMAs are not available, the pattern shall not be installed.

- 5.b) On non-limited access roadways, the use of TMAs to install and remove patterns closing a lane(s) is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to utilize the TMAs.
- 5.c) Generally, to establish the advance and transition signing, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane. The flashing arrow board mounted on the TMA should be in the “flashing arrow” mode when taking the lane. The sign truck and workers should be immediately ahead of the second TMA. In no case shall the TMA be used as the sign truck or a work truck. Once the transition is in place, the TMAs shall travel in the closed lane until all Changeable Message Signs, signs, Flashing Arrows, and cones/drums are installed. The flashing arrow board mounted on the TMA should be in the “caution” mode when traveling in the closed lane.
- 5.d) A TMA shall be placed prior to the first work area in the pattern. If there are multiple work areas within the same pattern, then additional TMAs shall be positioned at each additional work area as needed. The flashing arrow board mounted on the TMA should be in the “caution” mode when in the closed lane.
- 5.e) TMAs shall be positioned a sufficient distance prior to the workers or equipment being protected to allow for appropriate vehicle roll-ahead in the event that the TMA is hit, but not so far that an errant vehicle could travel around the TMA and into the work area. For additional placement and use details, refer to the specification entitled “Truck-Mounted or Trailer-Mounted Impact Attenuator”. Some operations, such as paving and concrete repairs, do not allow for placement of the TMA(s) within the specified distances. In these situations, the TMA(s) should be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.
- 5.f) TMAs should be paid in accordance with how the unit is utilized. If it is used as a TMA and is in the proper location as specified, then it should be paid at the specified hourly rate for “Truck-Mounted or Trailer-Mounted Impact Attenuator”. When the TMA is used as a Flashing Arrow, it should be paid at the daily rate for “High Mounted Internally Illuminated Flashing Arrow”. If a TMA is used to install and remove a pattern and is also used as a Flashing Arrow in the same day, then the unit should be paid as a “Truck-Mounted or Trailer-Mounted Impact Attenuator” for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove). If the TMA is also used as a Flashing Arrow during the same day, then the unit should be paid at the daily rate as a “High Mounted Internally Illuminated Flashing Arrow”.

SECTION 6. USE OF TRAFFIC DRUMS AND TRAFFIC CONES

- 6.a) Traffic drums shall be used for taper channelization on limited-access roadways, ramps, and turning roadways and to delineate raised catch basins and other hazards.

- 6.b) Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 36-hour duration.
- 6.c) Traffic Cones less than 42 inches in height shall not be used on limited-access roadways or on non-limited access roadways with a posted speed limit of 45 mph and above.
- 6.d) Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

SECTION 7. USE OF (REMOTE CONTROLLED) CHANGEABLE MESSAGE SIGNS (CMS)

- 7.a) For lane closures on limited access roadways, one CMS shall be used in advance of the traffic control pattern. Prior to installing the pattern, the CMS shall be installed and in operation, displaying the appropriate lane closure information (i.e.: Left Lane Closed - Merge Right). The CMS shall be positioned ½ - 1 mile ahead of the lane closure taper. If the nearest Exit ramp is greater than the specified ½ - 1 mile distance, than an additional CMS shall be positioned a sufficient distance ahead of the Exit ramp to alert motorists to the work and therefore offer them an opportunity to take the exit.
- 7.b) CMS should not be installed within 1000 feet of an existing CMS.
- 7.c) On non-limited access roadways, the use of CMS for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the CMS.
- 7.d) The advance CMS is typically placed off the right shoulder, 5 feet from the edge of pavement. In areas where the CMS cannot be placed beyond the edge of pavement, it may be placed on the paved shoulder with a minimum of five (5) traffic drums placed in a taper in front of it to delineate its position. The advance CMS shall be adequately protected if it is used for a continuous duration of 36 hours or more.
- 7.e) When the CMS are no longer required, they should be removed from the clear zone and have the display screen cleared and turned 90° away from the roadway.
- 7.f) The CMS generally should not be used for generic messages (ex: Road Work Ahead, Bump Ahead, Gravel Road, etc.).
- 7.g) The CMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs (Examples include: Exit 34 Closed Sat/Sun - Use Exit 35, All Lanes Closed - Use Shoulder, Workers on Road - Slow Down).

7.h) Messages that need to be displayed for long periods of time, such as during stage construction, should be displayed with construction signs. For special signs, please coordinate with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.

7.i) The messages that are allowed on the CMS are as follows:

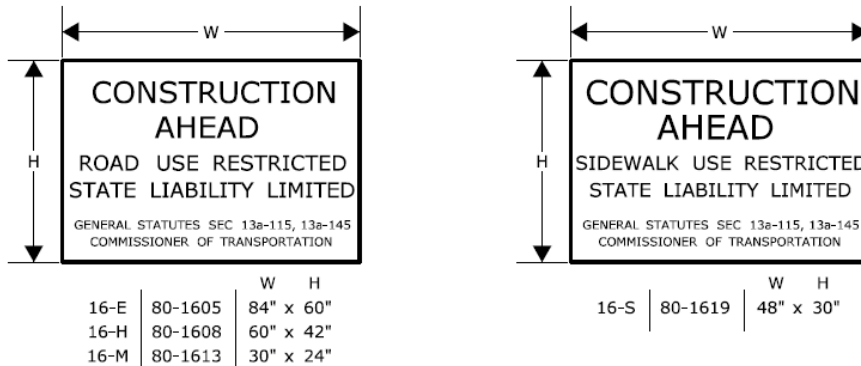
<u>Message No.</u>	<u>Frame 1</u>	<u>Frame 2</u>	<u>Message No.</u>	<u>Frame 1</u>	<u>Frame 2</u>
1	LEFT LANE CLOSED	MERGE RIGHT	9	LANES CLOSED AHEAD	REDUCE SPEED
2	2 LEFT LANES CLOSED	MERGE RIGHT	10	LANES CLOSED AHEAD	USE CAUTION
3	LEFT LANE CLOSED	REDUCE SPEED	11	WORKERS ON ROAD	REDUCE SPEED
4	2 LEFT LANES CLOSED	REDUCE SPEED	12	WORKERS ON ROAD	SLOW DOWN
5	RIGHT LANE CLOSED	MERGE LEFT	13	EXIT XX CLOSED	USE EXIT YY
6	2 RIGHT LANES CLOSED	MERGE LEFT	14	EXIT XX CLOSED USE YY	FOLLOW DETOUR
7	RIGHT LANE CLOSED	REDUCE SPEED	15	2 LANES SHIFT AHEAD	USE CAUTION
8	2 RIGHT LANES CLOSED	REDUCE SPEED	16	3 LANES SHIFT AHEAD	USE CAUTION

For any other message(s), approval must be received from the Office of Construction prior to their use. No more than two (2) displays shall be used within any message cycle.

SECTION 8. USE OF STATE POLICE OFFICERS

- 8.a) State Police may be utilized only on limited access highways and secondary roadways under their primary jurisdiction. One Officer may be used per critical sign pattern. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer. Likewise in areas with moderate traffic and wide, unobstructed medians, left lane closures can be implemented without State Police presence. Under some situations it may be desirable to have State Police presence, when one is available. Examples of this include: nighttime lane closures; left lane closures with minimal width for setting up advance signs and staging; lane and shoulder closures on turning roadways/ramps or mainline where sight distance is minimal; and closures where extensive turning movements or traffic congestion regularly occur, however they are not required.
- 8.b) Once the pattern is in place, the State Police Officer should be positioned in a non-hazardous location in advance of the pattern. If traffic backs up beyond the beginning of the pattern, then the State Police Officer shall be repositioned prior to the backup to give warning to the oncoming motorists. The State Police Officer and TMA should not be in proximity to each other.
- 8.c) Other functions of the State Police Officer(s) may include:
- Assisting entering/exiting construction vehicles within the work area.
 - Enforcement of speed and other motor vehicle laws within the work area, if specifically requested by the project.
- 8.d) State Police Officers assigned to a work site are to only take direction from the Engineer.

SERIES 16 SIGNS



THE 16-S SIGN SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHALL BE INSTALLED ON ANY MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHALL BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMP PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

THE LOCATION OF SERIES 16 SIGNS CAN BE FOUND ELSEWHERE IN THE PLANS OR INSTALLED AS DIRECTED BY THE ENGINEER.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMP, OTHER STATE ROADWAYS, AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

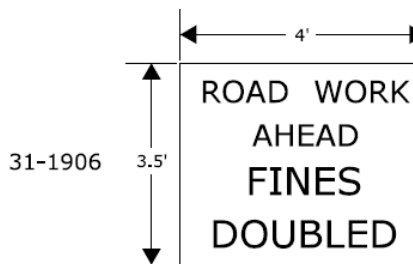
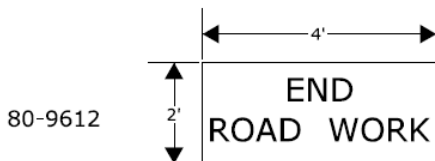
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY IN CONNECTICUT WHERE THERE ARE WORKERS ON THE HIGHWAY OR WHEN THERE IS OTHER THAN EXISTING TRAFFIC OPERATIONS.

THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN MUST BE THE "END ROAD WORK" SIGN.



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
REQUIRED SIGNS

NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.
2. SIGNS (AA), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.
3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.
4. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN TRAFFIC DRUMS SHALL BE USED IN PLACE OF TRAFFIC CONES.
5. ANY LEGAL SPEED LIMIT SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.
6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.
7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT < 40 MPH).
8. IF THIS PLAN IS TO REMAIN IN OPERATION DURING THE HOURS OF DARKNESS, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.
9. A CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.
10. SIGN (P) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT (MILES PER HOUR)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE
30 OR LESS	180' (55m)
35	250' (75m)
40	320' (100m)
45	540' (165m)
50	600' (180m)
55	660' (200m)
65	780' (240m)

METRIC CONVERSION CHART (1" = 25mm)

ENGLISH	METRIC	ENGLISH	METRIC	ENGLISH	METRIC
12"	300mm	42"	1050mm	72"	1800mm
18"	450mm	48"	1200mm	78"	1950mm
24"	600mm	54"	1350mm	84"	2100mm
30"	750mm	60"	1500mm	90"	2250mm
36"	900mm	66"	1650mm	96"	2400mm



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN NOTES

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

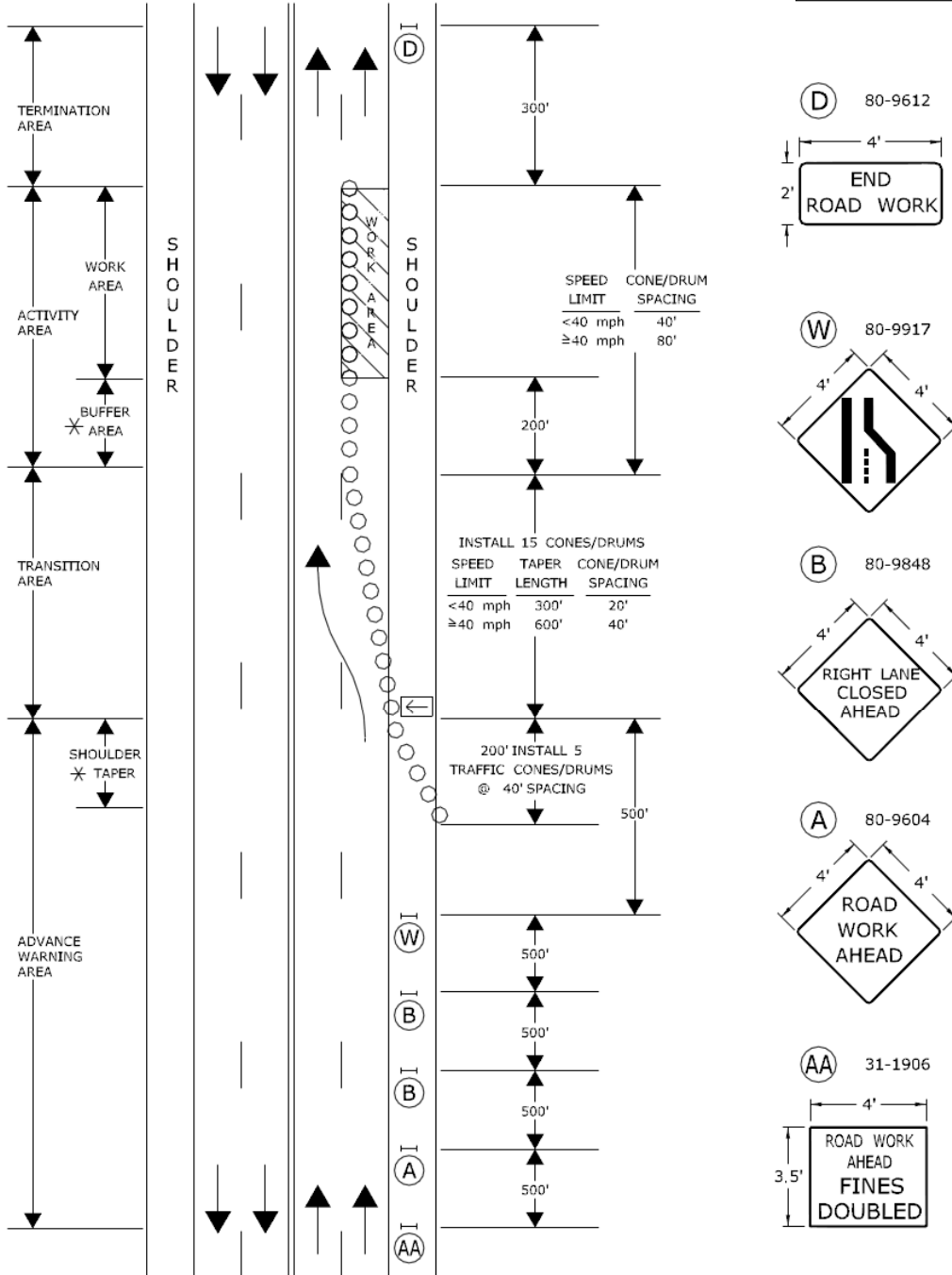
APPROVED

Charles S. Harlow
PRINCIPAL ENGINEER

Charles S. Harlow
2012.06.05 15:50:35-0400

WORK IN RIGHT LANE - 4 LANE UNDIVIDED HIGHWAY

SIGN FACE
86 SQ. FT (MIN.)



- TRAFFIC CONE **OR** TRAFFIC DRUM
- ✱ OPTIONAL ✕ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

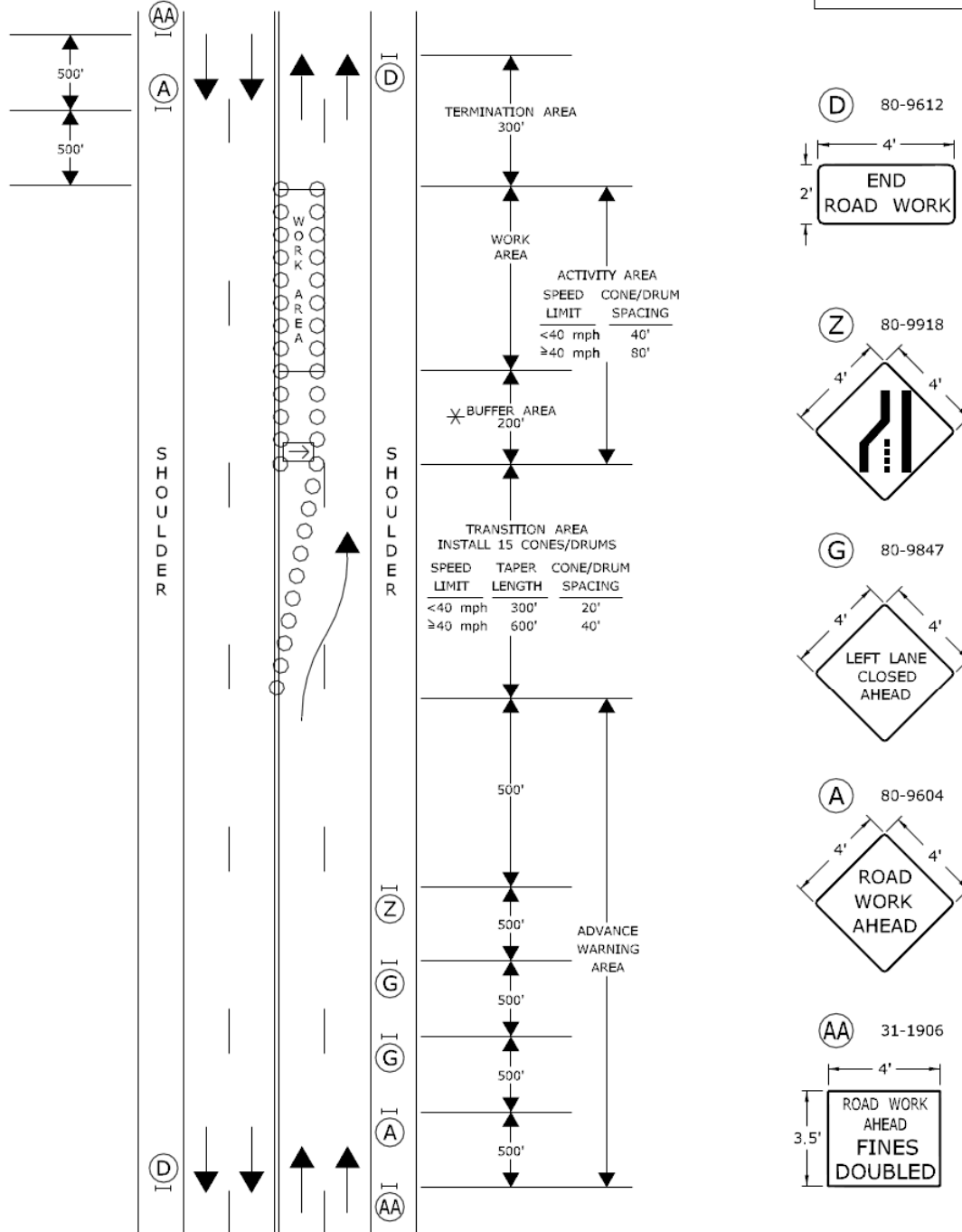
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 10
SEE NOTES 1, 2, 3, 4, 5, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* Charles S. Harlow
2012.06.05 15:54:15-0400
PRINCIPAL ENGINEER

WORK IN LEFT LANE - 4 LANE UNDIVIDED HIGHWAY

SIGN FACE
124 SQ. FT (MIN.)



- TRAFFIC CONE **OR** TRAFFIC DRUM
- ✱ OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

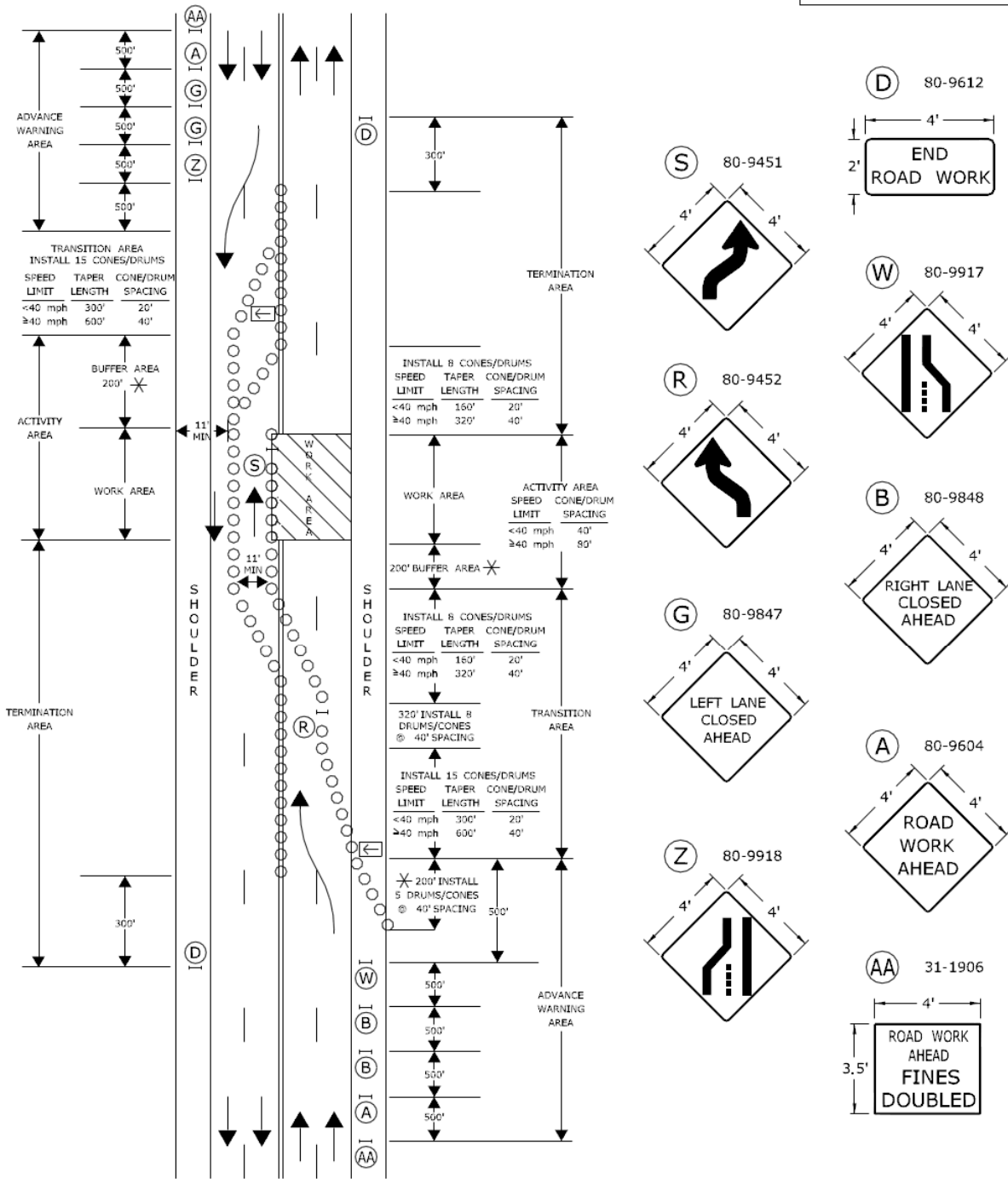
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 11
SEE NOTES 1, 2, 3, 4, 5, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
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APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.08.05 15:54:36-0400'

WORK IN BOTH LANES - 4 LANE UNDIVIDED HIGHWAY

SIGN FACE
204 SQ. FT. (MIN.)



- TRAFFIC CONE **OR** TRAFFIC DRUM
- ✱ OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



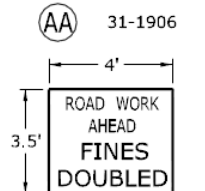
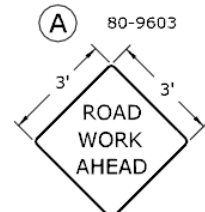
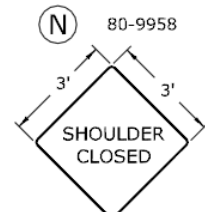
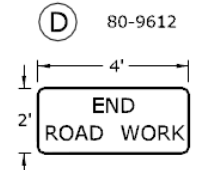
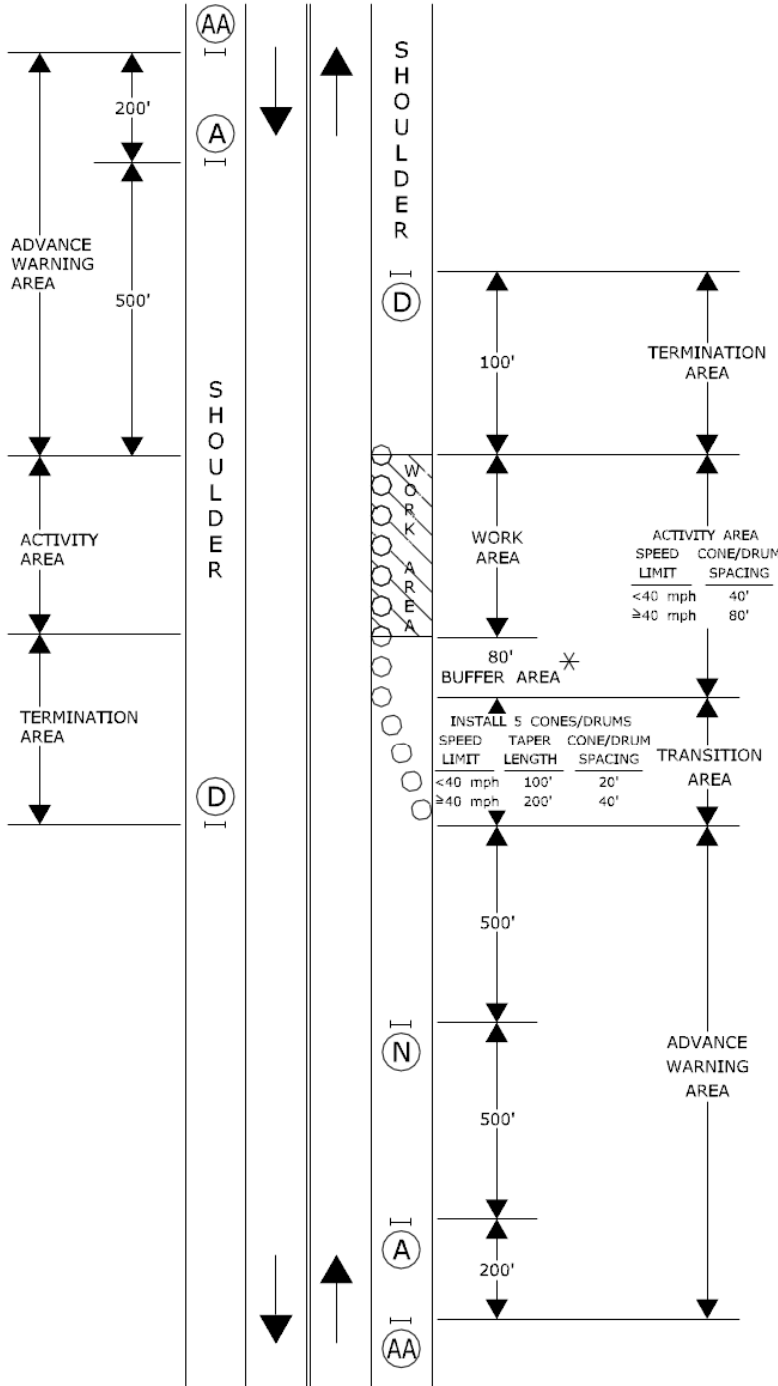
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 12
SEE NOTES 1, 2, 3, 4, 5, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:55:01-0400'

WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE
71 SQ. FT (MIN.)



ACTIVITY AREA	SPEED LIMIT	CONE/DRUM SPACING
<40 mph	40'	
≥40 mph	80'	

INSTALL 5 CONES/DRUMS

SPEED LIMIT	TAPER LENGTH	CONE/DRUM SPACING	TRANSITION AREA
<40 mph	100'	20'	
≥40 mph	200'	40'	

- TRAFFIC CONE **OR** TRAFFIC DRUM
- * OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



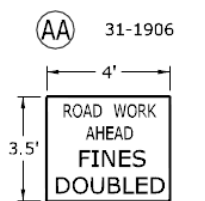
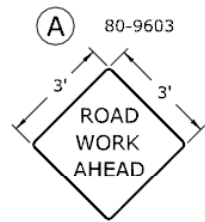
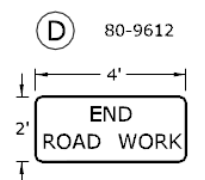
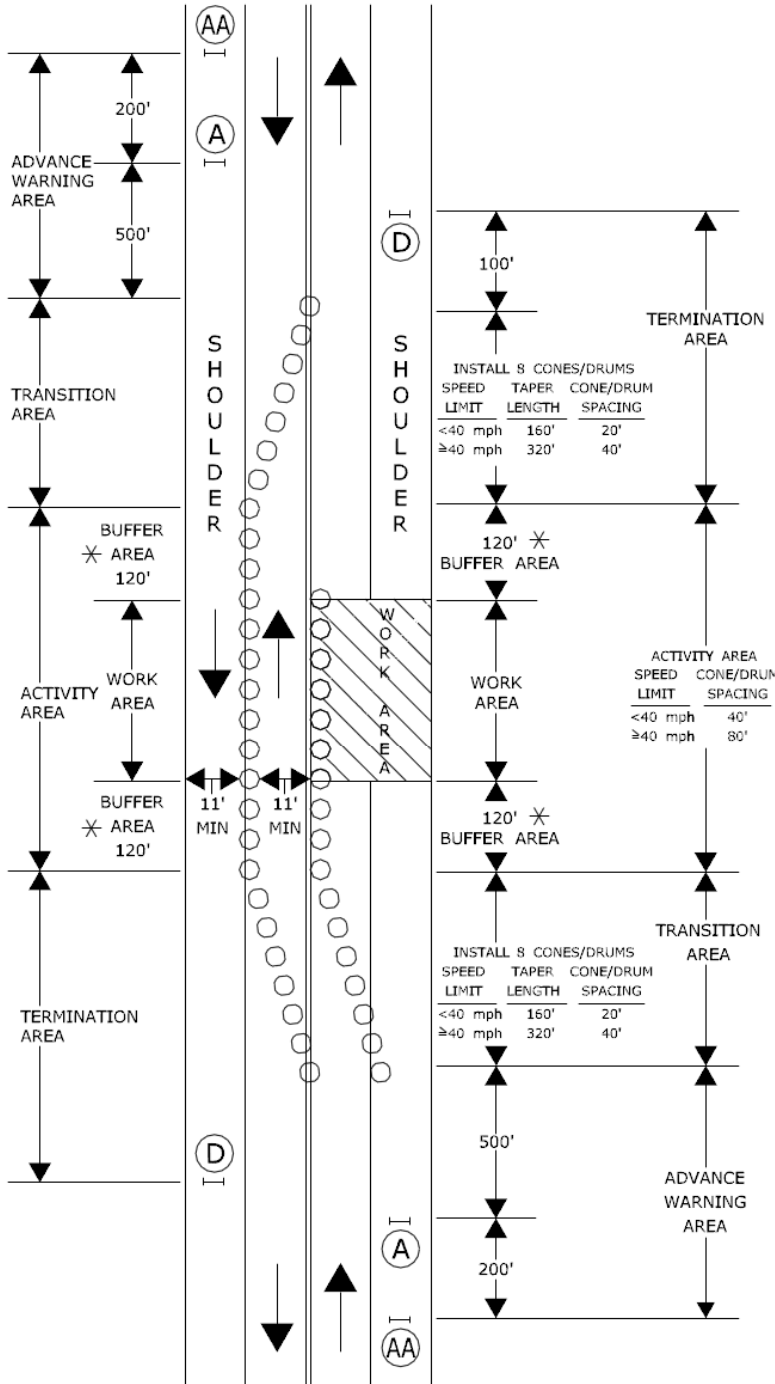
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 14
SEE NOTES 1, 2, 4, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.08.05 15:56:09-04'00"

WORK IN TRAVEL LANE AND SHOULDER TWO LANE HIGHWAY

SIGN FACE
62 SQ. FT (MIN.)



INSTALL 8 CONES/DRUMS

SPEED LIMIT	TAPER LENGTH	CONE/DRUM SPACING
<40 mph	160'	20'
≥40 mph	320'	40'

ACTIVITY AREA

SPEED LIMIT	CONE/DRUM SPACING
<40 mph	40'
≥40 mph	80'

INSTALL 8 CONES/DRUMS

SPEED LIMIT	TAPER LENGTH	CONE/DRUM SPACING
<40 mph	160'	20'
≥40 mph	320'	40'

- TRAFFIC CONE OR TRAFFIC DRUM
- ✱ OPTIONAL ✕ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

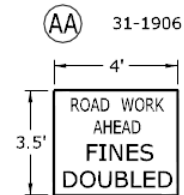
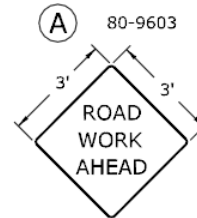
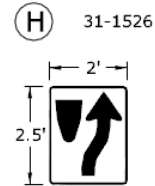
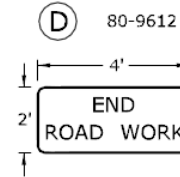
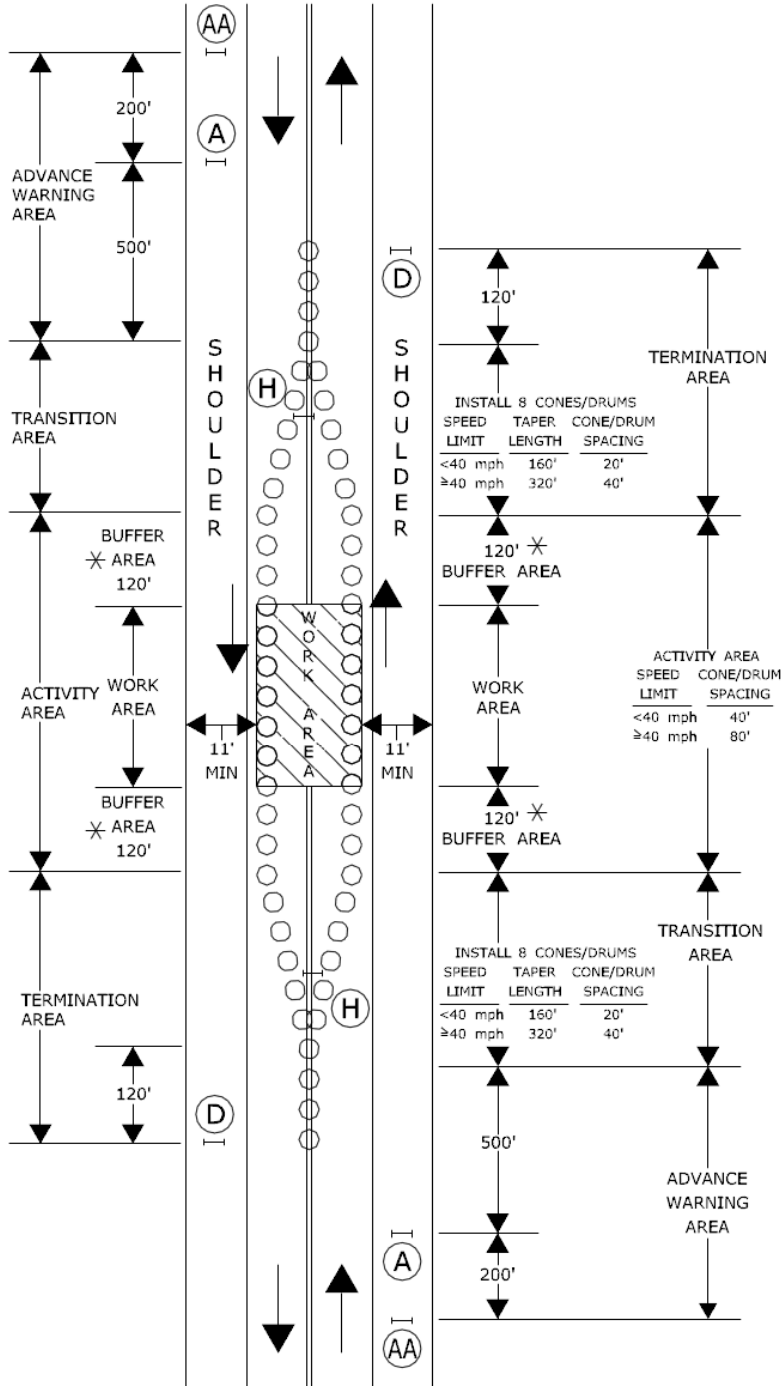
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 15
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* Charles S. Harlow
2012.06.05 15:56:29-04'00"
PRINCIPAL ENGINEER

WORK IN MIDDLE OF ROADWAY TWO LANE HIGHWAY

SIGN FACE
72 SQ. FT (MIN.)



- TRAFFIC CONE **OR** TRAFFIC DRUM
- ✱ OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 16

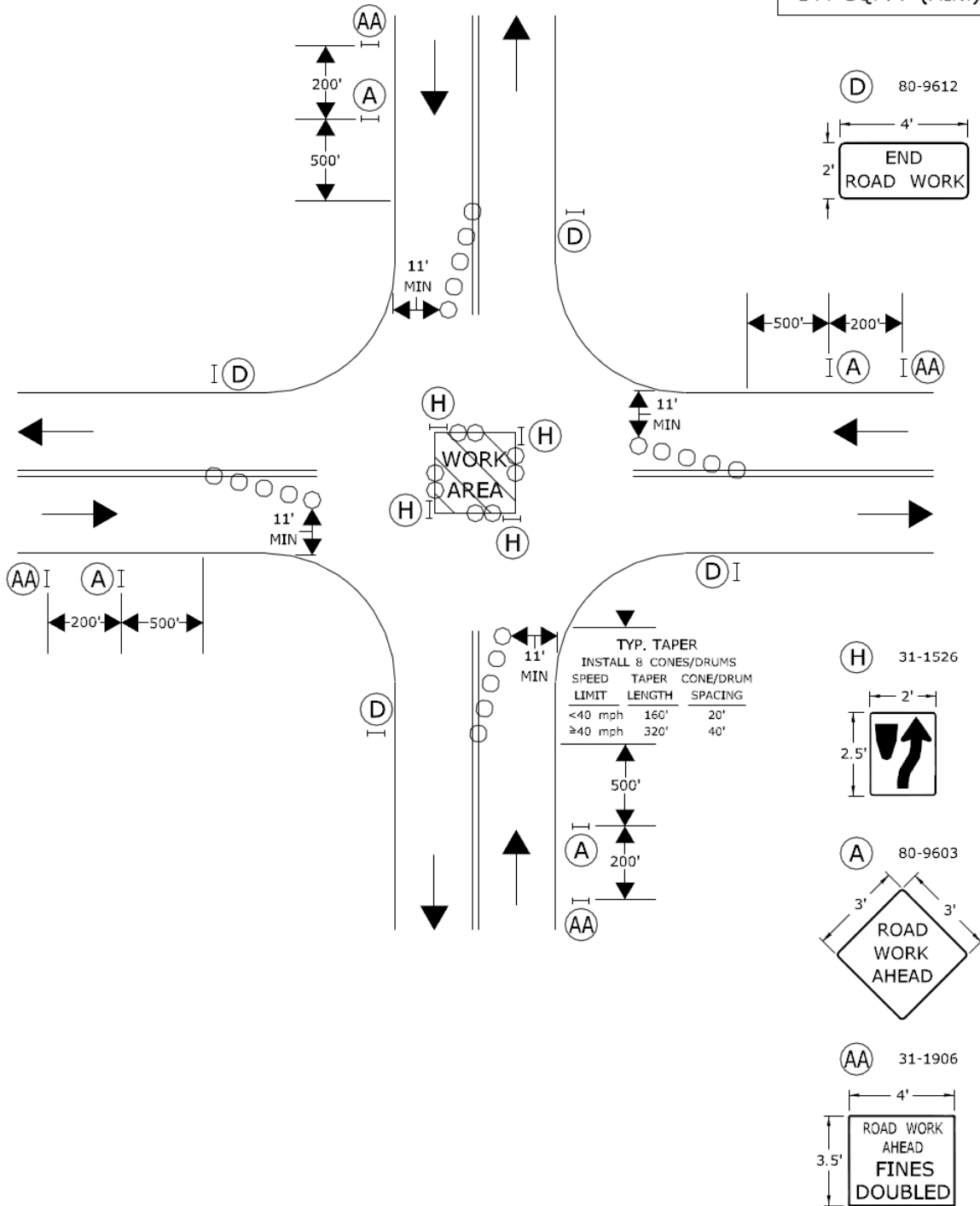
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.08.05 15:56:51-04'00"

WORK IN MIDDLE OF ROADWAY AT INTERSECTION

SIGN FACE
144 SQ. FT (MIN.)



- TRAFFIC CONE **OR** TRAFFIC DRUM
- ✱ OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 17

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
2012.08.05 15:57:16-04'00"

Article 9.71.05 – Basis of Payment is supplemented by the following:

The temporary relocation of signs and supports, and the furnishing, installation and removal of any temporary supports shall be paid for under the item “Maintenance and Protection of Traffic”. Temporary overhead sign supports and foundations shall be paid for under the appropriate item(s).

The cost of furnishing, installing, and removing the material for the 4H:1V traversable slope shall be paid for under the item “Maintenance and Protection of Traffic.”

ITEM #1404109A – SANITARY SEWER RECONSTRUCTION

Description:

The Contractor, shall, under this item, remove the existing sanitary sewer service connection attached to the existing bridge and provide a new sewer service connection in the same location, in accordance with the details shown on the Contract Drawings, and to the limits specified below, and/or as directed by the Engineer.

This work includes removing and disposing of the length of pipe from the face of the west abutment (Abutment #1) to the bridge Control House at Pier #1; all pipe insulation, heating cable and heat cable thermostat; furnishing and installing the new pipe from the face of the west abutment (Abutment #1) to the bridge Control House at Pier #1, fittings, transition couplings, insulation with PVC jacketing, electric heat tracing with spare, thermostat, protective conduit or shielding for exposed heat tracing, pipe supports; sewer service testing; access to the work and all incidental work.

Materials:

Shop Drawings and Working Drawings: The Contractor shall furnish shop drawings in accordance with Article 1.05.02, and no work shall be fabricated until they have been approved by the Designer or the Engineer, as applicable.

Shop drawings shall be provided for the following: pipe, pipe insulation with PVC jacketing, fittings, joint details, transition couplings, electric heat tracing and thermostat, and pipe supports.

Ductile Iron Pipe and Fittings: All ductile iron pipe shall conform to AWWA/ANSI C-150/A21.51. The thickness class shall be Class 52, unless otherwise indicated on the Contract Drawings or specified elsewhere. The industry standard bituminous coatings will be applied.

All fittings shall be as called for on the Contract Drawings, or as required to complete the work, and shall conform to the requirements of ANSI/AWWA A21.53/C-153 and ANSI/AWWA A21.11/C-111. The fittings shall be Pressure Class 350.

Mechanical joint nuts and bolts shall be ductile iron, high strength, low alloy steel per ANSI/AWWA A.21.11/C-111,

Pipe Insulation: Pipe and pipe fittings shall be insulated with a lightweight rigid inert insulation, resistant to moisture in a liquid or vapor form. Insulation shall be encased in a PVC jacket, as shown on the drawings with the electric heat tracing attached as described herein.

PVC Jacket: PVC jacket shall be Schedule 40 PVC pipe and fittings conforming to ASTM D 1785.

Pipe Supports: Pipe supports shall be galvanized A36 steel, made to the dimensions as shown on the Contract Drawings. Shop drawings shall be provided before fabricating.

Construction Methods:

All construction shall be in accordance with the Contract drawings and specifications and as directed by the Engineer.

Sequence of Operations. Prior to any construction, the Contractor shall first submit a written sequence of operations for approval by the Engineer. The Contractor shall coordinate the sanitary service disruption with CTDOT.

Maintenance and Protection of Traffic. All work shall be in accordance with "Article 1.08.04—Limitation of Operations" and "Item #0971001A – Maintenance and Protection of Traffic", contained elsewhere in these specifications.

Installation of Ductile Iron Pipe. Whenever the existing or new pipes require cutting, an approved saw, wheel or hydraulic cutter shall be used, and the pipe end shall be properly cleaned and prepared to accept the appropriate mechanical joint fitting. All pipe fittings shall be mechanical joints unless directed otherwise.

Hydrostatic Testing. Leakage testing shall be completed to the satisfaction of the Engineer. If it appears that one or more leaks may be present, the Engineer may order the pipeline subject to a leakage test with water under the appropriate hydrostatic head.

The Contractor shall furnish all labor, supervision, materials and equipment necessary for leakage testing, and shall be responsible for any damage to the pipeline or adjoining property due to the test(s).

Electric Heat Tracing with Thermostat. Electric heat tracing, one active plus one spare, shall be attached to the sewer pipe as shown on the Contract Drawings, in accordance with the manufacturer's specifications or as directed by the Engineer. The heat tracing with spare, shall be placed on the bottom sides of the 4-inch diameter horizontal run of pipe as shown on the Contract Drawings. To provide increased heat at the pipe joints, the run of heat tracings shall be looped at all pipe joints. Said loop radii shall not violate the minimum bending radius of the heat trace. Heat tracing shall be properly terminated at end of run. Testing shall be conducted prior to applying insulation.

The new thermostat, with security lock, shall be located in the bridge Control House and be properly anchored, grounded and connected to the power service as directed by the Engineer. The heat tracing and spare shall be shielded or placed in approved conduit from the thermostat to below ground. The heat tracing shall be functional beginning 6 inches inside the bridge Control House and ending at the face of Abutment #1. The thermostat bulb shall be attached to the pipe in accordance with the manufacturer's specifications, as shown on the Contract Drawings or as directed by the Engineer.

Removal of Existing Sanitary Sewer Service Connection. The Contractor shall furnish and employ such shores, braces, sheeting, pumps, etc., as may be necessary for the protection of property, proper completion of the work, and the safety of the public and employees of the Contractor and the Department. All items shall be removed when no longer required for the construction or safety of the work.

Method of Measurement:

This work, 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 price for "Sanitary Sewer Reconstruction", complete and accepted. Said price shall include removing and proper disposal of the existing sanitary sewer service connection, all necessary pumping and transporting of sewage, furnishing and installing the new sanitary sewer service connection and appurtenances, and all equipment, tools, access to the work and labor incidental thereto.

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

- General Permit for Coastal Maintenance Approved: September 19, 2018

 - USCG Letter of Approval for Temporary Approved: September 7, 2018
 Deviation from Regulatory Schedule of Opening

 - Flood Management General Certification Approved: August 21, 2018
-
- **Construction Contracts - Required Contract Provisions (FHWA Funded Contracts)**



Eligibility Determination Form

DEEP General Permit for Coastal Maintenance

DEEP-OLISP-GP-2015-02

Authorization under this permit does not obviate the need for other State or Federal Permits as may be required for the proposed activities.

Project Number: 173-462 Bridge Number: 02295 Waterway: Norwalk River

Location (Route/Town): Route 136 over Norwalk River in Norwalk, Connecticut

Brief Project Description: Rehabilitation of

Office: CE Design-Bridge

Contact: Barak Brako Frempong, Barak.Brako.Frempong@ct.gov, 860-594-3167

The above referenced project has been determined to be eligible for Authorization under the *General Permit for Coastal Maintenance Section 3(a)(5)* "maintenance activities performed on certain Department of Transportation infrastructure". This determination has been made by the Office of Environmental Planning, Water/Natural Resources Unit.

Project activities which are eligible for coverage under this Authorization under Section 3(a)(5) are:

- A – Bridge Deck Drains
- B – Bridge Painting
- C – Bridge Mechanical, Electrical, and Operational Repairs
- D – Bridge Superstructure
- E – Bridge Decks
- F – Bridge Supports
- G – Bridge Scour
- H – Walls & Abutment
- I – Pipes & Culverts
- J – Outlet Protection
- K – Shoreline Protection (required post-construction as-built survey)
- L – Access
- M – Rail Infrastructure

Required Coordination

Fisheries Coordination/Concurrence date: No coordination required, no in-water work

Special Requirements:

U.S. Coast Guard Coordination date: September 7, 2018 (Construction Letter)

Special Requirements:

NDDB Coordination: Species identified: No negative impact, NDDB Determination Letter, dated May 22, 2018

Special Requirements

As built survey required within 90 days of project completion

Special Conditions

SPECIAL CONDITIONS FOUND IN SECTION 5(e) ITEMS 1-19 ARE DIRECTLY APPLICABLE TO THIS AUTHORIZATION AND THE CONTRACT SHALL INCORPORATE CONTRACT ITEMS/SPECIAL PROVISIONS AS NECESSARY TO MEET THE REQUIRED CONDITIONS.

OEP Staff Certification:

Michael J. Salter

Digitally signed by Michael J. Salter
DN: cn=Michael J. Salter, o=Connecticut Department of
Transportation, ou=Office of Environmental Planning, Water &
Natural Resources Unit, email=Michael.Salter@ct.gov, c=US
Date: 2018.09.13 14:43:36 -0400

District Reporting Requirement: Each District is responsible for the yearly reporting of Construction Projects authorized under this General Permit. Reporting is to be made to the Office of Environmental Planning, Water/Noise Compliance Unit on forms prescribed by that Office.

General Permit for Coastal Maintenance

DEEP-OLISP-GP-2015-02

Issuance Date: October 26, 2015
Expiration Date: October 26, 2035

Bureau of Water Protection and Land Reuse
Office of Long Island Sound Programs
860-424-3034

General Permit for Coastal Maintenance

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General Permit for Coastal Maintenance

Section 1. Authority

This general permit is issued under the authority of section 22a-361(d) of the General Statutes.

Section 2. Definitions

As used in this general permit:

“Adverse impacts on coastal resources” means adverse impacts on coastal resources as defined by section 22a-93(15) of the General Statutes.

“Ancillary structures” means structures which facilitate boating access or support including utility lines such as fuel, waste, water, electric and cable, and berthing devices such as bollards, cleats, dock hooks, fenders and davits.

“Approval of registration” means an approval of registration issued under Section 4 of this general permit.

“Authorized activity” means any activity authorized by this general permit.

“Backflow prevention structure” means a device such as a flap gate or duck bill that allows water to drain out from a closed water discharge system and prevents backflow of tidal water into a closed water discharge system.

“Beach grading” means the redistribution and regrading of on-site beach sand between mean low water and the coastal jurisdiction line without the nourishment or addition of any off-site beach sand or other material.

“Beach raking” means the use of motorized equipment and any associated implements on a beach below the coastal jurisdiction line for the purpose of removing macroalgae, stones, shells or other natural or unnatural debris.

“Boat launch infrastructure” means boat launch ramps, docks, gangways, approaches, aprons, drainage structures, erosion control, pavement or any other structures or features associated with the launching of vessels at public boat launch facilities.

“Boating access or support” means moorings, fixed or floating docks, gangways or piles specifically utilized for the following recreational activities: berthing, accessing, loading, repairing, launching, hauling, fueling or discharging waste from boats.

“Catch basin” means a stormwater system structure in which grit, sand, sediment or debris is collected.

“Catch basin cleaning” means removal of grit, sand, sediment or debris from a catch basin by use of a vacuum, backhoe, shovel, or other device.

“Closed water discharge system” means a piping system that discharges stormwater

originating from an upland area to an area below the coastal jurisdiction line and is not connected on the landward side to any tidal wetlands.

“Coastal habitat creation” means to bring into existence a habitat that was not historically supported at the site in question including the conversion of an existing habitat in favor of a new habitat.

“Coastal habitat enhancement” means the intentional alteration of a habitat to improve one or a very limited number of functions of the existing habitat type.

“Coastal jurisdiction line” means coastal jurisdiction line as defined by section 22a-359(c) of the General Statutes.

“Coastal resources” means coastal resources as defined by section 22a-93(7) of the General Statutes.

“Coastal restoration activities” means the intentional alteration of a site to reestablish the approximate biogeophysical conditions that existed in the predisturbance ecosystem or habitat and, for the purposes of this general permit, shall include coastal habitat creation and coastal habitat enhancement. Such activities include, but are not limited to, open marsh water management activities, ditching, pond creation, raising marsh surface elevation, mowing, planting, removal of vegetation, the placement, repair or removal of tide regulating structures, and the installation or repair of fish bypass systems.

“Commissioner” means commissioner as defined by section 22a-2(b) of the General Statutes.

“Cultch” means a substrate appropriate for larval oyster attachment, consisting of gravel or shell material.

“Day” means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day thereafter.

“Department” means the department of energy and environmental protection.

“Department of Energy and Environmental Protection maintenance activities” means repair or replacement of certain appurtenances and facilities associated with the launching or retrieving of boats at State launches.

“Department of Transportation maintenance activities” means rehabilitation, repair, replacement of state-owned and maintained transportation infrastructure and appurtenances such as highways, roadways, bridges, and railways, and associated supporting and protective structures integral to the use and functionality of such infrastructure including, but not limited to, temporary accessways, stormwater-related structures, bridge piers, decks and abutments, mechanical, electrical or operational structures or workhouses.

“Derelict structure” means any flotsam, structure or vessel, or component thereof, that has been abandoned or deserted, is no longer capable of functioning as intended, or is impeding navigation.

“Dock” means an elevated or floating structure comprised of an open fixed pile-supported pier, gangway, or float, or any part or combination thereof, including all associated previously authorized boating-related appurtenances or features including but not limited to piles or pile clusters, boatlifts, utilities, or wave-attenuating devices.

“Individual permit” means a permit or certificate of permission issued to a named permittee under section 22a-361, section 22a-363b, or 22a-32 of the General Statutes.

“Existing inhabited structure” means a house, dwelling, or abode which was in use prior to the effective date of this general permit.

“FEMA” means the Federal Emergency Management Agency.

“FEMA standards” means municipal flood hazard or floodplain ordinances or regulations, approved by FEMA to allow participation of the municipality in the National Flood Insurance Program under the provisions of 44 CFR parts 59 and 60.

“Intertidal flats” means intertidal flats as defined by section 22a-93(7)(D) of the General Statutes.

“Harbormaster” means a harbormaster or deputy harbormaster appointed pursuant to section 15-1 of the General Statutes.

“Licensed shellfish operator” means a person licensed by the commissioner of agriculture to take, harvest, cultivate, produce oysters or other shellfish pursuant to Chapter 491 of the General Statutes.

“Marina boundary” means an area within which reconfiguration activities may occur and which has been established by the commissioner by connecting with straight lines the terminating point of existing authorized in-water boating-access structures including fixed or floating docks, gangways and piles, but excluding dredge footprints, vessels, mooring buoys, navigational markers and property lines.

“Marina reconfiguration” means the placement, replacement, removal or relocation of moorings, fixed or floating docks, piles, ladders, gangways, or finger piers and ancillary structures within an established marina boundary for boating access or support or for seasonal storage of such structures subject to the conditions of this general permit.

“Mean high water” means the average of all high water heights observed over the National Tidal Datum Epoch.

“Mean low water” means the average of all low water heights observed over the National Tidal Datum Epoch.

“Mooring boundary” means an area within which reconfiguration activities may occur and which is established by the commissioner by connecting with straight lines the perimeter of

existing in-water mooring buoys, but excluding dredge footprints, vessels, mooring swing radii, navigational markers, and property lines.

“Mooring reconfiguration” means the placement, replacement, removal or relocation moorings, within an established mooring boundary for boating access or support, exclusive of fixed and floating docks.

“Municipality” means a city, town or borough of the state.

“Non-commercial” means a structure which is (1) not rented and no other charge by the permittee is made for its use or maintenance; and (2) is not operated, maintained, or used by any for-profit entity.

“Order” means any consent order, removal order, cease and desist order, or any other enforcement action taken by the commissioner under authority of sections 22a-6, 22a-7, 22a-108, 22a-178, 22a-181, 22a-225, 22a-428, 22a-430, 22a-431, 22a-432, 22a-433, or 22a-449 of the General Statutes, or under any authority available by law or any enforcement action taken by the U.S. Army Corps of Engineers (“Corps”) or the U.S. Environmental Protection Agency (“EPA”); or any order entered by a state or federal court of competent jurisdiction pursuant to an enforcement action taken by the commissioner, the Corps, or EPA.

“Permittee” means any person or municipality to which the commissioner has issued an approval of registration under this general permit.

“Person” means person as defined by section 22a-2(c) of the General Statutes.

“Prior authorization” means a permit, certificate of permission, or approval of general permit registration issued by the State of Connecticut under section 22a-32, 22a-361, 22a-361(d), or 22a-363b of the General Statutes which was issued before the date of submission of a registration under this general permit.

“Registrant” means a person who or municipality which files a registration pursuant to Section 4 of this general permit.

“Registration” means a registration form filed with the commissioner pursuant to Section 4 of this general permit.

“Remedial activity” means any dredging, construction, placement of fill, obstruction or encroachment or work incidental thereto, or any other work the purpose of which is to restore a site or habitat to its natural condition, to correct a violation of law, to remove an unauthorized structure, fill, obstruction or encroachment, or to conduct remediation as defined by section 22a-133k-1 of the Regulations of Connecticut State Agencies.

“Removal of derelict structure” means the physical removal of derelict structures using hand-held tools or mechanical equipment.

“Repointing” means filling by hand, using hand-held equipment, cracks or weak spots in a seawall with mortar or small stones without increasing the waterward encroachment of the

seawall.

“*Seawall*” means any dry stone or concrete structure, including bulkheads, retaining walls and riprap revetments, the purpose or effect of which is to prevent upland materials from slumping or otherwise entering the area waterward of the coastal jurisdiction line. The term does not include steel, timber, or plastic sheet pile, railroad ties or concrete blocks.

“*Site*” means geographically contiguous land or water on which an authorized activity takes place or on which an activity for which authorization is sought under this general permit is proposed to take place. Non-contiguous land or water owned by the same person and connected by a right-of-way which such person controls and to which the public does not have access shall be deemed the same site.

“*Skim coating*” means, a layer of coating, applied by hand using hand-held equipment, to the face of a seawall not exceeding one inch in thickness.

“*Temporary access of construction vehicles or equipment*” means operation of construction vehicles or heavy equipment, including active equipment or material loading or off-loading via barge, within areas below the coastal jurisdiction line for the purposes of accessing, supporting, or conducting work above the coastal jurisdiction line and otherwise unregulated pursuant to section 22a-361 of the General Statutes.

“*Tidal wetlands*” means wetland as defined by section 22a-29(2) of the General Statutes.

“*Watercourse*” means watercourse as defined by section 22a-38 of the General Statutes.

Section 3. Authorization Under This General Permit

(a) *Eligible Activities*

Provided the requirements of Section 3(b) of this general permit are satisfied, this general permit authorizes the following activities:

- (1) establishment of a marina boundary and reconfiguration within such boundary, or the establishment of a mooring boundary and reconfiguration within such boundary;**
- (2) remedial activities which have been required by an order as defined in this general permit;**
- (3) modification of an existing inhabited structure which is located in whole or in part waterward of the coastal jurisdiction line and landward of mean high water for the purposes of conforming such structure to FEMA standards;**
- (4) reconstruction of a legally existing structure, obstruction or encroachment which was installed pursuant to a prior authorization and which exists in a serviceable state; and (b) removal of debris and reconstruction of a legally existing structure, obstruction or encroachment which has been damaged or destroyed by a casualty loss**

not more than one calendar year prior to the date of submission of the registration required in Section 4(a) of this general permit;

(5) maintenance activities performed on certain existing Department of Transportation infrastructure as follows:

- (A) Bridge Deck Drains.** Repair, rehabilitation, replacement and cleaning of bridge deck drains, scuppers and weeps, including the removal of accumulated sediment;
- (B) Bridge Painting.** Preparation of steel and painting including the placement of containment devices upon bridges;
- (C) Bridge Mechanical, Electrical and Operational Repairs.** Rehabilitation or replacement of appurtenances necessary for bridge safety and operation including lighting, fixtures, mechanical or electrical rooms or boxes, catenary support and wires, and signals and signal boxes;
- (D) Bridge Superstructure.** Rehabilitation, rinsing, repair or replacement of bridge superstructure components such as steel or timber members, plates or hardware, or bridge bearings, or the full bridge superstructure;
- (E) Bridge Decks.** Repair, rehabilitation or replacement of bridge decks membrane and bituminous wearing surfaces, joints, rails, ties, and fencing or other protective systems;
- (F) Bridge Supports.** Repair concrete superstructure or substructure elements including spalling, repointing or grouting of concrete, repairs to the joints, and application of protective coating;
- (G) Bridge Scour.** Manually placing grout bags within or immediately adjacent to the footprint of bridge substructure;
- (H) Walls and Abutments.** Repair of concrete wingwalls, endwalls or bridge abutments and pipe repair or replacement of such structures associated with such necessary wingwall, endwall or abutments;
- (I) Pipes and Culverts.** Removal of pipes and culverts, including the creation of open channels associated with the removal of such pipes and culverts;
- (J) Outlet Protection.** Repair, rehabilitation or expansion of an existing splash pad or plunge pool associated with an existing stormwater outfall or the installation of a new splash pad or plunge pool associated with the removal of a pipe or culvert;
- (K) Shoreline Protection.** Repair of previously protected shorelines

including riprap and stone armoring including shaping, regrading, placement of bedding material and riprap or armor stone to the pre-existing contours, and repair of seawalls to pre-existing conditions including repointing, patching, resetting stones, and applying a skim coat to the face of the seawall;

- (L) **Access.** Installation and use of low-impact temporary access structures including scaffolding, low ground pressure equipment, elevated trestle, scaffolding, ladders, and construction mats; and
- (M) **Rail Infrastructure.** Repair, rehabilitation or replacement of ballast, ties, rails, catenary towers and wires, signal cable tray, signal conduits, signal box and foundation, and electrical substations.

- (6) **beach grading or beach raking conducted in the area between mean low water and the coastal jurisdiction line;**
- (7) **removal of derelict structures;**
- (8) **placement of cultch;**
- (9) **minor repair to seawalls including patching concrete, repointing mortar between stones, resetting fallen stones and applying a skim coat to the face of the seawall;**
- (10) **catch basin cleaning;**
- (11) **repair or replacement of a backflow prevention structure on a closed water discharge system;**
- (12) **coastal restoration activities including coastal habitat creation and coastal habitat enhancement;**
- (13) **temporary access of construction vehicles or equipment; and**
- (14) **maintenance activities performed on certain existing Department of Energy & Environmental Protection boat launch infrastructure as follows:**
 - (A) **repair, replacement or repositioning of concrete planks, concrete panels, or interlocking blocks;**
 - (B) **repair or replacement of bituminous concrete;**
 - (C) **replacement or removal of gravel, stone or riprap material; and**
 - (D) **repair of trench drains, drainage systems, or erosion protection.**

Any discharge of water, substance or material into the waters of the state other than

the one specified in this section is not authorized by this general permit, and any person who or municipality which initiates, creates, originates or maintains such a discharge must apply for and obtain authorization under section 22a-430 of the General Statutes prior to the occurrence of such discharge.

(b) *Requirements for Authorization*

This general permit authorizes each of the activities listed in Section 3(a) of this general permit provided:

(1) Registration

A completed registration with respect to the activities identified in Section 3(a)(1), 3(a)(2), or 3(a)(3) of this general permit has been filed with the commissioner and the commissioner has issued an approval of registration with respect to such activity.

Or

A completed registration with respect to the activities identified in Section 3(a)(4) of this general permit has been filed with the commissioner.

Or

No registration is required with respect to activities identified in Section 3(a)(5) through Section 3(a)(14) of this general permit.

(2) Coastal Area Management

Such activity is consistent with all-applicable goals and policies in section 22a-92 of the General Statutes, and will not cause adverse impacts to coastal resources as defined in section 22a-93 of the General Statutes.

(3) Endangered and Threatened Species

Such activity does not threaten the continued existence of any species listed pursuant to section 26-306 of the General Statutes and will not result in the destruction of adverse modification of habitat designated as essential to such species.

(4) Aquifer Protection

Such activity, if it is located within an aquifer protection area as mapped under section 22a-354b of the General Statutes, complies with regulations adopted pursuant to section 22a-354i of the General Statutes.

(5) Conservation and Preservation Restrictions

Such activity, if located on or may affect property subject to a conservation or preservation restriction, complies with section 47-42d of the Connecticut General Statutes, by providing the following to the commissioner: proof of written notice to the holder of such restriction of the proposed activity's registration pursuant to this general permit or a letter from the holder of such

restriction verifying that the proposed activity is in compliance with the terms of the restriction.

(6) Flood Management

Such activity shall be consistent with all applicable standards and criteria established in sections 25-68d(b) of the General Statutes and sections 25-68h-1 through 25-68h-3, inclusive, of the Regulations of Connecticut State Agencies.

(c) ***Geographic Area***

This general permit applies throughout the tidal, coastal and navigable waters of the State of Connecticut and, where not explicitly disallowed, in tidal wetlands.

(d) ***Effective Date and Expiration Date of this General Permit***

This general permit is effective on the date it is issued by the commissioner and expires twenty (20) years from such date of issuance.

(e) ***Effective Date of Authorization***

Any activity identified in section 3(a)(1), 3(a)(2) and 3(a)(3) of this general permit is authorized by this general permit on the date the commissioner issues a written approval of registration with respect to such activities.

Any activity identified in Section 3(a)(4) of this general permit is authorized on the date the commissioner receives a completed registration with respect to such activity which meets the requirements of Section 4 of this general permit.

Any activity identified in Sections 3(a)(5) through 3(a)(14) of this general permit is authorized by this general permit effective on the date this general permit becomes effective, or on the date the activity is initiated, whichever is later.

(f) ***Transition to and from an Individual Permit***

No person shall operate or conduct an activity authorized by both an individual permit and this general permit. The requirements for transitioning authorization are as follows:

(1) ***Transition from an Individual Permit to Authorization under this General Permit.*** If an activity meets the requirements of authorization of this general permit and such operation or activity is presently authorized by an individual permit, the permittee may seek a modification to the permit to exclude such operation or activity from the individual permit or if the operation or activity is the sole operation or activity authorized by such permit, the permittee shall surrender its permit in writing to the commissioner. In either event, such permittee's individual permit shall continue to apply and remain in effect until authorization of such operation or activity under this general permit takes effect.

(2) ***Transition from Authorization under this General Permit to an Individual Permit*** If an activity or operation is authorized under this general permit and the commissioner subsequently issues an individual permit for the same activity,

then on the date any such individual permit is issued by the commissioner, the authorization issued under this general permit shall automatically expire.

Section 4. Registration Requirements

(a) *Who Must File a Registration*

Any person or municipality seeking under the authority of this general permit to conduct work set forth in Section 3(a)(1) through 3(a)(4) of this general permit, shall file with the commissioner:

- (1) A registration form which meets the requirements of Section 4 of this general permit; and
- (2) The applicable fee.

(b) *Scope of Registration*

A registrant shall register each activity for which the registrant seeks authorization under this general permit on a separate registration form.

(c) *Contents of Registration*

(1) Fees

(A) Fee Schedule

- i. For work pursuant to Sections 3(a)(1) and 3(a)(2) of this general permit, the registration fee of \$700.00 shall be submitted with a registration form.
- ii. For work pursuant to Section 3(a)(3) of this general permit, the registration fee of \$100.00 shall be submitted with the registration form.
- iii. For work pursuant to Section 3(a)(4) of this general permit, above, the registration fee of \$300.00 shall be submitted with the registration form.
- iv. The registration shall not be deemed complete and no activity shall be authorized by this general permit unless the registration fee has been paid in full.
- v. The registration fee shall be paid by check or money order payable to the **Department of Energy and Environmental Protection**.

(B) The registration fee is non-refundable.

(2) Registration Form

A registration shall be filed on forms prescribed and provided by the commissioner.

(d) *Where to File a Registration and Other Related Documents*

A registration shall be filed with the commissioner at the following address:

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

(e) *Notification of Harbor Management Commission*

Where applicable, a copy of the registration shall be submitted to the harbor management commission in the town where the work is proposed at the time the registration is filed with the commissioner.

(f) *Additional Information*

The commissioner may require a registrant to submit additional information, which the commissioner reasonably deems necessary to evaluate the consistency of the subject activity with the requirements for authorization under this general permit.

(g) *Action by Commissioner*

- (1) The commissioner may reject without prejudice a registration if it is determined that it does not satisfy the requirements of Section 4(c) of this general permit or more than thirty (30) days have elapsed since the commissioner requested that the registrant submit additional information or the required fee and the registrant has not submitted such information or fee. Any registration refiled after such a rejection shall be accompanied by the fee specified in Section 4(c)(1) of this general permit.
- (2) The commissioner may disapprove a registration if it is found that the subject activity is inconsistent with the requirements for authorization under Section 3 of this general permit, or for any other reason provided by law.
- (3) Disapproval of a registration under this subsection shall constitute notice to the registrant that the subject activity may not lawfully be conducted or maintained without the issuance of an individual permit.
- (4) The commissioner may approve a registration with reasonable conditions. If the commissioner approves a registration with conditions, the permittee shall be bound by such conditions as if they were a part of this general permit.
- (5) Rejection, disapproval, or approval of a registration shall be in writing.

Section 5. Conditions of This General Permit

The permittee shall at all times continue to meet the requirements for authorization set forth in Section 3 of this general permit. In addition, a permittee shall assure that activities authorized by this general permit are conducted in accordance with the following conditions:

(a) *Special Conditions for MARINA AND MOORING FIELD RECONFIGURATION authorized in Section 3(a)(1) of this general permit.*

- (1) Registrant for such reconfiguration is a yacht club or marina whose slips are entirely open for public use by membership or rental.
- (2) Such activities are not located on or over tidal wetlands or intertidal flats.
- (3) Such activities do not increase the number of berthing or mooring slips at the facility by more than 5% in any calendar year.
- (4) Such activities and any vessels berthed or moored to such reconfigured structures or moorings shall not interfere with the access to any riparian or littoral property and shall be placed and maintained within any established marina or mooring field boundary.
- (5) Prior to any such reconfiguration, the registrant must demonstrate that all regulated in-water structures are authorized by the State and are in compliance with such authorizations, as applicable.
- (6) Such activities shall include only structures used for boating access or support. Such activities shall not include structures such as offices, residences, restaurants, concessions, gazebos, viewing platforms, workshops, patios, or storage facilities, or other walled or roofed structure such as attendant shed, marina office, or other building.
- (7) Such activities shall not include the construction, installation, relocation, or modification of any wave-attenuating structures.
- (8) Such activities shall not include the construction or installation of any docks wider than the widest docks of the similar function previously authorized nor shall it include the installation of any gangways wider than the widest gangways previously authorized.
- (9) Such activities shall not include dredging, the placement of fill, or the installation of other structures not specifically authorized herein, including but not limited to seawalls, riprap, bulkheads, and travel lifts.
- (10) The placement of fixed piers or floating docks within any mooring boundary is prohibited under this general permit.
- (11) Any fixed piers or floating docks, in a marina boundary, shall be constructed in a manner that does not unreasonably restrict access to or along lands and waters waterward of mean high water.
- (12) Any fixed piers or floating docks, in a marina boundary, shall be designed to allow most wave and water current energy to pass through or under such

structure.

- (13) Any fixed pier, in a marina boundary, shall utilize the minimum number of pilings necessary, consistent with safety and resource protection considerations, and where feasible shall utilize large spans on fewer pilings rather than smaller spans on more pilings.
- (14) The permittee shall notify the commissioner of the commencement of any work authorized by the approval of registration no later than three days before commencing such work and shall notify the commissioner in writing of the completion of such work no later than seven days after such completion.

(b) *Special Conditions for REMEDIAL ACTIVITIES authorized in Section 3(a)(2) of this general permit.*

- (1) Such remedial activity has been required under an order as defined in Section 2 of this general permit requiring the permittee to conduct such remedial activity.
- (2) The permittee shall notify the commissioner of the commencement of any work authorized by the approval of registration no later than three days before commencing such work and shall notify the commissioner in writing of the completion of such work no later than seven days after such completion.

(c) *Special Conditions for RESIDENTIAL FLOOD HAZARD MITIGATION authorized in Section 3(a)(3) of this general permit.*

- (1) Prior to the commencement of work, the registrant shall obtain all other legally required authorizations applicable to such activity, including without limitation a building permit issued pursuant to section 8-3 of the General Statutes, a coastal site plan approval pursuant to sections 22a-105, 22a-106, or 22a-109 of the General Statutes, or a variance issued pursuant to section 8-6 of the General Statutes.
- (2) The sole purpose and effect of such activity is to conform an existing inhabited structure with applicable FEMA standards. Such activity may include, without limitation, elevating the subject structure and installing break-away walls, or other activities consistent with residential floodproofing standards.
- (3) No activity authorized herein shall result in the conversion of a dwelling from seasonal to year-round use, or in any other expansion or alteration of use of the subject structure.
- (4) Such activity shall not be construed as authorizing the construction or maintenance of any shoreline flood and erosion control structure as defined by section 22a-109(c) of the General Statutes.
- (5) Such activity does not create any further waterward encroachment of any structure, or the expansion of the subject structure's floor area, living space, or the addition of appurtenances such as decks or porches.

- (6) Such activity is not located waterward of mean high water or on or over tidal wetlands.
 - (7) The registrant shall comply with the standards and requirements set forth in section 25-68b through 25-68h of the General Statutes, as applicable.
- (d) ***Special Conditions for RECONSTRUCTION authorized in Section 3(a)(4) of this general permit.***
- (1) Such reconstruction is limited to the reconstruction of a structure, obstruction or encroachment which has been the subject of a prior authorization. This authorization explicitly does not apply to “grandfathered” or previously unauthorized structures that exist without the benefit of a prior authorization.
 - (2) Unless otherwise authorized in writing by the commissioner, such reconstruction activity shall be in-kind and in-place conforming to the siting, layout, design, materials and structural components as set forth in the prior authorization. The permittee shall not deviate from said authorization without prior written approval of the Commissioner.
 - (3) Such reconstruction shall be conducted in accordance with the requirements for authorization set forth herein and in accordance with any applicable terms and conditions set forth in the prior authorization.
 - (4) Prior to any reconstruction activity, the permittee shall obtain site plans signed and sealed by a professional engineer or land surveyor licensed in the State of Connecticut showing both the pre-construction site conditions and structures and the proposed site conditions and structures.
 - (5) The contractor(s) shall, whenever work is being performed, maintain a copy of the plans referenced above on the work site and make such plans available for inspection.
 - (6) Prior to any reconstruction activity, the permittee shall take site photographs documenting the pre-construction conditions.
 - (7) Such reconstruction does not apply to any dredging, regrading, fill or any other activities which restore or modify grades, depths, slopes, contours, tidal elevations or property boundaries.
 - (8) Such reconstruction does not apply to any groins or jetties.
 - (9) Such reconstruction does not apply to oversheeting of bulkheads.
 - (10) Any reconstruction activity of flood and erosion control structures is prohibited in areas of tidal wetlands.
 - (11) Any reconstruction activity of flood and erosion control structures which

increases the top elevation is prohibited.

- (12) Any reconstruction activity of docks that occur in areas of tidal wetlands shall be conducted such the lowest horizontal member of such fixed pier is no lower than five (5) feet off the surface of any underlying wetland areas, except if the previous authorization indicates such horizontal member is required to be constructed at a greater elevation.
 - (13) Any reconstruction activity which proposes minor modifications or engineering improvements to flood and erosion control structures, without modifying the footprint of such structure, may be allowable provided that the permittee provides a narrative of such changes and a copy of the pre-construction and proposed site conditions plans with the registration filed pursuant to Section 4 of this general permit. Such modifications or improvements may include but are not limited to weep holes, footings, tie-backs, or returns. Approval for such modifications will be made at the sole discretion of the Commissioner and the permittee will be notified in writing of such decision.
 - (14) Not later than five days prior to the commencement of work authorized herein, the permittee shall notify the commissioner of the commencement of work unless otherwise authorized by the commissioner.
 - (15) Not later than 90 days after completion of any work authorized herein, the permittee shall prepare a Compliance Certification, a copy of which is attached to the registration form as Appendix A. Such Compliance Certification shall be completed by a professional engineer or land surveyor licensed in the State of Connecticut and shall be signed and sealed by such professional.
 - (16) Not later than 120 days after completion of any work authorized herein, the permittee shall submit: (1) the Compliance Certification; (2) a copy of the pre-construction and post-construction plans; and (3) a copy of the pre-construction site photographs.
 - (17) Such reconstruction shall be conducted only upon property owned by the permittee or the registrant shall submit written permission from the rightful property owner approving such activity with the registration filed pursuant to Section 4 of this general permit.
- (e) ***Special Conditions for DEPARTMENT OF TRANSPORTATION MAINTENANCE authorized in Section 3(a)(5) of this general permit.***
- (1) In conducting any Department of Transportation Maintenance activities, the permittee shall follow any applicable Best Management Practices, design manuals and materials specifications published, used or adopted by the Connecticut Department of Transportation.
 - (2) In conducting the work authorized herein, the permittee shall not cause permanent impacts to tidal wetlands associated with the installation of temporary or permanent structures, staging, or storage.

- (3) In conducting any bridge painting, preparation or cleaning activities authorized herein, the permittee shall install and utilize proper containment that prevents discharges into coastal waters or wetlands. The permittee shall ensure the containment system is in optimal operating condition until the work authorized herein is completed.
- (4) Any debris associated with any activity authorized herein, including sediment or debris from drains, scuppers or weeps; residue from scraping, sandblasting, abrading or painting, shall be collected and disposed of at an approved upland site applicable for such debris.
- (5) This authorization specifically does not allow for the increase of additional stormwater flows from the structures authorized herein.
- (6) The permittee shall stage any barges employed to complete the work authorized herein such that no more than 50% of the channel beneath any bridge is impeded at any time.
- (7) Any debris containment systems employed by the permittee shall be designed so as to prevent impacts to navigation. Prior to commencement of work, the permittee shall obtain Advance Approval by the U.S. Coast Guard, when applicable.
- (8) The full superstructure replacement authorized herein shall not include the replacement of existing bridge piers or foundations or construction of new bridge piers or foundations, nor shall it include any expansion of the width of any superstructure that could increase the volume of stormwater associated with such work.
- (9) Unless otherwise authorized in writing by the commissioner, the permittee, prior to the commencement of any bridge scour repair, shall install turbidity curtains or other appropriate containment extending from the water surface to the substrate around the work area. Such curtains shall be maintained in optimal operating condition until project completion at which time the erosion and sediment controls shall be removed to an upland location.
- (10) Prior to the installation of any grout bags, the permittee shall consult with Department of Energy & Environmental Protection Inland Fisheries Division regarding necessary project modifications or restrictions to protect fisheries resources. Any such modifications or restrictions become binding.
- (11) The permittee shall install any grout bags by hand. Such grout bags shall be located within the footprint of the existing footing and shall not extend further than two feet from the face of such footing. Such grout bags shall be placed in such a manner that they do not pose any adverse impact to navigation or fish passage.
- (12) In conducting work to wingwalls, endwalls, abutments, pipes, culverts, outlet

protection, or other shoreline armoring the permittee shall work during periods of low flow and low tide so as minimize sedimentation and impacts to coastal resources.

- (13) In constructing any new outlet protection where a section of pipe has been removed, the permittee shall not exceed the area of the disturbance caused by the removal of the pipe.
 - (14) In conducting shoreline protection projects authorized herein, riprap or armoring shall not exceed the footprint of the protection originally in-place and shall be at the same grade and slope.
 - (15) Not later than 90 days subsequent to the completion of any shoreline protection project including rip rap, bedding material, or other shoreline armoring authorized herein, the permittee shall submit as-built drawings showing the project.
 - (16) In conducting any riprap work, the permittee shall place such riprap to its full course thickness in one operation to produce a reasonably well-graded slope without causing displacement of the underlying bedding material.
 - (17) Prior to the commencement of work authorized herein, the permittee has obtained approval from the commissioner from sections 25-68b through 25-68h, inclusive, of the General Statutes, and sections 25-68h-1 through 25-68h-3 of the Regulations of Connecticut State Agencies, inclusive, as applicable.
 - (18) Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground pressure or it shall be placed on construction mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. Construction mats are to be placed in the wetland from the upland or from equipment positioned on swamp mats if working within a wetland. Dragging construction mats into position is prohibited.
 - (19) Not later than January 15 of any year following a year in which the Department of Transportation conducted work under this general permit, the permittee shall submit a Project Report to the commissioner. The Project Report shall specify which projects, and which components of such projects, were conducted under this general permit, and a summary of the total number of times in the reporting year that the Department of Transportation conducted work under this general permit.
- (f) ***Special Conditions for BEACH GRADING and BEACH RAKING authorized in Section 3(a)(6) of this general permit.***
- (1) Unless otherwise authorized in writing by the Commissioner, all beach grading work authorized herein is prohibited between April 1st and September 15th, inclusive, of any year in order to protect spawning horseshoe crabs and nesting and migrating shorebirds.
 - (2) Unless otherwise authorized in writing by the Commissioner, any beach raking activity which uses motorized equipment or employs implements which

penetrate more than two inches is prohibited between May 10th and July 15th, inclusive, of any year in order to protect spawning horseshoe crabs. Surficial beach raking by hand may be conducted at any time.

- (3) Such beach grading or beach raking activities are not conducted in areas of tidal wetlands or intertidal flats.
 - (4) All structures located at or waterward of the coastal jurisdiction line on the site where such activities are proposed are authorized through an individual permit of this department and are in full compliance with such permit.
 - (5) Such beach grading or beach raking activities shall not be conducted in areas waterward of mean low water.
 - (6) In conducting such beach grading or beach raking activities, the permittee shall not store, stage, or operate any equipment in-water at any time.
 - (7) No work authorized herein shall impede access to any riparian or littoral property.
 - (8) No work authorized herein shall take place on any leased or managed shellfish bed.
 - (9) Any material including macroalgae, stones, shells or other natural or unnatural debris removed during beach raking activities shall be disposed of above the coastal jurisdiction line and outside of any tidal wetlands.
- (g) ***Special Conditions for DERELICT STRUCTURES authorized in Section 3(a)(7) of this general permit.***
- (1) Prior to the commencement of work authorized herein, the permittee must obtain written permission from the property owner if the permittee is not the property owner whereupon such activity is to be undertaken.
 - (2) Prior to the commencement of work authorized herein, the permittee shall install either (a) siltation curtains or (b) floating turbidity booms, if necessary, around the work area. Such curtains or booms shall be maintained in optimal operating condition until the work is completed and the area has stabilized.
 - (3) Such activity is prohibited between June 1st and September 30th, inclusive, of any year in order to protect spawning shellfish in the area unless otherwise authorized in writing by the commissioner.
 - (4) Any such activity which occurs in the intertidal zone shall only be conducted during periods of low water.
 - (5) Such activity shall not disturb, displace or destroy objects determined by the State of Connecticut Historic Commission to have historical significance.

(h) *Special Conditions for PLACEMENT OF CULTCH authorized in Section 3(a)(8) of this general permit.*

- (1) Such placement of cultch shall only be conducted by a licensed shellfish operator in beds or areas designated for shellfishing under section 26-194 or section 26-242 of the General Statutes.
- (2) Such placement of cultch shall be conducted only in appropriate locations for colonization by oysters, based upon factors of salinity, water quality, water circulation patterns and substrate composition.
- (3) Such placement of cultch shall not be conducted in areas of tidal wetlands or submerged aquatic vegetation beds.
- (4) Prior to the commencement of such placement of cultch, such licensed shellfish operator obtains all required authorizations from the Department of Agriculture Bureau of Aquaculture and Laboratory and the local shellfish commission, as applicable.
- (5) Prior to the commencement of such placement of cultch, such licensed shellfish operator obtains permission in writing from the owner or lessee of such shellfish bed or area.
- (6) Such placement of cultch shall be conducted in such a manner that it does not exceed a layer of cultch on the seafloor greater than 12” in depth.
- (7) Such placement of cultch shall be conducted such that the placement does not exceed 1,500 bushels per acre of seafloor.

(i) *Special Conditions for MINOR SEAWALL REPAIR authorized in Section 3(a)(9) of this general permit.*

- (1) Any minor seawall repair authorized herein may include patching concrete, repointing mortar between stones, resetting fallen stones, and applying a skim coating to the face of a seawall.
- (2) Any minor seawall repair authorized herein shall not include the waterward encroachment of the face of the existing wall nor shall it include a new footing waterward of the face of any existing footing.
- (3) Such seawall has been constructed in conformance with an individual permit issued by this department, or was installed prior to June 24, 1939, or installed in its entirety landward of mean high water prior to January 1, 1987, and has been continuously maintained and serviceable since such time.
- (4) No work authorized under this section shall consist of “substantial maintenance” as defined by 22a-363a of the General Statutes.
- (5) No work authorized herein shall measurably increase the height or extend any

lateral or waterward encroachment of the seawall.

- (6) Such seawall work shall only be conducted during periods of low water and shall be conducted by hand using hand-held equipment.

(j) *Special Conditions for CATCH BASIN CLEANING authorized in Section 3(a)(10) of this general permit.*

- (1) All waste resulting from the work authorized herein including but not limited to grit, sand, or other sediment or debris shall be removed from the area waterward of the coastal jurisdiction line and disposed of at an upland location in accordance with applicable law.
- (2) Sediment removal authorized herein shall not include removal of material located waterward of the waterward terminus of the pipe.
- (3) Activities such as flushing or power washing, or other similar activities that would create sedimentation or turbidity in the receiving waters is strictly prohibited.

(k) *Special Conditions for BACKFLOW PREVENTION STRUCTURES authorized in Section 3(a)(11) of this general permit.*

- (1) Such portion of the closed water discharge system has been constructed in conformance with an individual permit issued by this department, or was installed prior to June 24, 1939, or installed in its entirety landward of mean high water prior to January 1, 1987, and has been continuously maintained and serviceable since such time.

(l) *Special Conditions for RESTORATION ACTIVITIES authorized in Section 3(a)(12) of this general permit.*

- (1) Any restoration activities conducted under this authorization, except those consisting of the installation or repair of a fish bypass system, must be performed by, or under the direct supervision of, the department.
- (2) Any installation or repair of a fish bypass system which includes the removal or structural or functional modification of any dam, must be performed either by (a) the department; or (2) by a person who has consulted with department staff regarding project design and implementation. Any such person must implement recommendations made by department staff and shall retain a copy of such written consultation during construction at the construction site.
- (3) Any installation or repair of a fish bypass system which includes the removal or structural or functional modification of any dam, must have prior authorization under section 22a-403 of the General Statutes, as applicable.

(m) *Special Conditions for TEMPORARY ACCESS OF CONSTRUCTION*

VEHICLES OR EQUIPMENT authorized in Section 3(a)(13) of this general permit.

- (1) This authorization is only for active operation of vehicles or equipment. At no time shall such vehicles or equipment be stored below the coastal jurisdiction line.
- (2) No vehicles or equipment shall be operated within areas of tidal wetlands or below the mean low water line. No vehicles or equipment shall be operated in the water during periods of high water above the mean low water line.
- (3) No material including but not limited to fill, construction materials, excavated material or debris, shall be deposited, placed, or stored below the coastal jurisdiction line or within areas of tidal wetlands.
- (4) Any barges used for such work may only come ashore and be secured in place while actively loading or off-loading equipment and shall not be moored or spudded in place for longer than necessary for such loading or off-loading activities.
- (5) This authorization explicitly does not cover construction vehicles or equipment associated with work or other activities regulated pursuant to section 22a-361 or 22a-32 of the General Statutes.

(n) Special Conditions for MAINTENANCE OF DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION BOAT LAUNCH INFRASTRUCTURE authorized in Section 3(a)(14) of this general permit.

- (1) No work authorized herein shall occur in tidal wetlands.
- (2) Debris associated with any activity authorized herein shall be collected and disposed of at an approved upland site applicable for such debris.
- (3) Such maintenance activities are limited to boat launches which have been the subject of a prior authorization.
- (4) Such maintenance activities shall not include dredging or excavation of any sediments.
- (5) Except as may be explicitly authorized by the Commissioner, such maintenance activities shall be in-kind and in-place conforming to the siting, layout, design, materials and structural components as set forth in the prior authorization. Any riprap or armoring shall not exceed the footprint as was originally in-place and shall be to the same grade and slope.
- (6) Not later than January 15 of any year following a year in which the Department of Energy and Environmental Protection conducted work under this general permit, the permittee shall submit a Project Report to the commissioner. The Project Report shall specify which projects, and which components of such projects, were

conducted under this general permit, and a summary of the total number of times in the reporting year that the Department of Energy and Environmental Protection conducted work under this general permit.

(o) *General Construction and Use Conditions applicable to this General Permit.*

- (1) Prior to the commencement of any work authorized by this general permit or any approval of registration, the permittee shall provide copies of this general permit and any applicable approval of registration to any contractor employed to conduct such work and shall make such documents available for inspection at the site whenever work is being performed at the site.
- (2) No registrant or permittee shall initiate construction of any activity authorized herein prior to submission and approval of registration, as applicable, or prior to the submission of a Project Report, as applicable.
- (3) Any activity authorized herein shall be conducted in accordance with the site plans and drawings included with the approval of registration, as applicable.
- (4) Any barge utilized conducting any activity authorized herein, where allowed, shall not be stored over intertidal flats, submerged aquatic vegetation or tidal wetlands or in a location that interferes with navigation. In the event that any barge associated with the work authorized herein becomes grounded, no dragging or prop-dredging shall occur to free the barge.
- (5) Any activity authorized herein shall not be conducted such that it creates a hazard to or interferes with existing navigation uses in adjacent waterways. Such activities shall be setback from federal navigation channels and shall also be setback as prescribed in any harbor management plan approved pursuant to section 22a-113m of the General Statutes.
- (6) Such activities are, where applicable, consistent with a harbor management plan approved pursuant to section 22a-113m of the General Statutes.
- (7) The construction, installation, use or removal of any activity authorized herein shall not interfere with access or navigation to or from any riparian or littoral property.
- (8) The permittee shall maintain in good working condition all structures authorized under this general permit. Unless otherwise authorized in writing by the commissioner, the permittee shall remove from tidal, coastal or navigable waters of the state or tidal wetlands any structure or portions of structures which have been destroyed by any cause whether natural or man-made.
- (9) In the course of conducting any activity authorized herein, no person shall place any equipment or material, including fill, construction materials, construction debris or solid waste as defined in section 22a-207 of the General Statutes in any wetland or watercourse, nor use any wetland or watercourse as staging area except as explicitly authorized herein or in any approval of registration.

- (10) Upon completion of any work authorized herein, the permittee shall restore any area affected by, or used as a staging area in connection with, such activity to the condition of such area prior thereto.
- (11) Any debris associated with any activity authorized herein shall be removed from the area waterward of the coastal jurisdiction line and tidal wetlands and disposed of at an approved upland site applicable for such debris.
- (12) The permittee shall dispose of any solid waste, as defined in section 22a-207 of the General Statutes generated by the work authorized herein in accordance with all applicable law, including Chapters 446e and 446k of the General Statutes.
- (13) Any activity authorized herein shall be conducted so as to minimize adverse impacts to coastal resources and processes.
- (14) Any activity authorized herein shall be conducted so as to minimize adverse impacts to commercial and recreational fishing and shellfishing.
- (15) Any activity authorized herein shall not create an obstruction or hindrance that will have an adverse effect on the flood heights, flood carrying and water capacity of the waterways and floodplains.
- (16) Any activity authorized herein shall not adversely affect existing or designated uses of the waters of the state as defined in Connecticut's Water Quality Standards pursuant to section 22a-426 of the General Statutes.
- (17) In conducting any activity authorized herein, the permittee shall not cause or allow pollution, as defined in section 22a-423 of the General Statutes, including without limitation pollution resulting from erosion and sedimentation.
- (18) In undertaking the work authorized hereunder, the permittee shall not cause or allow pollution of wetlands or watercourses, including pollution resulting from sedimentation and erosion. For purposes of this permit, "pollution" means "pollution" as that term is defined by CGS section 22a-423.
- (19) Except as specifically authorized by this permit, the permittee shall establish a minimum of a 10 foot setback from any wetlands or watercourses in and adjacent to the area where work is to be conducted or areas which are to be used for access to the work area. Such setback area(s) shall be flagged so as to be readily identifiable by contractor personnel until the authorized work is completed.
- (20) Except as specifically authorized by this permit, no equipment or material, including but not limited to, fill, construction materials, excavated material or debris, shall be deposited, placed or stored in any wetland or watercourse on or off-site, or within any delineated setback area, nor shall any wetland, watercourse or delineated setback area be used as a staging area or access way other than as provided herein.

Section 6. General Conditions

(a) *Reliance on Registration*

When evaluating a registration, the commissioner relies on information provided by the registrant. If such information proves to be false or incomplete, the authorization issued under this general permit may be suspended or revoked in accordance with law, and the commissioner may take any other legal action provided by law.

(b) *Duty to Correct and Report Violations*

Upon learning of a violation of a condition of this general permit, a permittee shall immediately take all reasonable action to determine the cause of such violation, correct such violation and mitigate its results, prevent further such violation, and report in writing such violation and such corrective action to the commissioner within five (5) days of the permittee's learning of such violation. Such report shall be certified in accordance with Section 6(d) of this general permit.

(c) *Duty to Provide Information*

If the commissioner requests any information pertinent to the authorized activity or to determine compliance with this general permit, or with the permittee's approval of registration, the permittee shall provide such information in writing within thirty (30) days of such request. Such information shall be certified in accordance with Section 6(d) of this general permit.

(d) *Certification of Documents*

Any document, including but not limited to any notice, which is submitted to the commissioner under this general permit shall be signed by, as applicable, the registrant or the permittee in accordance with section 22a-430-3(b)(2) of the Regulations of Connecticut State Agencies, 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 thereto, and I 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. I understand that a false statement made 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.”

(e) *Date of Filing*

For purposes of this general permit, the date of filing with the commissioner of any document is the date such document is received by the commissioner. The word “day” as used in this general permit means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day thereafter.

(f) *False Statements*

Any false statement in any information submitted pursuant to this general permit 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.

(g) *Correction of Inaccuracies*

Within fifteen (15) days after the date a permittee becomes aware of a change in any of the information submitted pursuant to this general permit, becomes aware that any such information is inaccurate or misleading, or that any relevant information has been omitted, such permittee shall correct the inaccurate or misleading information or supply the omitted information in writing to the commissioner. Such information shall be certified in accordance with Section 6(d) of this general permit. The provisions of this subsection shall apply both while a request for approval of registration is pending and after the commissioner has approved such request.

(h) *Transfer of Authorization*

An approval of registration under this general permit is transferable only in accordance with the provisions of section 22a-60 of the General Statutes.

(i) *Other Applicable Law*

Nothing in this general permit shall relieve the permittee of the obligation to comply with any other applicable federal, state and local law, including but not limited to the obligation to obtain any other authorizations required by such law.

(j) *Other Rights*

This general permit is subject to and does not derogate any present or future rights or powers of the State of Connecticut and conveys no rights in real or personal property nor any exclusive privileges, and is subject to all public and private rights and to any federal, state, and local laws pertinent to the property or activity affected by such general permit. In conducting any activity authorized hereunder, the permittee may not cause pollution, impairment, or destruction of the air, water, or other natural resources of this state. The issuance of this general permit shall not create any presumption that this general permit should or will be renewed.

Section 7. Commissioner's Powers

(a) *Abatement of Violations*

The commissioner may take any action provided by law to abate a violation of this general permit, including the commencement of proceedings to collect penalties for such violation. The commissioner may, by summary proceedings or otherwise and for any reason provided by law, including violation of this general permit, revoke a permittee's authorization hereunder in accordance with sections 22a-3a-2 through 22a-3a-6, inclusive, of the Regulations of Connecticut State Agencies. Nothing herein shall be construed to affect any remedy available to the commissioner by law.

(b) **General Permit Revocation, Suspension, or Modification**

The commissioner may, for any reason provided by law, by summary proceedings or otherwise, revoke or suspend this general permit or modify it to establish any appropriate conditions, schedules of compliance, or other provisions which may be necessary to protect human health or the environment.

(c) **Filing of an Individual Permit Application**

If the commissioner notifies a permittee in writing that such permittee must obtain an individual permit to continue lawfully conducting the activity authorized by this general permit, the permittee may continue conducting such activity only if the permittee files an application for an individual permit within sixty (60) days of receiving the commissioner's notice. While such application is pending before the commissioner, the permittee shall comply with the terms and conditions of this general permit and the subject approval of registration. Nothing herein shall affect the commissioner's power to revoke a permittee's authorization under this general permit at any time.

Issued Date: October 26, 2015

Robert J. Klee
Commissioner

This is a true and accurate copy of the general permit executed on **October 26, 2015** by the Commissioner of the Department of Energy and Environmental Protection.

General Permit for Coastal Maintenance

DEEP-OLISP-GP-2015-02

Issuance Date: October 26, 2015
Expiration Date: October 26, 2035

Bureau of Water Protection and Land Reuse
Office of Long Island Sound Programs
860-424-3034

General Permit for Coastal Maintenance

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General Permit for Coastal Maintenance

Section 1. Authority

This general permit is issued under the authority of section 22a-361(d) of the General Statutes.

Section 2. Definitions

As used in this general permit:

“Adverse impacts on coastal resources” means adverse impacts on coastal resources as defined by section 22a-93(15) of the General Statutes.

“Ancillary structures” means structures which facilitate boating access or support including utility lines such as fuel, waste, water, electric and cable, and berthing devices such as bollards, cleats, dock hooks, fenders and davits.

“Approval of registration” means an approval of registration issued under Section 4 of this general permit.

“Authorized activity” means any activity authorized by this general permit.

“Backflow prevention structure” means a device such as a flap gate or duck bill that allows water to drain out from a closed water discharge system and prevents backflow of tidal water into a closed water discharge system.

“Beach grading” means the redistribution and regrading of on-site beach sand between mean low water and the coastal jurisdiction line without the nourishment or addition of any off-site beach sand or other material.

“Beach raking” means the use of motorized equipment and any associated implements on a beach below the coastal jurisdiction line for the purpose of removing macroalgae, stones, shells or other natural or unnatural debris.

“Boat launch infrastructure” means boat launch ramps, docks, gangways, approaches, aprons, drainage structures, erosion control, pavement or any other structures or features associated with the launching of vessels at public boat launch facilities.

“Boating access or support” means moorings, fixed or floating docks, gangways or piles specifically utilized for the following recreational activities: berthing, accessing, loading, repairing, launching, hauling, fueling or discharging waste from boats.

“Catch basin” means a stormwater system structure in which grit, sand, sediment or debris is collected.

“Catch basin cleaning” means removal of grit, sand, sediment or debris from a catch basin by use of a vacuum, backhoe, shovel, or other device.

“Closed water discharge system” means a piping system that discharges stormwater

originating from an upland area to an area below the coastal jurisdiction line and is not connected on the landward side to any tidal wetlands.

“Coastal habitat creation” means to bring into existence a habitat that was not historically supported at the site in question including the conversion of an existing habitat in favor of a new habitat.

“Coastal habitat enhancement” means the intentional alteration of a habitat to improve one or a very limited number of functions of the existing habitat type.

“Coastal jurisdiction line” means coastal jurisdiction line as defined by section 22a-359(c) of the General Statutes.

“Coastal resources” means coastal resources as defined by section 22a-93(7) of the General Statutes.

“Coastal restoration activities” means the intentional alteration of a site to reestablish the approximate biogeophysical conditions that existed in the predisturbance ecosystem or habitat and, for the purposes of this general permit, shall include coastal habitat creation and coastal habitat enhancement. Such activities include, but are not limited to, open marsh water management activities, ditching, pond creation, raising marsh surface elevation, mowing, planting, removal of vegetation, the placement, repair or removal of tide regulating structures, and the installation or repair of fish bypass systems.

“Commissioner” means commissioner as defined by section 22a-2(b) of the General Statutes.

“Cultch” means a substrate appropriate for larval oyster attachment, consisting of gravel or shell material.

“Day” means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day thereafter.

“Department” means the department of energy and environmental protection.

“Department of Energy and Environmental Protection maintenance activities” means repair or replacement of certain appurtenances and facilities associated with the launching or retrieving of boats at State launches.

“Department of Transportation maintenance activities” means rehabilitation, repair, replacement of state-owned and maintained transportation infrastructure and appurtenances such as highways, roadways, bridges, and railways, and associated supporting and protective structures integral to the use and functionality of such infrastructure including, but not limited to, temporary accessways, stormwater-related structures, bridge piers, decks and abutments, mechanical, electrical or operational structures or workhouses.

“Derelict structure” means any flotsam, structure or vessel, or component thereof, that has been abandoned or deserted, is no longer capable of functioning as intended, or is impeding navigation.

“Dock” means an elevated or floating structure comprised of an open fixed pile-supported pier, gangway, or float, or any part or combination thereof, including all associated previously authorized boating-related appurtenances or features including but not limited to piles or pile clusters, boatlifts, utilities, or wave-attenuating devices.

“Individual permit” means a permit or certificate of permission issued to a named permittee under section 22a-361, section 22a-363b, or 22a-32 of the General Statutes.

“Existing inhabited structure” means a house, dwelling, or abode which was in use prior to the effective date of this general permit.

“FEMA” means the Federal Emergency Management Agency.

“FEMA standards” means municipal flood hazard or floodplain ordinances or regulations, approved by FEMA to allow participation of the municipality in the National Flood Insurance Program under the provisions of 44 CFR parts 59 and 60.

“Intertidal flats” means intertidal flats as defined by section 22a-93(7)(D) of the General Statutes.

“Harbormaster” means a harbormaster or deputy harbormaster appointed pursuant to section 15-1 of the General Statutes.

“Licensed shellfish operator” means a person licensed by the commissioner of agriculture to take, harvest, cultivate, produce oysters or other shellfish pursuant to Chapter 491 of the General Statutes.

“Marina boundary” means an area within which reconfiguration activities may occur and which has been established by the commissioner by connecting with straight lines the terminating point of existing authorized in-water boating-access structures including fixed or floating docks, gangways and piles, but excluding dredge footprints, vessels, mooring buoys, navigational markers and property lines.

“Marina reconfiguration” means the placement, replacement, removal or relocation of moorings, fixed or floating docks, piles, ladders, gangways, or finger piers and ancillary structures within an established marina boundary for boating access or support or for seasonal storage of such structures subject to the conditions of this general permit.

“Mean high water” means the average of all high water heights observed over the National Tidal Datum Epoch.

“Mean low water” means the average of all low water heights observed over the National Tidal Datum Epoch.

“Mooring boundary” means an area within which reconfiguration activities may occur and which is established by the commissioner by connecting with straight lines the perimeter of

existing in-water mooring buoys, but excluding dredge footprints, vessels, mooring swing radii, navigational markers, and property lines.

“Mooring reconfiguration” means the placement, replacement, removal or relocation moorings, within an established mooring boundary for boating access or support, exclusive of fixed and floating docks.

“Municipality” means a city, town or borough of the state.

“Non-commercial” means a structure which is (1) not rented and no other charge by the permittee is made for its use or maintenance; and (2) is not operated, maintained, or used by any for-profit entity.

“Order” means any consent order, removal order, cease and desist order, or any other enforcement action taken by the commissioner under authority of sections 22a-6, 22a-7, 22a-108, 22a-178, 22a-181, 22a-225, 22a-428, 22a-430, 22a-431, 22a-432, 22a-433, or 22a-449 of the General Statutes, or under any authority available by law or any enforcement action taken by the U.S. Army Corps of Engineers (“Corps”) or the U.S. Environmental Protection Agency (“EPA”); or any order entered by a state or federal court of competent jurisdiction pursuant to an enforcement action taken by the commissioner, the Corps, or EPA.

“Permittee” means any person or municipality to which the commissioner has issued an approval of registration under this general permit.

“Person” means person as defined by section 22a-2(c) of the General Statutes.

“Prior authorization” means a permit, certificate of permission, or approval of general permit registration issued by the State of Connecticut under section 22a-32, 22a-361, 22a-361(d), or 22a-363b of the General Statutes which was issued before the date of submission of a registration under this general permit.

“Registrant” means a person who or municipality which files a registration pursuant to Section 4 of this general permit.

“Registration” means a registration form filed with the commissioner pursuant to Section 4 of this general permit.

“Remedial activity” means any dredging, construction, placement of fill, obstruction or encroachment or work incidental thereto, or any other work the purpose of which is to restore a site or habitat to its natural condition, to correct a violation of law, to remove an unauthorized structure, fill, obstruction or encroachment, or to conduct remediation as defined by section 22a-133k-1 of the Regulations of Connecticut State Agencies.

“Removal of derelict structure” means the physical removal of derelict structures using hand-held tools or mechanical equipment.

“Repointing” means filling by hand, using hand-held equipment, cracks or weak spots in a seawall with mortar or small stones without increasing the waterward encroachment of the

seawall.

“*Seawall*” means any dry stone or concrete structure, including bulkheads, retaining walls and riprap revetments, the purpose or effect of which is to prevent upland materials from slumping or otherwise entering the area waterward of the coastal jurisdiction line. The term does not include steel, timber, or plastic sheet pile, railroad ties or concrete blocks.

“*Site*” means geographically contiguous land or water on which an authorized activity takes place or on which an activity for which authorization is sought under this general permit is proposed to take place. Non-contiguous land or water owned by the same person and connected by a right-of-way which such person controls and to which the public does not have access shall be deemed the same site.

“*Skim coating*” means, a layer of coating, applied by hand using hand-held equipment, to the face of a seawall not exceeding one inch in thickness.

“*Temporary access of construction vehicles or equipment*” means operation of construction vehicles or heavy equipment, including active equipment or material loading or off-loading via barge, within areas below the coastal jurisdiction line for the purposes of accessing, supporting, or conducting work above the coastal jurisdiction line and otherwise unregulated pursuant to section 22a-361 of the General Statutes.

“*Tidal wetlands*” means wetland as defined by section 22a-29(2) of the General Statutes.

“*Watercourse*” means watercourse as defined by section 22a-38 of the General Statutes.

Section 3. Authorization Under This General Permit

(a) *Eligible Activities*

Provided the requirements of Section 3(b) of this general permit are satisfied, this general permit authorizes the following activities:

- (1) establishment of a marina boundary and reconfiguration within such boundary, or the establishment of a mooring boundary and reconfiguration within such boundary;**
- (2) remedial activities which have been required by an order as defined in this general permit;**
- (3) modification of an existing inhabited structure which is located in whole or in part waterward of the coastal jurisdiction line and landward of mean high water for the purposes of conforming such structure to FEMA standards;**
- (4) reconstruction of a legally existing structure, obstruction or encroachment which was installed pursuant to a prior authorization and which exists in a serviceable state; and (b) removal of debris and reconstruction of a legally existing structure, obstruction or encroachment which has been damaged or destroyed by a casualty loss**

not more than one calendar year prior to the date of submission of the registration required in Section 4(a) of this general permit;

(5) maintenance activities performed on certain existing Department of Transportation infrastructure as follows:

- (A) Bridge Deck Drains.** Repair, rehabilitation, replacement and cleaning of bridge deck drains, scuppers and weeps, including the removal of accumulated sediment;
- (B) Bridge Painting.** Preparation of steel and painting including the placement of containment devices upon bridges;
- (C) Bridge Mechanical, Electrical and Operational Repairs.** Rehabilitation or replacement of appurtenances necessary for bridge safety and operation including lighting, fixtures, mechanical or electrical rooms or boxes, catenary support and wires, and signals and signal boxes;
- (D) Bridge Superstructure.** Rehabilitation, rinsing, repair or replacement of bridge superstructure components such as steel or timber members, plates or hardware, or bridge bearings, or the full bridge superstructure;
- (E) Bridge Decks.** Repair, rehabilitation or replacement of bridge decks membrane and bituminous wearing surfaces, joints, rails, ties, and fencing or other protective systems;
- (F) Bridge Supports.** Repair concrete superstructure or substructure elements including spalling, repointing or grouting of concrete, repairs to the joints, and application of protective coating;
- (G) Bridge Scour.** Manually placing grout bags within or immediately adjacent to the footprint of bridge substructure;
- (H) Walls and Abutments.** Repair of concrete wingwalls, endwalls or bridge abutments and pipe repair or replacement of such structures associated with such necessary wingwall, endwall or abutments;
- (I) Pipes and Culverts.** Removal of pipes and culverts, including the creation of open channels associated with the removal of such pipes and culverts;
- (J) Outlet Protection.** Repair, rehabilitation or expansion of an existing splash pad or plunge pool associated with an existing stormwater outfall or the installation of a new splash pad or plunge pool associated with the removal of a pipe or culvert;
- (K) Shoreline Protection.** Repair of previously protected shorelines

including riprap and stone armoring including shaping, regrading, placement of bedding material and riprap or armor stone to the pre-existing contours, and repair of seawalls to pre-existing conditions including repointing, patching, resetting stones, and applying a skim coat to the face of the seawall;

- (L) **Access.** Installation and use of low-impact temporary access structures including scaffolding, low ground pressure equipment, elevated trestle, scaffolding, ladders, and construction mats; and
- (M) **Rail Infrastructure.** Repair, rehabilitation or replacement of ballast, ties, rails, catenary towers and wires, signal cable tray, signal conduits, signal box and foundation, and electrical substations.

- (6) **beach grading or beach raking conducted in the area between mean low water and the coastal jurisdiction line;**
- (7) **removal of derelict structures;**
- (8) **placement of cultch;**
- (9) **minor repair to seawalls including patching concrete, repointing mortar between stones, resetting fallen stones and applying a skim coat to the face of the seawall;**
- (10) **catch basin cleaning;**
- (11) **repair or replacement of a backflow prevention structure on a closed water discharge system;**
- (12) **coastal restoration activities including coastal habitat creation and coastal habitat enhancement;**
- (13) **temporary access of construction vehicles or equipment; and**
- (14) **maintenance activities performed on certain existing Department of Energy & Environmental Protection boat launch infrastructure as follows:**
 - (A) **repair, replacement or repositioning of concrete planks, concrete panels, or interlocking blocks;**
 - (B) **repair or replacement of bituminous concrete;**
 - (C) **replacement or removal of gravel, stone or riprap material; and**
 - (D) **repair of trench drains, drainage systems, or erosion protection.**

Any discharge of water, substance or material into the waters of the state other than

the one specified in this section is not authorized by this general permit, and any person who or municipality which initiates, creates, originates or maintains such a discharge must apply for and obtain authorization under section 22a-430 of the General Statutes prior to the occurrence of such discharge.

(b) *Requirements for Authorization*

This general permit authorizes each of the activities listed in Section 3(a) of this general permit provided:

(1) Registration

A completed registration with respect to the activities identified in Section 3(a)(1), 3(a)(2), or 3(a)(3) of this general permit has been filed with the commissioner and the commissioner has issued an approval of registration with respect to such activity.

Or

A completed registration with respect to the activities identified in Section 3(a)(4) of this general permit has been filed with the commissioner.

Or

No registration is required with respect to activities identified in Section 3(a)(5) through Section 3(a)(14) of this general permit.

(2) Coastal Area Management

Such activity is consistent with all-applicable goals and policies in section 22a-92 of the General Statutes, and will not cause adverse impacts to coastal resources as defined in section 22a-93 of the General Statutes.

(3) Endangered and Threatened Species

Such activity does not threaten the continued existence of any species listed pursuant to section 26-306 of the General Statutes and will not result in the destruction of adverse modification of habitat designated as essential to such species.

(4) Aquifer Protection

Such activity, if it is located within an aquifer protection area as mapped under section 22a-354b of the General Statutes, complies with regulations adopted pursuant to section 22a-354i of the General Statutes.

(5) Conservation and Preservation Restrictions

Such activity, if located on or may affect property subject to a conservation or preservation restriction, complies with section 47-42d of the Connecticut General Statutes, by providing the following to the commissioner: proof of written notice to the holder of such restriction of the proposed activity's registration pursuant to this general permit or a letter from the holder of such

restriction verifying that the proposed activity is in compliance with the terms of the restriction.

(6) **Flood Management**

Such activity shall be consistent with all applicable standards and criteria established in sections 25-68d(b) of the General Statutes and sections 25-68h-1 through 25-68h-3, inclusive, of the Regulations of Connecticut State Agencies.

(c) ***Geographic Area***

This general permit applies throughout the tidal, coastal and navigable waters of the State of Connecticut and, where not explicitly disallowed, in tidal wetlands.

(d) ***Effective Date and Expiration Date of this General Permit***

This general permit is effective on the date it is issued by the commissioner and expires twenty (20) years from such date of issuance.

(e) ***Effective Date of Authorization***

Any activity identified in section 3(a)(1), 3(a)(2) and 3(a)(3) of this general permit is authorized by this general permit on the date the commissioner issues a written approval of registration with respect to such activities.

Any activity identified in Section 3(a)(4) of this general permit is authorized on the date the commissioner receives a completed registration with respect to such activity which meets the requirements of Section 4 of this general permit.

Any activity identified in Sections 3(a)(5) through 3(a)(14) of this general permit is authorized by this general permit effective on the date this general permit becomes effective, or on the date the activity is initiated, whichever is later.

(f) ***Transition to and from an Individual Permit***

No person shall operate or conduct an activity authorized by both an individual permit and this general permit. The requirements for transitioning authorization are as follows:

(1) ***Transition from an Individual Permit to Authorization under this General Permit.*** If an activity meets the requirements of authorization of this general permit and such operation or activity is presently authorized by an individual permit, the permittee may seek a modification to the permit to exclude such operation or activity from the individual permit or if the operation or activity is the sole operation or activity authorized by such permit, the permittee shall surrender its permit in writing to the commissioner. In either event, such permittee's individual permit shall continue to apply and remain in effect until authorization of such operation or activity under this general permit takes effect.

(2) ***Transition from Authorization under this General Permit to an Individual Permit*** If an activity or operation is authorized under this general permit and the commissioner subsequently issues an individual permit for the same activity,

then on the date any such individual permit is issued by the commissioner, the authorization issued under this general permit shall automatically expire.

Section 4. Registration Requirements

(a) *Who Must File a Registration*

Any person or municipality seeking under the authority of this general permit to conduct work set forth in Section 3(a)(1) through 3(a)(4) of this general permit, shall file with the commissioner:

- (1) A registration form which meets the requirements of Section 4 of this general permit; and
- (2) The applicable fee.

(b) *Scope of Registration*

A registrant shall register each activity for which the registrant seeks authorization under this general permit on a separate registration form.

(c) *Contents of Registration*

(1) Fees

(A) Fee Schedule

- i. For work pursuant to Sections 3(a)(1) and 3(a)(2) of this general permit, the registration fee of \$700.00 shall be submitted with a registration form.
- ii. For work pursuant to Section 3(a)(3) of this general permit, the registration fee of \$100.00 shall be submitted with the registration form.
- iii. For work pursuant to Section 3(a)(4) of this general permit, above, the registration fee of \$300.00 shall be submitted with the registration form.
- iv. The registration shall not be deemed complete and no activity shall be authorized by this general permit unless the registration fee has been paid in full.
- v. The registration fee shall be paid by check or money order payable to the **Department of Energy and Environmental Protection**.

(B) The registration fee is non-refundable.

(2) Registration Form

A registration shall be filed on forms prescribed and provided by the commissioner.

(d) *Where to File a Registration and Other Related Documents*

A registration shall be filed with the commissioner at the following address:

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

(e) *Notification of Harbor Management Commission*

Where applicable, a copy of the registration shall be submitted to the harbor management commission in the town where the work is proposed at the time the registration is filed with the commissioner.

(f) *Additional Information*

The commissioner may require a registrant to submit additional information, which the commissioner reasonably deems necessary to evaluate the consistency of the subject activity with the requirements for authorization under this general permit.

(g) *Action by Commissioner*

- (1) The commissioner may reject without prejudice a registration if it is determined that it does not satisfy the requirements of Section 4(c) of this general permit or more than thirty (30) days have elapsed since the commissioner requested that the registrant submit additional information or the required fee and the registrant has not submitted such information or fee. Any registration refiled after such a rejection shall be accompanied by the fee specified in Section 4(c)(1) of this general permit.
- (2) The commissioner may disapprove a registration if it is found that the subject activity is inconsistent with the requirements for authorization under Section 3 of this general permit, or for any other reason provided by law.
- (3) Disapproval of a registration under this subsection shall constitute notice to the registrant that the subject activity may not lawfully be conducted or maintained without the issuance of an individual permit.
- (4) The commissioner may approve a registration with reasonable conditions. If the commissioner approves a registration with conditions, the permittee shall be bound by such conditions as if they were a part of this general permit.
- (5) Rejection, disapproval, or approval of a registration shall be in writing.

Section 5. Conditions of This General Permit

The permittee shall at all times continue to meet the requirements for authorization set forth in Section 3 of this general permit. In addition, a permittee shall assure that activities authorized by this general permit are conducted in accordance with the following conditions:

(a) *Special Conditions for MARINA AND MOORING FIELD RECONFIGURATION authorized in Section 3(a)(1) of this general permit.*

- (1) Registrant for such reconfiguration is a yacht club or marina whose slips are entirely open for public use by membership or rental.
- (2) Such activities are not located on or over tidal wetlands or intertidal flats.
- (3) Such activities do not increase the number of berthing or mooring slips at the facility by more than 5% in any calendar year.
- (4) Such activities and any vessels berthed or moored to such reconfigured structures or moorings shall not interfere with the access to any riparian or littoral property and shall be placed and maintained within any established marina or mooring field boundary.
- (5) Prior to any such reconfiguration, the registrant must demonstrate that all regulated in-water structures are authorized by the State and are in compliance with such authorizations, as applicable.
- (6) Such activities shall include only structures used for boating access or support. Such activities shall not include structures such as offices, residences, restaurants, concessions, gazebos, viewing platforms, workshops, patios, or storage facilities, or other walled or roofed structure such as attendant shed, marina office, or other building.
- (7) Such activities shall not include the construction, installation, relocation, or modification of any wave-attenuating structures.
- (8) Such activities shall not include the construction or installation of any docks wider than the widest docks of the similar function previously authorized nor shall it include the installation of any gangways wider than the widest gangways previously authorized.
- (9) Such activities shall not include dredging, the placement of fill, or the installation of other structures not specifically authorized herein, including but not limited to seawalls, riprap, bulkheads, and travel lifts.
- (10) The placement of fixed piers or floating docks within any mooring boundary is prohibited under this general permit.
- (11) Any fixed piers or floating docks, in a marina boundary, shall be constructed in a manner that does not unreasonably restrict access to or along lands and waters waterward of mean high water.
- (12) Any fixed piers or floating docks, in a marina boundary, shall be designed to allow most wave and water current energy to pass through or under such

structure.

- (13) Any fixed pier, in a marina boundary, shall utilize the minimum number of pilings necessary, consistent with safety and resource protection considerations, and where feasible shall utilize large spans on fewer pilings rather than smaller spans on more pilings.
- (14) The permittee shall notify the commissioner of the commencement of any work authorized by the approval of registration no later than three days before commencing such work and shall notify the commissioner in writing of the completion of such work no later than seven days after such completion.

(b) *Special Conditions for REMEDIAL ACTIVITIES authorized in Section 3(a)(2) of this general permit.*

- (1) Such remedial activity has been required under an order as defined in Section 2 of this general permit requiring the permittee to conduct such remedial activity.
- (2) The permittee shall notify the commissioner of the commencement of any work authorized by the approval of registration no later than three days before commencing such work and shall notify the commissioner in writing of the completion of such work no later than seven days after such completion.

(c) *Special Conditions for RESIDENTIAL FLOOD HAZARD MITIGATION authorized in Section 3(a)(3) of this general permit.*

- (1) Prior to the commencement of work, the registrant shall obtain all other legally required authorizations applicable to such activity, including without limitation a building permit issued pursuant to section 8-3 of the General Statutes, a coastal site plan approval pursuant to sections 22a-105, 22a-106, or 22a-109 of the General Statutes, or a variance issued pursuant to section 8-6 of the General Statutes.
- (2) The sole purpose and effect of such activity is to conform an existing inhabited structure with applicable FEMA standards. Such activity may include, without limitation, elevating the subject structure and installing break-away walls, or other activities consistent with residential floodproofing standards.
- (3) No activity authorized herein shall result in the conversion of a dwelling from seasonal to year-round use, or in any other expansion or alteration of use of the subject structure.
- (4) Such activity shall not be construed as authorizing the construction or maintenance of any shoreline flood and erosion control structure as defined by section 22a-109(c) of the General Statutes.
- (5) Such activity does not create any further waterward encroachment of any structure, or the expansion of the subject structure's floor area, living space, or the addition of appurtenances such as decks or porches.

- (6) Such activity is not located waterward of mean high water or on or over tidal wetlands.
 - (7) The registrant shall comply with the standards and requirements set forth in section 25-68b through 25-68h of the General Statutes, as applicable.
- (d) ***Special Conditions for RECONSTRUCTION authorized in Section 3(a)(4) of this general permit.***
- (1) Such reconstruction is limited to the reconstruction of a structure, obstruction or encroachment which has been the subject of a prior authorization. This authorization explicitly does not apply to “grandfathered” or previously unauthorized structures that exist without the benefit of a prior authorization.
 - (2) Unless otherwise authorized in writing by the commissioner, such reconstruction activity shall be in-kind and in-place conforming to the siting, layout, design, materials and structural components as set forth in the prior authorization. The permittee shall not deviate from said authorization without prior written approval of the Commissioner.
 - (3) Such reconstruction shall be conducted in accordance with the requirements for authorization set forth herein and in accordance with any applicable terms and conditions set forth in the prior authorization.
 - (4) Prior to any reconstruction activity, the permittee shall obtain site plans signed and sealed by a professional engineer or land surveyor licensed in the State of Connecticut showing both the pre-construction site conditions and structures and the proposed site conditions and structures.
 - (5) The contractor(s) shall, whenever work is being performed, maintain a copy of the plans referenced above on the work site and make such plans available for inspection.
 - (6) Prior to any reconstruction activity, the permittee shall take site photographs documenting the pre-construction conditions.
 - (7) Such reconstruction does not apply to any dredging, regrading, fill or any other activities which restore or modify grades, depths, slopes, contours, tidal elevations or property boundaries.
 - (8) Such reconstruction does not apply to any groins or jetties.
 - (9) Such reconstruction does not apply to oversheeting of bulkheads.
 - (10) Any reconstruction activity of flood and erosion control structures is prohibited in areas of tidal wetlands.
 - (11) Any reconstruction activity of flood and erosion control structures which

increases the top elevation is prohibited.

- (12) Any reconstruction activity of docks that occur in areas of tidal wetlands shall be conducted such the lowest horizontal member of such fixed pier is no lower than five (5) feet off the surface of any underlying wetland areas, except if the previous authorization indicates such horizontal member is required to be constructed at a greater elevation.
 - (13) Any reconstruction activity which proposes minor modifications or engineering improvements to flood and erosion control structures, without modifying the footprint of such structure, may be allowable provided that the permittee provides a narrative of such changes and a copy of the pre-construction and proposed site conditions plans with the registration filed pursuant to Section 4 of this general permit. Such modifications or improvements may include but are not limited to weep holes, footings, tie-backs, or returns. Approval for such modifications will be made at the sole discretion of the Commissioner and the permittee will be notified in writing of such decision.
 - (14) Not later than five days prior to the commencement of work authorized herein, the permittee shall notify the commissioner of the commencement of work unless otherwise authorized by the commissioner.
 - (15) Not later than 90 days after completion of any work authorized herein, the permittee shall prepare a Compliance Certification, a copy of which is attached to the registration form as Appendix A. Such Compliance Certification shall be completed by a professional engineer or land surveyor licensed in the State of Connecticut and shall be signed and sealed by such professional.
 - (16) Not later than 120 days after completion of any work authorized herein, the permittee shall submit: (1) the Compliance Certification; (2) a copy of the pre-construction and post-construction plans; and (3) a copy of the pre-construction site photographs.
 - (17) Such reconstruction shall be conducted only upon property owned by the permittee or the registrant shall submit written permission from the rightful property owner approving such activity with the registration filed pursuant to Section 4 of this general permit.
- (e) ***Special Conditions for DEPARTMENT OF TRANSPORTATION MAINTENANCE authorized in Section 3(a)(5) of this general permit.***
- (1) In conducting any Department of Transportation Maintenance activities, the permittee shall follow any applicable Best Management Practices, design manuals and materials specifications published, used or adopted by the Connecticut Department of Transportation.
 - (2) In conducting the work authorized herein, the permittee shall not cause permanent impacts to tidal wetlands associated with the installation of temporary or permanent structures, staging, or storage.

- (3) In conducting any bridge painting, preparation or cleaning activities authorized herein, the permittee shall install and utilize proper containment that prevents discharges into coastal waters or wetlands. The permittee shall ensure the containment system is in optimal operating condition until the work authorized herein is completed.
- (4) Any debris associated with any activity authorized herein, including sediment or debris from drains, scuppers or weeps; residue from scraping, sandblasting, abrading or painting, shall be collected and disposed of at an approved upland site applicable for such debris.
- (5) This authorization specifically does not allow for the increase of additional stormwater flows from the structures authorized herein.
- (6) The permittee shall stage any barges employed to complete the work authorized herein such that no more than 50% of the channel beneath any bridge is impeded at any time.
- (7) Any debris containment systems employed by the permittee shall be designed so as to prevent impacts to navigation. Prior to commencement of work, the permittee shall obtain Advance Approval by the U.S. Coast Guard, when applicable.
- (8) The full superstructure replacement authorized herein shall not include the replacement of existing bridge piers or foundations or construction of new bridge piers or foundations, nor shall it include any expansion of the width of any superstructure that could increase the volume of stormwater associated with such work.
- (9) Unless otherwise authorized in writing by the commissioner, the permittee, prior to the commencement of any bridge scour repair, shall install turbidity curtains or other appropriate containment extending from the water surface to the substrate around the work area. Such curtains shall be maintained in optimal operating condition until project completion at which time the erosion and sediment controls shall be removed to an upland location.
- (10) Prior to the installation of any grout bags, the permittee shall consult with Department of Energy & Environmental Protection Inland Fisheries Division regarding necessary project modifications or restrictions to protect fisheries resources. Any such modifications or restrictions become binding.
- (11) The permittee shall install any grout bags by hand. Such grout bags shall be located within the footprint of the existing footing and shall not extend further than two feet from the face of such footing. Such grout bags shall be placed in such a manner that they do not pose any adverse impact to navigation or fish passage.
- (12) In conducting work to wingwalls, endwalls, abutments, pipes, culverts, outlet

protection, or other shoreline armoring the permittee shall work during periods of low flow and low tide so as minimize sedimentation and impacts to coastal resources.

- (13) In constructing any new outlet protection where a section of pipe has been removed, the permittee shall not exceed the area of the disturbance caused by the removal of the pipe.
 - (14) In conducting shoreline protection projects authorized herein, riprap or armoring shall not exceed the footprint of the protection originally in-place and shall be at the same grade and slope.
 - (15) Not later than 90 days subsequent to the completion of any shoreline protection project including rip rap, bedding material, or other shoreline armoring authorized herein, the permittee shall submit as-built drawings showing the project.
 - (16) In conducting any riprap work, the permittee shall place such riprap to its full course thickness in one operation to produce a reasonably well-graded slope without causing displacement of the underlying bedding material.
 - (17) Prior to the commencement of work authorized herein, the permittee has obtained approval from the commissioner from sections 25-68b through 25-68h, inclusive, of the General Statutes, and sections 25-68h-1 through 25-68h-3 of the Regulations of Connecticut State Agencies, inclusive, as applicable.
 - (18) Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground pressure or it shall be placed on construction mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. Construction mats are to be placed in the wetland from the upland or from equipment positioned on swamp mats if working within a wetland. Dragging construction mats into position is prohibited.
 - (19) Not later than January 15 of any year following a year in which the Department of Transportation conducted work under this general permit, the permittee shall submit a Project Report to the commissioner. The Project Report shall specify which projects, and which components of such projects, were conducted under this general permit, and a summary of the total number of times in the reporting year that the Department of Transportation conducted work under this general permit.
- (f) ***Special Conditions for BEACH GRADING and BEACH RAKING authorized in Section 3(a)(6) of this general permit.***
- (1) Unless otherwise authorized in writing by the Commissioner, all beach grading work authorized herein is prohibited between April 1st and September 15th, inclusive, of any year in order to protect spawning horseshoe crabs and nesting and migrating shorebirds.
 - (2) Unless otherwise authorized in writing by the Commissioner, any beach raking activity which uses motorized equipment or employs implements which

penetrate more than two inches is prohibited between May 10th and July 15th, inclusive, of any year in order to protect spawning horseshoe crabs. Surficial beach raking by hand may be conducted at any time.

- (3) Such beach grading or beach raking activities are not conducted in areas of tidal wetlands or intertidal flats.
 - (4) All structures located at or waterward of the coastal jurisdiction line on the site where such activities are proposed are authorized through an individual permit of this department and are in full compliance with such permit.
 - (5) Such beach grading or beach raking activities shall not be conducted in areas waterward of mean low water.
 - (6) In conducting such beach grading or beach raking activities, the permittee shall not store, stage, or operate any equipment in-water at any time.
 - (7) No work authorized herein shall impede access to any riparian or littoral property.
 - (8) No work authorized herein shall take place on any leased or managed shellfish bed.
 - (9) Any material including macroalgae, stones, shells or other natural or unnatural debris removed during beach raking activities shall be disposed of above the coastal jurisdiction line and outside of any tidal wetlands.
- (g) ***Special Conditions for DERELICT STRUCTURES authorized in Section 3(a)(7) of this general permit.***
- (1) Prior to the commencement of work authorized herein, the permittee must obtain written permission from the property owner if the permittee is not the property owner whereupon such activity is to be undertaken.
 - (2) Prior to the commencement of work authorized herein, the permittee shall install either (a) siltation curtains or (b) floating turbidity booms, if necessary, around the work area. Such curtains or booms shall be maintained in optimal operating condition until the work is completed and the area has stabilized.
 - (3) Such activity is prohibited between June 1st and September 30th, inclusive, of any year in order to protect spawning shellfish in the area unless otherwise authorized in writing by the commissioner.
 - (4) Any such activity which occurs in the intertidal zone shall only be conducted during periods of low water.
 - (5) Such activity shall not disturb, displace or destroy objects determined by the State of Connecticut Historic Commission to have historical significance.

(h) *Special Conditions for PLACEMENT OF CULTCH authorized in Section 3(a)(8) of this general permit.*

- (1) Such placement of cultch shall only be conducted by a licensed shellfish operator in beds or areas designated for shellfishing under section 26-194 or section 26-242 of the General Statutes.
- (2) Such placement of cultch shall be conducted only in appropriate locations for colonization by oysters, based upon factors of salinity, water quality, water circulation patterns and substrate composition.
- (3) Such placement of cultch shall not be conducted in areas of tidal wetlands or submerged aquatic vegetation beds.
- (4) Prior to the commencement of such placement of cultch, such licensed shellfish operator obtains all required authorizations from the Department of Agriculture Bureau of Aquaculture and Laboratory and the local shellfish commission, as applicable.
- (5) Prior to the commencement of such placement of cultch, such licensed shellfish operator obtains permission in writing from the owner or lessee of such shellfish bed or area.
- (6) Such placement of cultch shall be conducted in such a manner that it does not exceed a layer of cultch on the seafloor greater than 12” in depth.
- (7) Such placement of cultch shall be conducted such that the placement does not exceed 1,500 bushels per acre of seafloor.

(i) *Special Conditions for MINOR SEAWALL REPAIR authorized in Section 3(a)(9) of this general permit.*

- (1) Any minor seawall repair authorized herein may include patching concrete, repointing mortar between stones, resetting fallen stones, and applying a skim coating to the face of a seawall.
- (2) Any minor seawall repair authorized herein shall not include the waterward encroachment of the face of the existing wall nor shall it include a new footing waterward of the face of any existing footing.
- (3) Such seawall has been constructed in conformance with an individual permit issued by this department, or was installed prior to June 24, 1939, or installed in its entirety landward of mean high water prior to January 1, 1987, and has been continuously maintained and serviceable since such time.
- (4) No work authorized under this section shall consist of “substantial maintenance” as defined by 22a-363a of the General Statutes.
- (5) No work authorized herein shall measurably increase the height or extend any

lateral or waterward encroachment of the seawall.

- (6) Such seawall work shall only be conducted during periods of low water and shall be conducted by hand using hand-held equipment.

(j) *Special Conditions for CATCH BASIN CLEANING authorized in Section 3(a)(10) of this general permit.*

- (1) All waste resulting from the work authorized herein including but not limited to grit, sand, or other sediment or debris shall be removed from the area waterward of the coastal jurisdiction line and disposed of at an upland location in accordance with applicable law.
- (2) Sediment removal authorized herein shall not include removal of material located waterward of the waterward terminus of the pipe.
- (3) Activities such as flushing or power washing, or other similar activities that would create sedimentation or turbidity in the receiving waters is strictly prohibited.

(k) *Special Conditions for BACKFLOW PREVENTION STRUCTURES authorized in Section 3(a)(11) of this general permit.*

- (1) Such portion of the closed water discharge system has been constructed in conformance with an individual permit issued by this department, or was installed prior to June 24, 1939, or installed in its entirety landward of mean high water prior to January 1, 1987, and has been continuously maintained and serviceable since such time.

(l) *Special Conditions for RESTORATION ACTIVITIES authorized in Section 3(a)(12) of this general permit.*

- (1) Any restoration activities conducted under this authorization, except those consisting of the installation or repair of a fish bypass system, must be performed by, or under the direct supervision of, the department.
- (2) Any installation or repair of a fish bypass system which includes the removal or structural or functional modification of any dam, must be performed either by (a) the department; or (2) by a person who has consulted with department staff regarding project design and implementation. Any such person must implement recommendations made by department staff and shall retain a copy of such written consultation during construction at the construction site.
- (3) Any installation or repair of a fish bypass system which includes the removal or structural or functional modification of any dam, must have prior authorization under section 22a-403 of the General Statutes, as applicable.

(m) *Special Conditions for TEMPORARY ACCESS OF CONSTRUCTION*

VEHICLES OR EQUIPMENT authorized in Section 3(a)(13) of this general permit.

- (1) This authorization is only for active operation of vehicles or equipment. At no time shall such vehicles or equipment be stored below the coastal jurisdiction line.
- (2) No vehicles or equipment shall be operated within areas of tidal wetlands or below the mean low water line. No vehicles or equipment shall be operated in the water during periods of high water above the mean low water line.
- (3) No material including but not limited to fill, construction materials, excavated material or debris, shall be deposited, placed, or stored below the coastal jurisdiction line or within areas of tidal wetlands.
- (4) Any barges used for such work may only come ashore and be secured in place while actively loading or off-loading equipment and shall not be moored or spudded in place for longer than necessary for such loading or off-loading activities.
- (5) This authorization explicitly does not cover construction vehicles or equipment associated with work or other activities regulated pursuant to section 22a-361 or 22a-32 of the General Statutes.

(n) Special Conditions for MAINTENANCE OF DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION BOAT LAUNCH INFRASTRUCTURE authorized in Section 3(a)(14) of this general permit.

- (1) No work authorized herein shall occur in tidal wetlands.
- (2) Debris associated with any activity authorized herein shall be collected and disposed of at an approved upland site applicable for such debris.
- (3) Such maintenance activities are limited to boat launches which have been the subject of a prior authorization.
- (4) Such maintenance activities shall not include dredging or excavation of any sediments.
- (5) Except as may be explicitly authorized by the Commissioner, such maintenance activities shall be in-kind and in-place conforming to the siting, layout, design, materials and structural components as set forth in the prior authorization. Any riprap or armoring shall not exceed the footprint as was originally in-place and shall be to the same grade and slope.
- (6) Not later than January 15 of any year following a year in which the Department of Energy and Environmental Protection conducted work under this general permit, the permittee shall submit a Project Report to the commissioner. The Project Report shall specify which projects, and which components of such projects, were

conducted under this general permit, and a summary of the total number of times in the reporting year that the Department of Energy and Environmental Protection conducted work under this general permit.

(o) *General Construction and Use Conditions applicable to this General Permit.*

- (1) Prior to the commencement of any work authorized by this general permit or any approval of registration, the permittee shall provide copies of this general permit and any applicable approval of registration to any contractor employed to conduct such work and shall make such documents available for inspection at the site whenever work is being performed at the site.
- (2) No registrant or permittee shall initiate construction of any activity authorized herein prior to submission and approval of registration, as applicable, or prior to the submission of a Project Report, as applicable.
- (3) Any activity authorized herein shall be conducted in accordance with the site plans and drawings included with the approval of registration, as applicable.
- (4) Any barge utilized conducting any activity authorized herein, where allowed, shall not be stored over intertidal flats, submerged aquatic vegetation or tidal wetlands or in a location that interferes with navigation. In the event that any barge associated with the work authorized herein becomes grounded, no dragging or prop-dredging shall occur to free the barge.
- (5) Any activity authorized herein shall not be conducted such that it creates a hazard to or interferes with existing navigation uses in adjacent waterways. Such activities shall be setback from federal navigation channels and shall also be setback as prescribed in any harbor management plan approved pursuant to section 22a-113m of the General Statutes.
- (6) Such activities are, where applicable, consistent with a harbor management plan approved pursuant to section 22a-113m of the General Statutes.
- (7) The construction, installation, use or removal of any activity authorized herein shall not interfere with access or navigation to or from any riparian or littoral property.
- (8) The permittee shall maintain in good working condition all structures authorized under this general permit. Unless otherwise authorized in writing by the commissioner, the permittee shall remove from tidal, coastal or navigable waters of the state or tidal wetlands any structure or portions of structures which have been destroyed by any cause whether natural or man-made.
- (9) In the course of conducting any activity authorized herein, no person shall place any equipment or material, including fill, construction materials, construction debris or solid waste as defined in section 22a-207 of the General Statutes in any wetland or watercourse, nor use any wetland or watercourse as staging area except as explicitly authorized herein or in any approval of registration.

- (10) Upon completion of any work authorized herein, the permittee shall restore any area affected by, or used as a staging area in connection with, such activity to the condition of such area prior thereto.
- (11) Any debris associated with any activity authorized herein shall be removed from the area waterward of the coastal jurisdiction line and tidal wetlands and disposed of at an approved upland site applicable for such debris.
- (12) The permittee shall dispose of any solid waste, as defined in section 22a-207 of the General Statutes generated by the work authorized herein in accordance with all applicable law, including Chapters 446e and 446k of the General Statutes.
- (13) Any activity authorized herein shall be conducted so as to minimize adverse impacts to coastal resources and processes.
- (14) Any activity authorized herein shall be conducted so as to minimize adverse impacts to commercial and recreational fishing and shellfishing.
- (15) Any activity authorized herein shall not create an obstruction or hindrance that will have an adverse effect on the flood heights, flood carrying and water capacity of the waterways and floodplains.
- (16) Any activity authorized herein shall not adversely affect existing or designated uses of the waters of the state as defined in Connecticut's Water Quality Standards pursuant to section 22a-426 of the General Statutes.
- (17) In conducting any activity authorized herein, the permittee shall not cause or allow pollution, as defined in section 22a-423 of the General Statutes, including without limitation pollution resulting from erosion and sedimentation.
- (18) In undertaking the work authorized hereunder, the permittee shall not cause or allow pollution of wetlands or watercourses, including pollution resulting from sedimentation and erosion. For purposes of this permit, "pollution" means "pollution" as that term is defined by CGS section 22a-423.
- (19) Except as specifically authorized by this permit, the permittee shall establish a minimum of a 10 foot setback from any wetlands or watercourses in and adjacent to the area where work is to be conducted or areas which are to be used for access to the work area. Such setback area(s) shall be flagged so as to be readily identifiable by contractor personnel until the authorized work is completed.
- (20) Except as specifically authorized by this permit, no equipment or material, including but not limited to, fill, construction materials, excavated material or debris, shall be deposited, placed or stored in any wetland or watercourse on or off-site, or within any delineated setback area, nor shall any wetland, watercourse or delineated setback area be used as a staging area or access way other than as provided herein.

Section 6. General Conditions

(a) *Reliance on Registration*

When evaluating a registration, the commissioner relies on information provided by the registrant. If such information proves to be false or incomplete, the authorization issued under this general permit may be suspended or revoked in accordance with law, and the commissioner may take any other legal action provided by law.

(b) *Duty to Correct and Report Violations*

Upon learning of a violation of a condition of this general permit, a permittee shall immediately take all reasonable action to determine the cause of such violation, correct such violation and mitigate its results, prevent further such violation, and report in writing such violation and such corrective action to the commissioner within five (5) days of the permittee's learning of such violation. Such report shall be certified in accordance with Section 6(d) of this general permit.

(c) *Duty to Provide Information*

If the commissioner requests any information pertinent to the authorized activity or to determine compliance with this general permit, or with the permittee's approval of registration, the permittee shall provide such information in writing within thirty (30) days of such request. Such information shall be certified in accordance with Section 6(d) of this general permit.

(d) *Certification of Documents*

Any document, including but not limited to any notice, which is submitted to the commissioner under this general permit shall be signed by, as applicable, the registrant or the permittee in accordance with section 22a-430-3(b)(2) of the Regulations of Connecticut State Agencies, 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 thereto, and I 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. I understand that a false statement made 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.”

(e) *Date of Filing*

For purposes of this general permit, the date of filing with the commissioner of any document is the date such document is received by the commissioner. The word “day” as used in this general permit means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day thereafter.

(f) *False Statements*

Any false statement in any information submitted pursuant to this general permit 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.

(g) *Correction of Inaccuracies*

Within fifteen (15) days after the date a permittee becomes aware of a change in any of the information submitted pursuant to this general permit, becomes aware that any such information is inaccurate or misleading, or that any relevant information has been omitted, such permittee shall correct the inaccurate or misleading information or supply the omitted information in writing to the commissioner. Such information shall be certified in accordance with Section 6(d) of this general permit. The provisions of this subsection shall apply both while a request for approval of registration is pending and after the commissioner has approved such request.

(h) *Transfer of Authorization*

An approval of registration under this general permit is transferable only in accordance with the provisions of section 22a-6o of the General Statutes.

(i) *Other Applicable Law*

Nothing in this general permit shall relieve the permittee of the obligation to comply with any other applicable federal, state and local law, including but not limited to the obligation to obtain any other authorizations required by such law.

(j) *Other Rights*

This general permit is subject to and does not derogate any present or future rights or powers of the State of Connecticut and conveys no rights in real or personal property nor any exclusive privileges, and is subject to all public and private rights and to any federal, state, and local laws pertinent to the property or activity affected by such general permit. In conducting any activity authorized hereunder, the permittee may not cause pollution, impairment, or destruction of the air, water, or other natural resources of this state. The issuance of this general permit shall not create any presumption that this general permit should or will be renewed.

Section 7. Commissioner's Powers

(a) *Abatement of Violations*

The commissioner may take any action provided by law to abate a violation of this general permit, including the commencement of proceedings to collect penalties for such violation. The commissioner may, by summary proceedings or otherwise and for any reason provided by law, including violation of this general permit, revoke a permittee's authorization hereunder in accordance with sections 22a-3a-2 through 22a-3a-6, inclusive, of the Regulations of Connecticut State Agencies. Nothing herein shall be construed to affect any remedy available to the commissioner by law.

(b) **General Permit Revocation, Suspension, or Modification**

The commissioner may, for any reason provided by law, by summary proceedings or otherwise, revoke or suspend this general permit or modify it to establish any appropriate conditions, schedules of compliance, or other provisions which may be necessary to protect human health or the environment.

(c) **Filing of an Individual Permit Application**

If the commissioner notifies a permittee in writing that such permittee must obtain an individual permit to continue lawfully conducting the activity authorized by this general permit, the permittee may continue conducting such activity only if the permittee files an application for an individual permit within sixty (60) days of receiving the commissioner's notice. While such application is pending before the commissioner, the permittee shall comply with the terms and conditions of this general permit and the subject approval of registration. Nothing herein shall affect the commissioner's power to revoke a permittee's authorization under this general permit at any time.

Issued Date: October 26, 2015

Robert J. Klee
Commissioner

This is a true and accurate copy of the general permit executed on **October 26, 2015** by the Commissioner of the Department of Energy and Environmental Protection.

U.S. Department of
Homeland Security

United States
Coast Guard



Commander
First Coast Guard District

One South Street
Battery Bldg
New York, NY 10004-1466
Staff Symbol: dpb
Phone: (212) 514-4335
Fax: (212) 514-4337
Email: Stephanie.E.Lopez@uscg.mil

September 7, 2018

Connecticut Department of Transportation
Attn: Mr. Timothy Fields, P.E.
Transportation Principal Engineer
2800 Berlin Turnpike
Newington, CT 06111

Dear Mr. Fields:

We have completed our review of the work schedule and documents submitted for the Bridge rehabilitation of Route 136 Bridge construction across the Norwalk River, between South Norwalk and East Norwalk, Connecticut.

Approval is granted conditioned upon full compliance with all applicable stipulations in the attached enclosure (1) entitled "General Construction Requirements."

Review of the documents shows that temporary deviations may be required for this project. The Contractor or Bridge owner must contact us 90 days prior to each deviation request but no later than 30 days to process the deviation request when more information is available.

These stipulations are based on the facts you have provided presently; however, additional requirements may be required if additional information or conditions not anticipated warrant.

This bridge work authorization does not relieve the project proponent of the responsibility to comply with applicable state, local or other federal requirements for this project.

Please contact me at (212) 514-4335 if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Stephanie E. Lopez".

Stephanie E. Lopez
Bridge Management Specialist
U.S. Coast Guard
By direction

Encl: (1) General Construction Requirements
Copy: Coast Guard Sector Long Island Sound, Waterways Management

U.S. Coast Guard Bridge Administration

GENERAL CONSTRUCTION REQUIREMENTS

1. All bridge closures, or bridge operating schedule changes, must be requested in writing, 90-days in advance, from the First Coast Guard District Bridge Branch Office. No channel restrictions, or vertical clearance reductions may be made without written approval from the above office.
2. Waterway closures/restrictions, barge placement or safety zones must also be requested a **minimum** of 90-days in advance. Please contact USCG Sector New York, 212 Coast Guard Drive, Staten Island, NY 10305-5005. Ph: (718) 354-4195/2353.
3. All submissions to the Coast Guard for review and approval must first be approved by the owner of the bridge or their authorized agent. All submission of plans, scope of work, and schedules of operation must be sent to the First Coast Guard District, Bridge Branch Office.
4. At least 30-days prior to commencement of any work, we must have for our review and approval, a copy of the construction plans, contractor schedule, preferably depicted in a time line graphic format, and the contractor's daily hours of operation. The construction plan package must show the following: **(1)** a plan of the entire waterway area in the vicinity of the project. **(2)** The location of work barges during working and off-hours. **(3)** In addition, a drawing must be included, if applicable, depicting any scaffolding or containment used indicating the location and the total vertical or horizontal channel reduction. All vertical clearance reductions below low steel or concrete under the bridge as a result of the use of scaffolding must be clearly detailed on the drawings shown in total feet. **(4)** Emergency 24-hour telephone numbers for all responsible individuals for this project must be submitted to this office before any phase of construction begins in case of an emergency situation during off-hours.
5. Scaffolding used under ANY span of the bridge must be lighted with constant burning red lights every 50 feet and on all corners. The placement of scaffolding must not interfere with the ability of a moveable bridge to open for vessel traffic. Moveable bridges must continue to operate according to their normal schedule unless special drawbridge operation regulation changes have been requested. Warning signs must be posted on both sides of the bridge, visible for a 1-mile range, to warn mariners of the vertical clearance reduction. The signs shall face upstream and downstream so as to draw the mariner's attention to the fact that the clearance has been reduced.
6. All barges placed in the waterway must be lighted with constant burning white lights on all four corners of the barge. The contractor is required to comply with all provisions of the Navigation Rules International-Inland, regarding the use of work barges or floating equipment in the waterway. www.navcen.uscg.gov .
7. Placement of construction barges in the navigable channel shall be done so as to provide a minimum horizontal clearance reduction. Only one navigation channel of a swing bridge may be blocked by work equipment at anytime. Barges must be moved out of the navigable channel after working hours unless approved in writing by the USCG.

8. Barges held in place by anchor lines must be marked by anchor buoys, which should be lighted.
9. The vertical and horizontal clearances through the navigable channel of the completed structure (as-built clearances) shall be certified in writing to this office by a responsible official of the permittee, a licensed surveyor or a registered professional engineer upon completion of bridge work. As built clearances consist of: vertical clearance in the navigational channel measured from mean high and mean low water to the lowest point of the superstructure; horizontal clearance through the navigational channel between piers or fenders measured normal to the axis of the channel. Documentation shall state the horizontal and vertical datum (e.g., NAVD88) used for all measurements. Please contact this office if there are questions regarding the required clearance data for specific bridge types, i.e. fixed or movable.
10. The on-scene contractor must have a VHF-FM marine radio set to the bridge communication channels 16/13 or the designated channel for the bridge. Additional marine radios monitoring the above channels must also be maintained at the main control of any floating equipment or barges on station.
11. Preventive measures must be taken to prevent any hot work, debris, or construction material from entering the waterway. This includes sandblasting material, paint, and any concrete work by-products. Welding and burning must cease upon approach of a vessel and shall not start again until the vessel has passed the bridge.
12. The project manager must contact the Coast Guard Sector New York-VTS via marine radio before commencement of any and after completion of any Hot Work. A cell phone back-up may be used to contact the above Coast Guard Unit at (718) 354-4088.
13. If permanent bridge navigational lighting cannot be maintained operational during any phase of this project, temporary battery/power lights must be installed at the same locations. These temporary lights must be visible for a distance of **2,000 yards on 90% of the nights of the year**. Generally, a lamp of (**50 candela**) will meet these requirements. Plans for temporary lighting shall be submitted to this office for written approval. Deviations from the approved temporary lighting shall be permitted only upon written authorization from this office.
14. **All newly constructed bridge piers, or those in the process of demolition, must be lighted with either red or white flashing (60 flashes per minute) lights. All cofferdams used during construction must also be lighted with red or white flashing (60 flashes per minute) on all four corners.**
15. Bridge protective fenders shall not be constructed or rebuilt with any metal surfaces on the rubbing face of the fender system. All bolts, spikes, or other metal fastening devices must be countersunk. Metal splicing plates, if used, shall be mounted on back of outer wales.
16. All piles including those previously damaged or broken that are not being used in the new or repaired fender shall be extracted rather than cut off at the mud line. Upon completion of all fender repairs a bottom sweep is required to determine if any piles or debris are present in the waterway. A wire-drag sweep or side-scan sonar is the preferred method.
17. It is the owners' responsibility to ensure that channel depths are not affected by this work.

Any material, machinery or equipment lost, dumped, thrown into, or otherwise entering the waterway must be removed immediately. If immediate removal is impractical and the object entering the waterway could possibly obstruct or hazard navigation, the object must be marked immediately to protect navigation and the Coast Guard shall be notified as soon as possible. Such notification shall give the location and type of obstruction and the navigational markings installed.

18. Spillage of oil and hazardous substances is specifically prohibited by Section 311 of the Clean Water Act, as amended. Measures including properly maintaining construction equipment, designating fuel/hazardous substances handling areas to allow spills to be contained before reaching the waterway, instructing personnel not to dispose of oil/hazardous substances into drains or into the waterway directly, and other necessary procedures should be implemented to prevent spillage. If oil/hazardous substances are spilled into the waterway in spite of such planning, the U.S. Coast Guard is to be notified immediately at 800-424-8802. An adequate supply of absorbent material should be readily accessible to soak up any possible spillage pending Coast Guard arrival. The use of chemical dispersing agents and emulsifiers is not authorized without prior, specific, federal approval.
19. The bridge owner/contractor shall provide any and all necessary equipment and personnel to determine the presence of any "suspected" obstructions in the waterway at any time either during or following the completion of bridge construction or demolition operations.
20. The owner or registered professional engineer shall certify that the waterway depths have not been impaired and that the waterway is clear of materials or debris resulting from bridge construction or demolition.
21. This approval may be revoked and/or civil penalties imposed for failure to ensure that the above listed stipulations are adhered to or if work is determined to hazard or impair navigation.
22. This bridge work authorization does not relieve the project proponent of the responsibility to comply with applicable state, local or other federal requirements for this project.

**Construction Contracts - Required Contract Provisions
(FHWA Funded Contracts)**

Index

1. Federal Highway Administration (FHWA) Form 1273 (Revised May 1, 2012)
2. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements
3. Contractor Work Force Utilization (Federal Executive Order 11246) / Specific Equal Employment Opportunity
4. Requirements of Title 49, CFR , Part 26, Participation by DBEs
5. Contract Wage Rates
6. Americans with Disabilities Act of 1990, as Amended
7. Connecticut Statutory Labor Requirements
 - a. Construction, Alteration or Repair of Public Works Projects; Wage Rates
 - b. Debarment List - Limitation on Awarding Contracts
 - c. Construction Safety and Health Course
 - d. Awarding of Contracts to Occupational Safety and Health Law Violators Prohibited
 - e. Residents Preference in Work on Other Public Facilities (Not Applicable to Federal Aid Contracts)
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9. Executive Orders (State of CT)
10. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised)
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 - a. Disclosure of Records
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18. Audit and Inspection of Plants, Places of Business and Records
19. Campaign Contribution Restriction
20. Tangible Personal Property
21. Bid Rigging and/or Fraud – Notice to Contractor
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23. Federal Cargo Preference Act Requirements (46 CFR 381.7(a)-(b))

Index of Exhibits

- EXHIBIT A – FHWA Form 1273 (Begins on page 14)
- EXHIBIT B – Title VI Contractor Assurances (page 35)
- EXHIBIT C – Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity (page 36)
- EXHIBIT D – Health Insurance Portability and Accountability Act of 1996 (HIPAA) (page 43)
- EXHIBIT E - Campaign Contribution Restriction (page 51)
- EXHIBIT F – Federal Wage Rates (Attached at the end)
- EXHIBIT G - State Wage Rates (Attached at the end)

1. Federal Highway Administration (FHWA) Form 1273

The Contractor shall comply with the Federal Highway Administration (FHWA), Form 1273 attached at Exhibit A, as revised, which is hereby made part of this contract. The Contractor shall also require its subcontractors to comply with the FHWA – Form 1273 and include the FHWA – Form 1273 as an attachment to all subcontracts and purchase orders.

2. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements

The Contractor shall comply with Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000 et seq.), all requirements imposed by the regulations of the United States Department of Transportation (49 CFR Part 21) issued in implementation thereof, and the Title VI Contractor Assurances attached hereto at Exhibit B, all of which are hereby made a part of this Contract.

3. Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity

- (a) The Contractor shall comply with the Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity requirements attached at Exhibit C and hereby made part of this Contract, whenever a contractor or subcontractor at any tier performs construction work in excess of \$10,000. These goals shall be included in each contract and subcontract. Goal achievement is calculated for each trade using the hours worked under each trade.
- (b) Companies with contracts, agreements or purchase orders valued at \$10,000 or more will develop and implement an Affirmative Action Plan utilizing the ConnDOT Affirmative Action Plan Guideline. This Plan shall be designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex or national origin, and to promote the full realization of equal employment opportunity through a positive continuation program. Plans shall be updated as required by ConnDOT.

4. Requirements of Title 49, Code of Federal Regulations (CFR), Part 26, Participation by DBEs, as may be revised.

Pursuant to 49 CFR 26.13, the following paragraph is part of this Contract and shall be included in each subcontract the Contractor enters into with a subcontractor:

“The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26, Participation by DBEs, in the award and administration of U.S. DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this contract or such other remedy as ConnDOT (recipient) deems appropriate, which may include, but is not limited to: (1) Withholding monthly progress payments, (2) Assessing sanctions, (3) Liquidated damages; and/or, (4) Disqualifying the contractor from future bidding as non-responsible.”

5. Contract Wage Rates

The Contractor shall comply with:

The Federal and State wage rate requirements indicated in Exhibits F and G hereof, as revised, are hereby made part of this Contract. The Federal wage rates (Davis-Bacon Act) applicable to this Contract shall be the Federal wage rates that are current on the US Department of Labor website (<http://www.wdol.gov/dba.aspx>) as may be revised 10 days prior to bid opening. These applicable Federal wage rates will be physically incorporated in the final contract document executed by both parties. The Department will no longer physically include revised Federal wage rates in the bid documents or as part of addenda documents, prior to the bid opening date. During the bid advertisement period, bidders are responsible for obtaining the appropriate Federal wage rates from the US Department of Labor website.

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

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

Prevailing Wages for Work on State Highways; Annual Adjustments. With respect to contracts for work on state highways and bridges on state highways, the Contractor shall comply with the provisions of Section 31-54 and 31-55a of the Connecticut General Statutes, as revised.

As required by Section 1.05.12 (Payrolls) of the State of Connecticut, Department of Transportation's Standard Specification for Roads, Bridges and Incidental Construction (FORM 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.

6. Americans with Disabilities Act of 1990, as Amended

This provision applies to those Contractors who are or will be responsible for compliance with the terms of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. 12101 et seq.), (Act), during the term of the Contract. The Contractor represents that it is familiar with the terms of this Act and that it is in compliance with the Act. Failure of the Contractor to satisfy this standard as the same applies to performance under this Contract, either now or during the term of the Contract as it may be amended, will render the Contract voidable at the option of the State upon notice to the contractor. The Contractor warrants that it will hold the State harmless and indemnify the State from any liability which may be imposed upon the State as a result of any failure of the Contractor to be in compliance with this Act, as the same applies to performance under this Contract.

7. Connecticut Statutory Labor Requirements

(a) Construction, Alteration or Repair of Public Works Projects; Wage Rates. The Contractor shall comply with Section 31-53 of the Connecticut General Statutes, as revised. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (i)

of section 31-53 of the Connecticut General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

(b) Debarment List. Limitation on Awarding Contracts. The Contractor shall comply with Section 31-53a of the Connecticut General Statutes, as revised.

(c) Construction Safety and Health Course. The Contractor shall comply with section 31-53b of the Connecticut General Statutes, as revised. The contractor shall furnish proof to the Labor Commissioner with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 of the Connecticut General Statutes, as revised, on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

Any employee required to complete a construction safety and health course as required that has not completed the course, shall have a maximum of fourteen (14) days to complete the course. If the employee has not been brought into compliance, they shall be removed from the project until such time as they have completed the required training.

Any costs associated with this notice shall be included in the general cost of the contract. In addition, there shall be no time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall not be grounds for claims as outlined in Section 1.11 – "Claims".

(d) Awarding of Contracts to Occupational Safety and Health Law Violators Prohibited. The Contract is subject to Section 31-57b of the Connecticut General Statutes, as revised.

(e) Residents Preference in Work on Other Public Facilities. NOT APPLICABLE TO FEDERAL AID CONTRACTS. Pursuant to Section 31-52a of the Connecticut General Statutes, as revised, in the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the state who are, and continuously for at least six months prior to the date hereof have been, residents of this state, and if no such person is available, then to residents of other states

8. Tax Liability - Contractor's Exempt Purchase Certificate (CERT – 141)

The Contractor shall comply with Chapter 219 of the Connecticut General Statutes pertaining to tangible personal property or services rendered that is/are subject to sales tax. The Contractor is responsible for determining its tax liability. If the Contractor purchases materials or supplies pursuant to the Connecticut Department of Revenue Services' "Contractor's Exempt Purchase Certificate (CERT-141)," as may be revised, the Contractor acknowledges and agrees that title to such materials and supplies installed or placed in the project will vest in the State simultaneously with passage of title

from the retailers or vendors thereof, and the Contractor will have no property rights in the materials and supplies purchased.

Forms and instructions are available anytime by:

Internet: Visit the DRS website at www.ct.gov/DRS to download and print Connecticut tax forms; or Telephone: Call 1-800-382-9463 (Connecticut calls outside the Greater Hartford calling area only) and select Option 2 or call 860-297-4753 (from anywhere).

9. Executive Orders

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the contract as if they had been fully set forth in it. The contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order No. 14 and/or Executive Order No. 49 are applicable, they are deemed to be incorporated into and are made a part of the contract as if they had been fully set forth in it. At the Contractor's request, the Department shall provide a copy of these orders to the Contractor.

10. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised): References to "minority business enterprises" in this Section are not applicable to Federal-aid projects/contracts. Federal-aid projects/contracts are instead subject to the Federal Disadvantaged Business Enterprise Program.

(a) For purposes of this Section, the following terms are defined as follows:

- 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>

11. Whistleblower Provision

The following clause is applicable if the Contract has a value of Five Million Dollars (\$5,000,000) or more.

Whistleblowing. This Contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the Contractor takes or threatens to take any personnel action against any employee of the Contractor in retaliation for such employee's disclosure of information to any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, the Contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation, each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the Contractor.

12. Connecticut Freedom of Information Act

(a) Disclosure of Records. This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.

(b) Confidential Information. The State will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the State receives from the Contractor. However, all materials associated with the Contract are subject to the terms of the FOIA and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation

and rationale sufficient to justify each exemption consistent with the FOIA must accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract conflicts or is in any way inconsistent with this section, this section controls and shall apply and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking the documentation as "CONFIDENTIAL," DOT will first review the Contractor's claim for consistency with the FOIA (that is, review that the documentation is actually a trade secret or commercial or financial information and not required by statute), and if determined to be consistent, will endeavor to keep such information confidential to the extent permitted by law. See, *e.g.*, Conn. Gen. Stat. §1-210(b)(5)(A-B). The State, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. Should the State withhold such documentation from a Freedom of Information requester and a complaint be brought to the Freedom of Information Commission, the Contractor shall have the burden of cooperating with DOT in defense of that action and in terms of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the State have any liability for the disclosure of any documents or information in its possession which the State believes are required to be disclosed pursuant to the FOIA or other law.

13. Service of Process

The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoints the Secretary of State of the State of Connecticut, and his successors in office, as agent for service of process for any action arising out of or as a result of this Contract; such appointment to be in effect throughout the life of this Contract and six (6) years thereafter.

14. Substitution of Securities for Retainages on State Contracts and Subcontracts

This Contract is subject to the provisions of Section 3-112a of the General Statutes of the State of Connecticut, as revised.

15. Health Insurance Portability and Accountability Act of 1996 (HIPAA)

The Contractor shall comply, if applicable, with the Health Insurance Portability and Accountability Act of 1996 and, pursuant thereto, the provisions attached at Exhibit D, and hereby made part of this Contract.

16. Forum and Choice of Law

Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be

brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

17. Summary of State Ethics Laws

Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.

18. Audit and Inspection of Plants, Places of Business and Records

- (a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract. For the purposes of this Section, "Contractor Parties" means the Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.
- (b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.
- (c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.
- (d) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
- (e) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
- (f) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

19. Campaign Contribution Restriction

For all State contracts, defined in Conn. Gen. Stat. §9-612(f)(1) as having a value in a calendar year of \$50,000 or more, or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this contract expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," a copy of which is attached hereto and hereby made a part of this contract, attached as Exhibit E.

20. Tangible Personal Property

- (a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:
- (1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;
 - (2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;
 - (3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
 - (4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
 - (5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.
- (b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.
- (c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.

21. Bid Rigging and/or Fraud – Notice to Contractor

The Connecticut Department of Transportation is cooperating with the U.S. Department of Transportation and the Justice Department in their investigation into highway construction contract bid rigging and/or fraud.

A toll-free "HOT LINE" telephone number 800-424-9071 has been established to receive information from contractors, subcontractors, manufacturers, suppliers or anyone with knowledge of bid rigging and/or fraud, either past or current. The "HOT LINE" telephone number will be available during normal working hours (8:00 am – 5:00 pm EST). Information will be treated confidentially and anonymity respected.

22. Consulting Agreement Affidavit

The Contractor shall comply with Connecticut General Statutes Section 4a-81(a) and 4a-81(b), as revised. Pursuant to Public Act 11-229, after the initial submission of the form, if there is a change in the information contained in the form, a contractor shall submit the updated form, as applicable, either

(i) not later than thirty (30) days after the effective date of such change or (ii) prior to execution of any new contract, whichever is earlier.

The Affidavit/Form may be submitted in written format or electronic format through the Department of Administrative Services (DAS) website.

23. Cargo Preference Act Requirements (46 CFR 381.7(a)-(b)) – Use of United States Flag Vessels

The Contractor agrees to comply with the following:

(a) ***Agreement Clauses.***

- (1) Pursuant to Pub. L. 664 ([43 U.S.C. 1241\(b\)](#)) at least 50 percent of any equipment, materials or commodities procured, contracted for or otherwise obtained with funds granted, guaranteed, loaned, or advanced by the U.S. Government under this agreement, and which may be transported by ocean vessel, shall be transported on privately owned United States-flag commercial vessels, if available.
- (2) Within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (a)(1) of this section shall be furnished to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(b) ***Contractor and Subcontractor Clauses.*** The contractor agrees—

- (1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
- (2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
- (3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

EXHIBIT A

FHWA-1273 -- Revised May 1, 2012

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of

such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26, and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26, in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the

provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible

therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;
- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out

the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from

participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

EXHIBIT B**TITLE VI CONTRACTOR ASSURANCES**

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 C**CONTRACTOR WORKFORCE UTILIZATION (FEDERAL EXECUTIVE ORDER 11246) /
EQUAL EMPLOYMENT OPPORTUNITY
(Federal - FHWA)****1. Project Workforce Utilization Goals:**

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted or funded) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where the work is actually performed.

Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications which contain the applicable goals for minority and female participation.

The goals for minority and female utilization are expressed in percentage terms for the contractor's aggregate work-force in each trade on all construction work in the covered area, are referenced in the attached Appendix A.

2. Executive Order 11246

The Contractor's compliance with Executive Order 11246 and 41-CFR Part 60-4 shall be based on its implementation of the specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(A) and its efforts to meet the goals established for the geographical area where the contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hour performed.

If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved Pan does not excuse any covered Contractor's or subcontractor's failure to take good faith efforts to achieve the plan goals and timetables.

The Contractor shall implement the specific affirmative action standards provided in a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and

female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs (OFCCP) Office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant hereto.

In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites; and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off the street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason thereafter; along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the Union or Unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or women sent by the Contractor, or when the Contractor has other

information that the Union referral process has impeded the Contractor's efforts to meet its obligations.

- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO Policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company EEO Policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment, decisions including specific Foreman, etc. prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO Policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work-force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and

employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

- n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review at least annually of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (a through p). The efforts of a contractor association, joint contractor union, contractor community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work-force participation, makes a good faith effort to meet with individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of Executive Order 11246 if a particular group is employed in a substantially disparate manner, (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is under utilized).

The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in these

specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status, (e.g. mechanic, apprentice, trainee, helper, or laborer) dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

Nothing herein provided shall be construed as a limitation upon the application of their laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

The Director of the Office of Federal Contract Compliance Programs, from time to time, shall issue goals and timetables for minority and female utilization which shall be based on appropriate workforce, demographic or other relevant data and which shall cover construction projects or construction contracts performed in specific geographical areas. The goals, which shall be applicable to each construction trade in a covered contractor's or timetables, shall be published as notices in the Federal Register, and shall be inserted by the Contracting officers and applicants, as applicable, in the Notice required by 41 CFR 60-4.2.

FEDERALLY FUNDED OR ASSISTED PROJECTS**APPENDIX A****(Labor Market Goals)****Standard Metropolitan Statistical Area (SMSA)****Female****Minority**

Bridgeport – Stamford – Norwalk – Danbury	10.2%
6.9%	

Bethel	Bridgeport	Brookfield	Danbury
Darien	Derby	Easton	Fairfield
Greenwich	Milford	Monroe	New Canaan
New Fairfield	Newton	Norwalk	Redding
Shelton	Stamford	Stratford	Trumbull
Weston	Westport	Wilton	

Hartford – Bristol – New Britain	6.9%
6.9%	

Andover	Avon	Berlin	Bloomfield
Bolton	Bristol	Burlington	Canton
Colchester	Columbia	Coventry	Cromwell
East Granby	East Hampton	East Hartford	East Windsor
Ellington	Enfield	Farmington	Glastonbury
Granby	Hartford	Hebron	Manchester
Marlborough	New Britain	New Hartford	Newington
Plainville	Plymouth	Portland	Rocky Hill
Simsbury	South Windsor	Southington	Stafford
Suffield	Tolland	Vernon	West Hartford
Wethersfield	Willington	Windsor	Windsor Locks

New Haven – Waterbury – Meriden	9.0%
6.9%	

Beacon Falls	Bethany	Branford	Cheshire
Clinton	East Haven	Guilford	Hamden
Madison	Meriden	Middlebury	Naugatuck
New Haven	North Branford	North Haven	Orange
Prospect	Southbury	Thomaston	Wallingford
Waterbury	Watertown	West Haven	Wolcott
Woodbridge	Woodbury		

New London – Norwich	4.5%
6.9%	

Bozrah	East Lyme	Griswold	Groton
Ledyard	Lisbon	Montville	New London
Norwich	Old Lyme	Old Saybrook	Preston
Sprague	Stonington	Waterford	

Non SMSA**Female****Minority**

Litchfield – Windham			5.9%
6.9%			
Abington	Ashford	Ballouville	Bantam
Barkhamsted	Bethlehem	Bridgewater	Brooklyn
Canaan	Canterbury	Central Village	Cahplin
Colebrook	Cornwall	Cornwall Bridge	Danielson
Dayville	East Canaan	East Killingly	East Woodstock
Eastford	Falls Village	Gaylordsville	Goshen
Grosvenor Dale	Hampton	Harwinton	Kent
Killigly	Lakeside	Litchfield	Moosup
Morris	New Milford	New Preston	New Preston Marble Dale
Norfolk	North Canaan	No. Grosvenordale	North Windham
Oneco	Pequabuck	Pine Meadow	Plainfield
Pleasant Valley	Pomfret	Pomfret Center	Putnam
Quinebaug	Riverton	Rogers	Roxbury
Salisbury	Scotland	Sharon	South Kent
South Woodstock	Sterling	Taconic	Terryville
Thompson	Torrington	Warren	Warrenville
Washington	Washington Depot	Wauregan	West Cornwall
Willimantic	Winchester	Winchester Center	Windham
Winsted	Woodstock	Woodstock Valley	

EXHIBIT D**Health Insurance Portability and Accountability Act of 1996 (“HIPAA”).**

- (a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.
- (b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and
- (c) The State of Connecticut Agency named on page 1 of this Contract (hereinafter the “Department”) is a “covered entity” as that term is defined in 45 C.F.R. § 160.103; and
- (d) The Contractor, on behalf of the Department, performs functions that involve the use or disclosure of “individually identifiable health information,” as that term is defined in 45 C.F.R. § 160.103; and
- (e) The Contractor is a “business associate” of the Department, as that term is defined in 45 C.F.R. § 160.103; and
- (f) The Contractor and the Department agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (hereinafter the HITECH Act), (Pub. L. 111-5, sections 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.
- (g) Definitions
 - (1) “Breach shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1))
 - (2) “Business Associate” shall mean the Contractor.
 - (3) “Covered Entity” shall mean the Department of the State of Connecticut named on page 1 of this Contract.
 - (4) “Designated Record Set” shall have the same meaning as the term “designated record set” in 45 C.F.R. § 164.501.
 - (5) “Electronic Health Record” shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5))

- (6) "Individual" shall have the same meaning as the term "individual" in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).
 - (7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and parts 164, subparts A and E.
 - (8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.
 - (9) "Required by Law" shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.
 - (10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.
 - (11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.
 - (12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.
 - (13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R. § 164.304.
 - (14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and parts 164, subpart A and C.
 - (15) "Unsecured protected health information" shall have the same meaning as the term as defined in section 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. §17932(h)(1)(A)).
- (h) Obligations and Activities of Business Associates.
- (1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.
 - (2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.
 - (3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.
 - (4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.

- (5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.
- (6) Business Associate agrees to insure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.
- (7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524.
- (8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.
- (9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.
- (10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (12) Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.
- (13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.

- (14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.
- (15) Business Associate agrees that it shall not, directly or indirectly, receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act,(42 U.S.C. § 17935(d)(2)) and in any accompanying regulations
- (16) Obligations in the Event of a Breach
- A. The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. 17932(b) and the provisions of this Section of the Contract.
- B. Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. 17932(g)) . A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.
- C. The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.
 2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).
 3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.
 4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.
 5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to

individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and; if so, include contact information for said official.

- D. Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor.
 - E. Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.
- (i) Permitted Uses and Disclosure by Business Associate.
- (1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.
 - (2) Specific Use and Disclosure Provisions
 - (A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.
 - (B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.
 - (C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).
- (j) Obligations of Covered Entity.

- (1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.
 - (2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.
 - (3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.
- (k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.
- (l) Term and Termination.
- (1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.
 - (2) Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:
 - (A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or
 - (B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or
 - (C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.
 - (3) Effect of Termination
 - (A) Except as provided in (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

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 result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/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 F

(federal wage rate package will be inserted here for final executed contract only. Refer to NTC – Federal Wage Determinations)

EXHIBIT G

(state wages will be inserted here)

Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

**Minimum Rates and Classifications
for Heavy/Highway Construction**

ID#: H 25341

**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: Norwalk

FAP Number:

State Number: 173-462

Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

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**

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
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As of:

Monday, October 15, 2018

Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

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
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Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

4d) Painters: Blast and Spray	36.62	21.05
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4e) Painters: Tanks, Tower and Swing	35.62	21.05
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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
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6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	35.47	35.14 + a
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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
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---LABORERS----

8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	30.05	20.10
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Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	30.30	20.10
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10) Group 3: Pipelayers	30.55	20.10
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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
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12) Group 5: Toxic waste removal (non-mechanical systems)	32.05	20.10
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13) Group 6: Blasters	31.80	20.10
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Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	31.05	20.10
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Group 8: Traffic control signalmen	16.00	20.10
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As of:

Monday, October 15, 2018

Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

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
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13b) Brakemen, Trackmen	31.28	20.10 + a
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---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: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

---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
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---TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED
AIR: ----

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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Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	36.41	20.10 + a
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21) Mucking Machine Operator	39.11	20.10 + a
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---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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Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

Four axle ready-mix	29.38	23.33 + a
<hr/>		
Heavy duty trailer (40 tons and over)	29.58	23.33 + a
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Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.38	23.33 + a
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---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
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Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	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
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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

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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: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	35.46	24.05 + a
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Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	33.04	24.05 + a
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**NOTE: SEE BELOW

---LINE CONSTRUCTION---(Railroad Construction and Maintenance)---

20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
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21) Heavy Equipment Operator	42.26	6.5% + 19.88
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22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
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Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

23) Driver Groundmen	26.50	6.5% + 9.00
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23a) Truck Driver	40.96	6.5% + 17.76
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---LINE CONSTRUCTION---

24) Driver Groundmen	30.92	6.5% + 9.70
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25) Groundmen	22.67	6.5% + 6.20
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26) Heavy Equipment Operators	37.10	6.5% + 10.70
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27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
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Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

28) Material Men, Tractor Trailer Drivers, Equipment Operators 35.04 6.5% + 10.45

Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

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: Monday, October 15, 2018

Project: Rehabilitation Of Bridge Number 02295 Route 136 Over Norwalk River

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:

Monday, October 15, 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