

## **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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JULY 26, 2017  
FEDERAL AID PROJECT NO. 0349(002)  
STATE PROJECT NO. 58-332

RECONSTRUCTION OF ROUTE 349 NB AND SB OVER AMTRAK RAILROAD

Town of Groton  
Federal Aid Project No. 0349(002)

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016, 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 RECONSTRUCTION OF ROUTE 349 NB AND SB OVER AMTRAK RAILROAD in the Town of Groton.

**CONTRACT TIME AND LIQUIDATED DAMAGES**

Four Hundred Eighty Three (483) calendar days will be allowed for completion of the work on this project and the liquidated damages charge to apply will be Three Thousand Dollars (\$3,700.00) 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](mailto: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 - FEDERAL WAGE DETERMINATIONS (Davis Bacon Act)**

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

Check Applicable WD# (DOT Use Only)	WD#	Construction Type	Counties
	CT1	Highway	Fairfield, Litchfield, Middlesex, New Haven, Tolland, Windham
<b>X</b>	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 - VERIFICATION OF PLAN DIMENSIONS AND FIELD MEASUREMENTS**

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

In the field, the Contractor shall examine and verify all existing and given conditions and dimensions with those shown on the plans. If field conditions differ from what has been shown on the plans, the Contractor shall use the field conditions and dimensions. The Contractor shall note the changed field conditions and dimensions on the plans, when submitted for approval.

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

**NOTICE TO CONTRACTOR - MINIMUM CONCRETE COMPRESSIVE STRENGTH**

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



**NOTICE TO CONTRACTOR - USE OF STATE POLICE OFFICERS**

The Department will reimburse services of State Police Officers as a direct payment to the Department of Emergency Services and Public Protection. Payment for State Police Officers utilized by the Contractor for its convenience, not approved by the Engineer, is the responsibility of the Contractor. No separate payment item for State Police Officers is included in this contract.

Any costs associated with coordination and scheduling of State Police Officers will be included under the cost of Item No. 0971001A – Maintenance and Protection of Traffic.

## **NOTICE TO CONTRACTOR - PROCUREMENT OF MATERIALS**

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

## **NOTICE TO CONTRACTOR - Federal Rail Safety Regulations (49 C.F.R. Part 219) Concerning Alcohol and Drug Testing**

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

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

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

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

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

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

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

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

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

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

## **NOTICE TO CONTRACTOR - RAILROAD SPECIFICATIONS**

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

## **NOTICE TO CONTRACTOR - WORK ON RAILROAD PROPERTY**

The Contractor is herein notified of the following:

- Amtrak Temporary Permit to Enter Upon Property
  - The cost of obtaining this permit, including the cost of complying with the specifications attached to the Permit shall be included in the general cost of the work.
- Amtrak Contractor Orientation Training
  - The cost for the Safety Orientation Training, and re-training if required, is the Contractor's responsibility and shall be included in the general cost of the work.
- Railroad Protective Liability Insurance
  - The cost for Railroad Protective Liability Insurance is the Contractor's responsibility and shall be included in the general cost of the work.
- Cost of Railroad Protection
  - The cost of Railroad Protection necessary to complete the work shown in the contract will be paid directly by the Department under a separate Force Account Agreement.
- Railroad Traffic/Usage Information
  - The railroad traffic/usage information on schedules can be obtained from Amtrak and also found on Amtrak's website. A sample schedule for the **Northeast Corridor Boston/Springfield and Washington, DC** (effective April 3, 2017) is included herein for use/information. The Contractor shall confirm or obtain the most current schedule for the **Northeast Corridor Boston/Springfield and Washington, DC** prior to commencement of the work.
    - It should be expressly understood that; a) actual length of time for any track outage is contingent upon operating schedules at time of construction; b) programmed Amtrak construction and maintenance work requiring track outage within the same operating block will have priority, therefore contract work requiring track outage, if scheduled within the same time frame, must be coordinated with such work; and c) the potential times for track outages are not guaranteed and are for normal operating conditions. Contractors will be required to submit a two week look ahead schedule to coordinate work outages with other projects. Outages are subject to availability based on Train operations and other Amtrak projects.

- Amtrak Engineering Standards

- All Amtrak Engineering Practices and Specifications contained herein shall be made part of this contract, and that the Contractor shall be bound to comply with the requirements of such specifications. The requirements and conditions set forth in the subject specifications applies to all Contractor work performed on Amtrak Right-of-Way and adjacent to Amtrak tracks and shall be binding on the Contractor just as any other specification.

<b>Amtrak Engineering Practices Item / Related Attachment</b>	<b>Number</b>
<p>Design and Construction Criteria for Overhead Bridges</p> <p><b>ET Standard Plan ET 1446-D</b> <b>ET Standard Plan ET 1447-D</b></p> <p><i>The design for any construction platform(s), barrier(s) or shield(s) must be submitted to Amtrak.</i></p>	EP3006
<p>Maintenance and Protection of Railroad Traffic During Contractor Operations</p> <p><b>01141A – Safety and Protection of Railroad Traffic and Property</b> <b>01142A – Submission Documentation Required for Amtrak Review and Approval of Plans for Bridge Erection, Demolition and Other Crane/Hoisting Operations over Railroad Right-of-Way</b> <b>01520A –Requirements for Temporary Protection Shields for Demolition and Construction of Overhead Bridges and Other Structures</b> <b>02261A – Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks</b></p> <p><i>All work performed within Amtrak’s right-of-way requires temporary shielding. Any debris falling onto Amtrak property or damage to Amtrak infrastructure resulting from the work shall be immediately reported to Amtrak. Damage to Amtrak infrastructure will be repaired by railroad forces at the Contractor’s expense.</i></p>	EP3014
<p>Storm Water Drainage and Discharge from Adjacent Property onto Amtrak Right-of-Way</p> <p><b>Stormwater Management Policy</b></p> <p><i>No drainage shall be allowed to flow onto railroad property during and after construction. No drainage shall be directed towards the track or Right-of Way.</i></p>	EP3016
<p>Design Exception Request (DER)</p> <p><b>Standard Track Plan - Minimum Roadway Clearances – Dwg. No. 70050.001.08</b> <b>Standard Track Plan - Minimum Roadway Clearances – Dwg. No. 70050.001.08</b></p> <p><i>Any instance where the proposed clearance(s) is less than the Amtrak minimum clearance specifications and/or less than the existing clearance, a work around or alternative protection must be submitted on the DER form for Amtrak review and approval. Submission of the DER does not guarantee Amtrak approval of the requested exception.</i></p>	~
<p>Bonding and Grounding Instructions</p> <p><b>Overhead Contact System Concrete Bridge Grounding Typical – Dwg. No. JVCC8101</b> <b>Overhead Contact System Typical Bridge Grounding Details – Dwg. No. JVCC8103_1</b> <b>Overhead Contact System Typical Bridge Grounding Details – Dwg. No. JVCC8103_2</b></p> <p><i>The Contractor will be responsible for bonding and grounding the proposed debris shield. The proposed shield ground wire must be tied into the existing bridge grounding configuration.</i></p>	~

**National Railroad Passenger Corporation  
30<sup>th</sup> Street Station, Mail Box 64  
2955 Market Street  
Philadelphia, PA 19104**

**Temporary Permits to Enter Upon Amtrak Property (PTE)**

Requests for Temporary Permits to Enter Upon Amtrak Property (PTE) must be submitted to Amtrak in writing and include the following information:

1. Name of company requesting the permit (include address and telephone number)
2. Who's attention the permit should be addressed to
3. Permittee's e-mail address
4. Exact location of work (including railroad milepost, if known)
5. Specific work activity being performed on railroad property (please provide dollar value of the contract if work being performed is other than surveys or bridge inspections)
6. Projected duration of work being performed on railroad property
7. Contact, phone and address where invoices should be sent for payment by Permittee.

**Due to the heavy volume of requests for Temporary Permits to Enter Upon Amtrak Property, the processing time for initial Permit requests is approximately 30 business days.**

***Note: Temporary Permits for performing any environmental or geotechnical tests or studies (e.g., air, soil or water sampling) may be issued subsequent to completion of Amtrak's environmental review and approval process. Requests are reviewed on a case-by-case basis. Depending on the site specific circumstances, a separate Site Access Agreement that addresses environmental liability issues may be required prior to any Temporary Permit.***

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**All PTE Requests must be submitted to the Amtrak Engineering Construction Department e-mail or mail as noted below:**

- Email to [mcgratm@amtrak.com](mailto:mcgratm@amtrak.com) or mailed to:  
Senior Manager Engineering  
National Railroad Passenger Corporation  
30<sup>th</sup> Street Station, Mail Box 64  
2955 Market Street  
Philadelphia, PA 19104

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*Rev. 03/07/16*



AMTRAK  
Engineering  
30<sup>th</sup> and Market Streets – 3 North – Box 15  
Philadelphia, PA 19104

### Contractor Orientation Training Request

Starting January 2017, the cost of computer based training will increase to \$25.00 per person. This training can be completed at [www.amtrakcontractor.com](http://www.amtrakcontractor.com) and requires participants to register on the website before accessing the course. The course is available 24 hours / 7 days per week. Participants completing this course are required to be able to **Read, Comprehend and Demonstrate in English their understanding of the materials presented, as well as all the safety instructions, briefings and warnings.** Before taking this course, participants will be required to provide a current photo and have the capability of uploading the photo electronically. At the end of this course, participants are required to pass a comprehensive test to receive a temporary certificate that is valid for fifteen days. A Photo ID card, which is valid for one calendar year from the date of issue, will be mailed to the participant. Each participant will be given three (3) opportunities to pass the test. If unable to pass on the 3<sup>rd</sup> attempt, the participant will be unable to retake the test for 30 days.

The safety of Amtrak's passengers and all employees working on the property (Amtrak and Contractor personnel) remains our highest priority. For your protection, Amtrak requires that your employees comply with all safety regulations ("Specifications Regarding Safety and Protection of the Railroad Traffic Property").

All contractors must notify the Amtrak Project Manager or Engineer assigned to your project before entering onto railroad property and before coming within twenty-five (25 feet) of the centerline of the track or energized wire. Amtrak's Project Manager or Engineer assigned to your project will assist you with obtaining a temporary "Permit to Enter upon Property" and will arrange for protection if needed. All permits to enter Amtrak property are obtained by contacting the Director of I & C Projects. Safety violations will result in the immediate suspension of work within the railroad's property limits.

Thank You

Amtrak Engineering



## **EXHIBIT D**

### **INSURANCE REQUIREMENTS**

**NATIONAL RAILROAD PASSENGER CORPORATION (AMTRAK)**

**CHICAGO UNION STATION COMPANY (CUSCO)**

**WASHINGTON TERMINAL COMPANY (WTC)**

**Revised as of March 14, 2013**

#### **DEFINITIONS**

In these Insurance Requirements, "Railroad" or "Amtrak" shall mean National Railroad Passenger Corporation and, as appropriate, its subsidiaries Chicago Union Station Company ("CUSCO") and Washington Terminal Company ("WTC"). "Contractor" shall mean the party identified as "Permittee" in the Temporary Permit to Enter Upon Property Agreement or the party with whom Amtrak has contracted in another agreement (e.g., Preliminary Engineering Agreement, Design Phase Agreement, Construction Phase Agreement or Force Account Agreement), as well as its officers, employees, agents, servants, contractors, subcontractors, or any other person acting for or by permission of Contractor. "Operations" shall mean activities of or work performed by Contractor. "Agreement" shall mean the Temporary Permit to Enter Upon Property Agreement or other such agreement, as applicable.

#### **INSURANCE**

Contractor shall procure and maintain, at its sole cost and expense, the types of insurance specified below. Contractor shall evidence such coverage by submitting to Amtrak the original Railroad Protective Liability Policy and certificates of insurance evidencing the other required insurance, prior to commencement of Operations. In addition, Contractor agrees to provide certified copies of the insurance policies for the required insurance within 30 days of Amtrak's written request. All insurance shall be procured from insurers authorized to do business in the jurisdiction(s) where the Operations are to be performed. Contractor shall require all subcontractors to carry the insurance required herein or Contractor may, at its option, provide the coverage for any or all subcontractors, provided the evidence of insurance submitted by Contractor to Amtrak so stipulates. The insurance shall provide for thirty (30) days prior written notice to Amtrak in the event coverage is substantially changed, canceled or non-renewed. All insurance shall remain in force until all Operations are satisfactorily completed (unless otherwise noted below), all Contractor personnel and equipment have been removed from Railroad property, and any work has been formally accepted. Contractor may provide for the insurance coverages with such deductibles or retained amounts as Amtrak may approve from time to time, except, however, that Contractor shall, at its sole expense, pay for all claims and damages which fall within such deductible or retained amount on the same basis as if there were full commercial insurance in force in compliance with these requirements. Contractor's failure to comply with the insurance requirements set forth herein shall constitute a violation of the Agreement.

1. **Workers' Compensation Insurance** complying with the requirements of the statutes of the jurisdiction(s) in which the Operations will be performed, covering all employees of Contractor.

Employer's Liability coverage with limits of not less than \$1 million each accident or illness shall be included.

In the event the Operations are to be performed on, over, or adjacent to navigable waterways, a U.S. Longshoremen and Harbor Workers' Compensation Act Endorsement and Outer Continental Lands Act Endorsement are required.

2. **Commercial General Liability (CGL) Insurance** covering liability of Contractor with respect to all operations to be performed and all obligations assumed by Contractor under the terms of the Agreement. Products-completed operations, independent contractors and contractual liability coverages are to be included, with the contractual exclusion related to construction/demolition activity within fifty (50) feet of the railroad deleted and no exclusions for Explosion/Collapse/Underground (X-C-U) applicable or added.

The policy shall name National Railroad Passenger Corporation and, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue as additional insureds with respect to the operations to be performed. In addition, the policy shall include an ISO endorsement Form CG 24 17 10 01 or its equivalent providing contractual liability coverage for railroads listed as additional insureds. Coverage for such additional insureds shall be primary and non-contributory with respect to any other insurance the additional insureds may carry.

Coverage under this policy shall have limits of liability of not less than \$5 million each occurrence, combined single limit, for bodily injury (including disease or death), personal injury and property damage (including loss of use) liability. Such coverage may be provided by a combination of a primary CGL policy and a following form excess or umbrella liability policy.

3. **Automobile Liability Insurance** covering the liability of Contractor arising out of the use of any vehicles which bear, or are required to bear, license plates according to the laws of the jurisdiction in which they are to be operated, and which are not covered under Contractor's CGL insurance. The policy shall name National Railroad Passenger Corporation and, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue as additional insureds with respect to the operations to be performed. Coverage under this policy shall have limits of liability of not less than \$1 million each occurrence, combined single limit, for bodily injury (including disease or death), personal injury and property damage (including loss of use) liability.

In the event Contractor or any subcontractor will be transporting and/or disposing of any hazardous material or waste off of the jobsite, a MCS-90 Endorsement is to be added to this policy and the limits of liability are to be increased to \$5 million each occurrence.

4. **Railroad Protective Liability (RRP) Insurance** covering the Operations performed by Contractor or any subcontractor within fifty (50) feet vertically or horizontally of railroad tracks. The current ISO Occurrence Form (claims-made forms are unacceptable) in the name of National Railroad Passenger Corporation (and as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue) shall have limits of liability of not less than \$5 million each occurrence, combined single limit, for Coverages A and B, for losses arising out of injury to or death of all persons, and for physical loss or damage to or destruction of property, including the loss of use thereof. A \$10 million annual aggregate shall apply. Additionally, Policy Endorsement CG 28 31 - Pollution Exclusion Amendment, is required to be

endorsed onto the policy. Further, "Physical Damage to Property" as defined in the policy is to be deleted and replaced by the following endorsement:

"It is agreed that 'Physical Damage to Property' means direct and accidental loss of or damage to all property owned by any named insured and all property in any named insured's care, custody and control."

The original RRP Liability Insurance Policy must be submitted to Amtrak prior to commencement of Operations.

5. **All Risk Property Insurance** covering damage to or loss of all remaining personal property of Contractor, its contractors and subcontractors used during Operations including, but not limited to, tools, equipment, construction trailers and their contents and temporary scaffolding at the project site, whether owned, leased, rented or borrowed for the full replacement cost value. Insurance policies of Contractor, its contractors and subcontractors, covering tools, equipment and other personal property will include a waiver of subrogation and any other rights of recovery in favor of Amtrak and Contractor.
6. **Contractor's Pollution Liability Insurance** covering the liability of Contractor arising out of any sudden and/or non-sudden pollution or impairment of the environment, including clean-up costs and defense, that arise from the Operations of Contractor, with National Railroad Passenger Corporation and, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue named as additional insureds. Coverage under this policy shall have limits of liability of not less than \$2 million each occurrence. The coverage shall be maintained during the term of the project, and for at least two (2) years following Amtrak's acceptance of the completion of all Operations to be performed.
7. **Pollution Legal Liability Insurance** is required if any hazardous material or waste is to be transported or disposed of off of the jobsite. Contractor, its subcontractor or transporter, as well as the disposal site operator, shall maintain this insurance. Contractor shall designate the disposal site, and must provide a certificate of insurance from the disposal facility to Amtrak. The policy shall name National Railroad Passenger Corporation and, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue as additional insureds, with limits of liability of not less than \$2 million per claim.

Further, any additional insurance coverages, permits, licenses and other forms of documentation required by the United States Department of Transportation, the Environmental Protection Agency and/or related state and local laws, rules and regulations shall be obtained by Contractor.

8. **Professional Liability Insurance** covering the liability of Contractor for any and all errors or omissions committed by Contractor in the performance of the Operations, regardless of the type of damages. The coverage shall be maintained during the term of the Operations, and for at least three (3) years following completion thereof. The policy shall have a retroactive date that precedes any design work on the project and shall have limits of liability of not less than \$2 million per claim and \$2 million in the annual aggregate. . For a Project scopes which include under grade bridges (bridges which carry trains) the policy shall have limits of liability not less than \$10 million per claim and \$10 million in the annual aggregate.

If Contractor is not performing professional design or engineering services, Contractor may elect to satisfy this requirement through the addition of endorsement CG2279 "Incidental Professional

Liability” to its CGL policy.

9. **Waiver of Subrogation** As to all insurance policies required herein, Contractor waives all rights of recovery, and its insurers must waive all rights of subrogation of damages against Amtrak and, as appropriate, CUSCO and WTC, and their agents, officers, directors, and employees. The waiver must be stated on the certificate of insurance.
10. **Punitive Damages** Unless prohibited by law, no liability insurance policies required above shall contain an exclusion for punitive or exemplary damages.
11. **Claims-Made Insurance** If any liability insurance specified above shall be provided on a claims-made basis then, in addition to coverage requirements above, such policy shall provide that:
  - a. The retroactive date shall coincide with or precede Contractor’s start of Operations (including subsequent policies purchased as renewals or replacements);
  - b. The policy shall allow for the reporting of circumstances or incidents that might give rise to future claims;
  - c. Contractor will use its best efforts to maintain similar insurance under the same terms and conditions that describe each type of policy listed above (e.g., CGL, Professional Liability) for at least three (3) years following completion of the Operations; and
  - d. If insurance is terminated for any reason, Contractor will purchase an extended reporting provision of at least six (6) years to report claims arising from Operations.
12. **Evidence of Insurance** Contractor shall furnish evidence of insurance as specified above at least fifteen (15) days prior to commencing Operations. Prior to the cancellation, renewal, or expiration of any insurance policy specified above, Contractor shall furnish evidence of insurance replacing the cancelled or expired policies. THESE DOCUMENTS SHALL INCLUDE A DESCRIPTION OF THE PROJECT AND THE LOCATION ALONG THE RAILROAD RIGHT-OF-WAY (typically given by milepost designation) IN ORDER TO FACILITATE PROCESSING. The fifteen (15) day advance notice of coverage may be waived by Amtrak in situations where such waiver will benefit Amtrak, but under no circumstances will Contractor begin Operations without providing satisfactory evidence of insurance as approved by Amtrak. Such evidence of insurance coverage shall be sent to:

Director I&C Projects  
National Railroad Passenger Corporation  
30th Street Station, Mail Box 64  
Philadelphia, PA 19104-2817

**NORTHEAST CORRIDOR**  
Boston/Springfield - Washington, DC

Effective April 3, 2017

**BOSTON/SPRINGFIELD**  
and  
**WASHINGTON, DC**

**BOSTON - PROVIDENCE**  
**SPRINGFIELD - HARTFORD**  
**NEW HAVEN - NEW YORK**  
**WASHINGTON, DC**  
and intermediate stations

Acela Express,<sup>®</sup>  
Northeast Regional<sup>SM</sup>  
and Vermonter<sup>SM</sup>

**THIS TIMETABLE SHOWS ALL AMTRAK SERVICE FROM BOSTON OR  
SPRINGFIELD TO POINTS NEW YORK THROUGH WASHINGTON, DC.**  
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Washington, DC schedules, and Timetable Form W06 for service to Virginia locations.



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Washington, DC 20002.  
NRPC Form W4-Internet only-4/3/17. Schedules subject to change without notice.

# Southbound











Services, Symbols and Reference Marks on other side.

Train Name >	Northeast Regional	Northeast Regional	Acela Express	Northeast Regional	Northeast Regional	Acela Express	Acela Express	Northeast Regional	Northeast Regional	Acela Express	Northeast Regional	Northeast Regional	Acela Express	Northeast Regional	Northeast Regional	Acela Express	Northeast Regional	Northeast Regional	Acela Express	Northeast Regional	Northeast Regional	Acela Express	Acela Express	Northeast Regional
Train Number >	65	67	2151	141	143	2249	2153	95	195	2155	157	147	2251	171	99	2159	93	83	161	2163	2253	173		
Normal Days of Operation >	FrSa	Su-Th	Mo-Fr	Mo-Fr	SaSu	Sa	Mo-Fr	Mo-Fr	SaSu	Mo-Fr	Sa	Sa	Mo-Fr	SaSu	Mo-Fr	SaSu	Mo-Fr	Mo-Th	Fr	SaSu	Mo-Fr	SaSu	Mo-Fr	
Will Also Operate >	528																							
Will Not Operate >		528	528	528	528	528	528	528	528	528	528	528	528	528	528	528	528	528	528	528	528	528	528	528
On Board Service >																								
BOSTON, MA-South Station	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Boston, MA-Back Bay Station	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Route 128, MA	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Providence, RI	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Kingston, RI (W&A)	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Westerly, RI	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Mystic, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
New London, CT (Casino W)	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Old Saybrook, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Springfield, MA	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Windsor Locks, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Windsor, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Hartford, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Berlin, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Meriden, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Wallingford, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
New Haven, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Bridgeport, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Stamford, CT	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
New Rochelle, NY	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
NEW YORK, NY -Penn Station	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Newark, NJ	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Newark Liberty Intl. Air. NJ	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Metropark, NJ	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Trenton, NJ	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
PHILADELPHIA, PA -30th Street Station	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Wilmington, DE	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Aberdeen, MD	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
Baltimore, MD-Penn Station	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
BWI Marshall Airport, MD	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
New Carrollton, MD	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar
WASHINGTON, DC-Union Sta.	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar	Ar

SCHEDULES EFFECTIVE 4/3/17










## Service

-  All-reserved train, reservations required.
-  Business class service available. Ticket price includes beverage and newspaper on *Northeast Regional*.
-  First class service available on *Acela Express*.
-  Sandwiches, snacks and beverages.
-  Amtrak Quiet Car.
-  Checked baggage at select stations.
-  Wi-Fi available.
-  Trains 54, 55, 56, 57, 65, 66 and 67: trainside checked bicycle service offered between staffed locations handling checked baggage. Customers will check in with the station agent, get a claim check/baggage tag for their bike, and hand up to a crew member inside the baggage car. Visit [Amtrak.com/bikes](http://Amtrak.com/bikes) for more information.
-  Van/Car service available from Kingston, RI station to Newport, RI. Reservations required. Call (401) 295-1100 for information and reservations.
-  Seasonal shuttle service from Kingston, R.I. train station to Quonset Point, R.I. Operated by Martha's Vineyard Fast Ferry to connect with ferry boats. Reservations required. Call (401) 295-4040 or visit [www.vineyardfastferry.com](http://www.vineyardfastferry.com) for information and reservations.
- \* Trains 465 and 497 operate Sundays only; will also operate 5/29; will not operate 5/28.
- \*\* On 5/28, Train 82 does not come from Richmond, VA; originates in Washington, DC those dates.

All Amtrak services and stations are non-smoking.

Service between Springfield and New Haven is financed primarily through funds made available by the Connecticut Department of Transportation and the Massachusetts Department of Transportation.

Money saving 10-trip and monthly Smart Pass tickets available between most stations.

SHADING KEY	SYMBOLS KEY
Acela Express	 Stops only to discharge passengers; train may leave before time shown.
Connecting train	 Stops to receive and discharge passengers; train may leave before time shown.
Daytime train	 Stops only to receive passengers.
Thruway and connecting services	 Thruway Bus stop
Substitute bus	 Airport connection
	 Ferry connection
	 Quik-Trak self-serve ticketing kiosk

## Airport Connections

### **Newark Liberty International Airport**

Convenient transfers between Amtrak Newark Liberty International Airport station and airline terminals via AirTrain.

### **Philadelphia International Airport**

Convenient transfers between 30th Street station and airline terminals via SEPTA Airport Line trains.


### **Wilmington New Castle Airport**

Convenient transfers between the Amtrak Station Wilmington and the airline terminal at the Wilmington New Castle Airport via DART bus 22.


### **BWI Thurgood Marshall Airport**

Convenient transfers between Amtrak station and airline terminals via free shuttle bus.

## Carry-On Pet Program

 **Amtrak.com Pets Animals** A small cat or dog in a pet carrier may be carried on *Northeast Corridor* trains with reservations required. Reservations can be made at a staffed station or visit the website for complete information.



 <b>ENGINEERING PRACTICES</b>	ORIGINAL ISSUE DATE <b>03/26/02</b>	NUMBER <b>EP3006</b>	
	REVISED DATE <b>N/A</b>		
<small>TITLE</small> <b>DESIGN AND CONSTRUCTION CRITERIA FOR OVERHEAD BRIDGES</b>	RECOMMENDED by <i>K.L. Kulick</i>	DATE <b>3/26/02</b>	PAGE <b>1</b>
	APPROVED by CHIEF ENGR, STRUCTURES <i>James S. Richter</i>	DATE <b>3/26/02</b>	OF <b>8</b>
<p><b>SCOPE AND NATURE</b></p> <p>To establish uniform requirements for the design and construction of overhead bridges by outside agencies.</p> <p><b>SPECIAL REFERENCE</b></p> <p>Standard Track Plan AM70050  ET Standard Plan ET1446-D  ET Standard Plan ET 1447-D  Engineering Practice 3003  Engineering Practice 3014 Section 02261  Engineering Practice 3014 Section 01520  Engineering Practice 3014 Section 01142  Engineering Practice 1604  AED-1 Procedures and Design Criteria to be Employed by Electrification Consultants Engaged in the Design of Electrification Facilities on the National Railroad Passenger Corporation  AREMA Manual for Railway Engineering – Chapter 8, Article 2.1.5</p> <p><b>SPECIAL MATERIALS</b></p> <p>N/A</p>			

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**PROCEDURE**

**DESIGN AND CONSTRUCTION CRITERIA FOR OVERHEAD BRIDGES**

New or reconstructed bridges over Amtrak Railroad tracks shall meet the following requirements:

**I. CLEARANCES**

- a. Horizontal and Vertical Clearances shall be in accordance with the current Standard Track Plan AM70050 – "Minimum Roadway Clearances". When replacing existing bridges that have substandard clearances, every effort shall be made to improve the clearances.
- b. Temporary Construction clearances may be less if approved by Amtrak.
- c. Amtrak shall be furnished as-built drawings showing actual clearances as constructed.
- d. Horizontal clearances may need to be increased if a maintenance roadway is required by Amtrak.
- e. Clearances shall be adjusted to provide for any planned changes in the trackage, including the change in track centers and raising of the tracks. Amtrak shall be contacted to obtain information on planned track changes. If the track is in a sag at the proposed overhead crossing location, it should be anticipated that the track may be raised to improve the condition. Clearances shall be increased to provide for this track raise.

**II. CRASH WALLS**

AREMA Manual for Railway Engineering, Chapter 8, Article 2.1.5 Pier Protection, describes the requirements for the crash walls. Crash walls are required when face of the pier is closer than 25'-0" from centerline of the nearest track, measured perpendicular to the track, unless the size of the pier satisfies the criteria for piers of heavy construction as listed in Article II (d).

Crash walls shall meet the following requirements:

- a. Crash walls for piers from 12 feet to 25 feet clear from the centerline of the track shall have a minimum height of 6 feet above the top of rail. Piers less than 12 feet clear from the centerline of the track shall have a minimum crash wall height of 12 feet above the top of rail. Crash walls shall be at least 2'-6" thick and at least 12 feet long.
- b. For multi-column piers, the crash wall shall connect the columns and extend at least 1 foot beyond the outermost columns parallel to the track.
- c. Crash walls shall be anchored to the footings and columns as applicable and shall extend to at least four feet below the lowest surrounding grade.

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- d. A pier shall be considered of heavy construction if it has a cross-sectional area equal to or greater than that required for the crash wall and the larger of its dimensions is parallel to the track.
- e. Consideration may be given to providing protection for bridge piers located more than 25 feet from the centerline of track as conditions warrant. In making this determination, account shall be taken of such factors as horizontal and vertical alignment of the track, embankment height, and an assessment of the consequences of serious damage in the case of a collision.

**III. BARRIERS**

- a. In the territory where there is railroad electrification, barriers shall be designed and constructed on both faces of the bridge in conformance with the current ET Standard Plan ET-1446-D "Electrified Territory OH Bridge Typical Protection Barrier".
- b. In non-electrified territory, chain-link fence with 1" mesh fabric may be substituted for the solid barrier.

**IV. ELECTRIFICATION SYSTEMS.**

- a. In electrified territory the agency responsible for the project shall be required to comply with AED-1 "Procedures and Design Criteria to be Employed by Electrification Consultants Engaged in the Design of Electrification Facilities on the National Railroad Passenger Corporation".

**V. DRAINAGE**

It is essential to maintain good drainage of railroad right-of-way during construction and provide for good drainage after construction of the overhead crossing. The following guidelines shall be followed:

- a. Piers and end slopes shall be located such that they do not interfere with railroad drainage system, including, but not limited to, ditches, pipes, catch basins and detention basins.
- b. Drainage from the section of the bridge above railroad right-of-way shall be collected with drain pipes and drained away from the railroad right-of-way. No open scuppers are permitted on the portion of the bridge over the railroad right of way. Drainage from any scuppers shall be drained away from the railroad right-of-way.
- c. After completion of construction, railroad drainage ditches shall be cleaned of all debris to the satisfaction of Amtrak representatives.
- d. During construction, silt fences shall be provided to prevent silting of the ditches. All drainage from the construction site must be collected and directed away from railroad property.

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- e. If the project will alter drainage characteristics at the site of the crossing at any time during or after completion of the project, three sets of the drainage calculations and plans shall be submitted to Amtrak for approval. Approval of the drainage plans shall not relieve the submitting agency of responsibility for the drainage design.
- f. All disturbed areas on the railroad right-of-way shall be properly seeded and mulched to the satisfaction of Amtrak.

**VI. STRUCTURE EXCAVATION AND SHORING**

Shoring or sheeting protection shall be provided in conformance with the current Engineering Practice 3014 Section 02261 – "Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks". Blasting is restricted and if required shall be in conformance with Engineering Practice 3003- "Blasting Procedures".

- a. A construction procedure for temporary shoring shall be shown on the drawing.
- b. Safety railing meeting OSHA requirements shall be installed when temporary shoring is within 12 feet of track. When shoring is further than 12 feet from centerline of track, railing shall be provided if necessary for safety of workers and railroad personnel.

**VII. GENERAL REQUIREMENTS**

- a. The distance from the nearest milepost at intersection of centerline of the track and centerline of the bridge shall be shown on the General Plan.
- b. Horizontal and vertical clearances shall be marked clearly on the General Plan and Elevation.
- c. Soil parameters used in designing the shoring shall be based on soil and rock data obtained from test borings performed for the design of the proposed structure.
- d. It is the designer's responsibility to ensure that a constructability analysis is performed to confirm that the structure, as designed, can be constructed in the applicable railroad environment.
- e. Piers, abutments and columns located within the railroad right-of-way shall have an anti-graffiti coating consisting of a three-coat system. Each of the three coats shall be a clear, two component, polyester type, aliphatic urethane. Each coat shall be applied at a minimum 2 mils DFT.

**VIII. DEMOLITION OF EXISTING STRUCTURES**

Railroad tracks shall be protected from damage during demolition of existing structure or replacement of deck slab. Either of the following methods may be used:

- a. During demolition of the decks, a protection shield shall be erected over the right-of-way to catch falling debris. The shield shall be designed and constructed in

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conformance with the current Engineering Practice 3014 Section 01520 – “Requirements for Temporary Protection Shields for Demolition and Construction of Overhead Bridges and Other Structures”.

- b. On light traffic density lines or when overhead protection shield cannot be installed due to limited clearance or type of superstructure, track may be protected by timber mats placed over the track structure, subject to approval by Amtrak. Timber mats shall be made in sections such that they may be lifted in and out quickly. Mats shall not rest on ties or rails.

Geo-fabric or canvas shall be placed over the track structure to keep the ballast clean.

The contractor shall submit detailed plans of the protection shield or the timber mats to the Project Engineer for approval prior to the start of demolition. The plans shall be prepared by a Registered Professional Engineer and shall bear his seal and signature.

Blasting will not be permitted to demolish a structure over or within the railroad right-of-way.

**IX. ERECTION PROCEDURE**

The contractor shall submit a detailed procedure for erecting the spans over railroad right of way. The procedure shall be in conformance with the current Engineering Practice 3014 Section 01142 – “Submission Documentation Required for Amtrak Review and Approval of Plans for Bridge Erection, Demolition, and Other Crane/Hoisting Operations over Railroad Right-Of-Way”.

**X. PIPELINES**

All pipelines occupying the bridge shall be designed and constructed in accordance with Engineering Practice 1604 Pipeline Occupancy – Requirements and Specifications.

**XI. CROSSING DATA**

Plans submitted for review by Amtrak shall contain, at the minimum, the following information:

- Roadway name or route number
- Amtrak bridge number
- Skew angle to the railroad center line
- Proposed foundation type and elevation of bottom of footing
- Pile type and depth (if applicable)
- Top of rail elevation for all tracks
- Drainage modifications
- Elevation and cross sections of existing and proposed structure

<small>TITLE</small> <b>DESIGN AND CONSTRUCTION CRITERIA FOR OVERHEAD BRIDGES</b>	<small>ORIGINAL ISSUE DATE</small> <b>03/26/02</b>	<small>NUMBER</small> <b>EP3006</b>
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	<ul style="list-style-type: none"> <li>• North arrow</li> <li>• Railroad clearance information with dimensions in English units</li> </ul> <p>The following "Overhead Bridge Crossing Data" sheet shall be completed and submitted, by the agency responsible for the project, with both the Preliminary and Final Plan submission to Amtrak.</p>	

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**OVERHEAD BRIDGE CROSSING DATA**

1. LOCATION:      \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_  
                                 CITY                          COUNTY                          STATE
  
2. Distance from nearest Mile Post to Centerline of Bridge: \_\_\_\_\_
3. DOT Crossing Number: \_\_\_\_\_
4. State Project Number: \_\_\_\_\_
5. Description of Project:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
6. Minimum Horizontal Clearance from Centerline of nearest Track:  
    A. Proposed: \_\_\_\_\_      B. Existing (if applicable): \_\_\_\_\_
7. Minimum Vertical Clearance above top of high rail:  
    A. Proposed: \_\_\_\_\_      B. Existing (if applicable): \_\_\_\_\_
8. List piers where crashwalls are provided:  
    Pier: \_\_\_\_\_      Distance from centerline of track: \_\_\_\_\_  
    \_\_\_\_\_      \_\_\_\_\_  
    \_\_\_\_\_      \_\_\_\_\_
9. Describe how drainage from bridge is handled:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
10. List piers where shoring is required to protect track:  
\_\_\_\_\_  
\_\_\_\_\_
11. Plan Submittal: Preliminary: \_\_\_\_\_ Final: \_\_\_\_\_

<b>TITLE</b>  <b>DESIGN AND CONSTRUCTION CRITERIA FOR OVERHEAD BRIDGES</b>	<b>ORIGINAL ISSUE DATE</b> <b>03/26/02</b>	<b>NUMBER</b> <b>EP3006</b>
	<b>REVISED DATE</b> <b>N/A</b>	<b>PAGE</b> <b>8 OF 8</b>

**REPORTING**

As detailed in procedure.

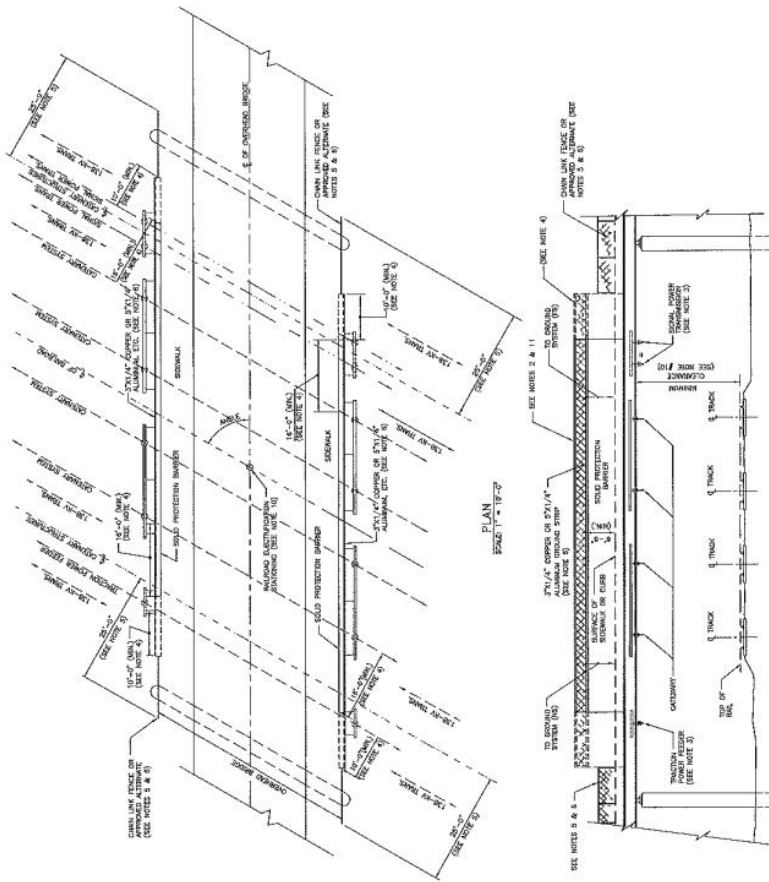
**RESPONSIBILITY**

Amtrak I&C Staff	Comply with Procedure
Director I&C	Assure Compliance
Amtrak Design Staff	Comply with Procedure
Amtrak Construction Staff	Comply with Procedure
Sr. Director Construction	Assure Compliance



GENERAL NOTES:

1. ANY MODIFICATION OF THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL BE SUBMITTED TO THE ELECTRIC Traction DEPARTMENT FOR APPROVAL.
2. THE PROTECTIVE BARRIERS SHALL BE CONSTRUCTED TO BE SUBSTANTIALLY IDENTICAL TO THE BARRIERS OF THE STANDARD ELECTRIC Traction SYSTEMS IN ORDER TO MAINTAIN AN APPROPRIATE WEIGHT BALANCE AND TO PREVENT A PROTECTIVE BARRIER FROM COLLAPPING UNDER THE WEIGHT OF A TRAIN. THE PROTECTIVE BARRIERS SHALL BE CONSTRUCTED TO BE IDENTICAL TO THE BARRIERS OF THE STANDARD ELECTRIC Traction SYSTEMS IN ORDER TO MAINTAIN AN APPROPRIATE WEIGHT BALANCE AND TO PREVENT A PROTECTIVE BARRIER FROM COLLAPPING UNDER THE WEIGHT OF A TRAIN. THE PROTECTIVE BARRIERS SHALL BE CONSTRUCTED TO BE IDENTICAL TO THE BARRIERS OF THE STANDARD ELECTRIC Traction SYSTEMS IN ORDER TO MAINTAIN AN APPROPRIATE WEIGHT BALANCE AND TO PREVENT A PROTECTIVE BARRIER FROM COLLAPPING UNDER THE WEIGHT OF A TRAIN.
3. NORMALLY THE SIGNAL POWER TRANSMISSION WIRES AND THE TRACTION POWER FEEDER WIRES SHALL BE INSTALLED IN THE SAME TRENCH AS THE PROTECTIVE BARRIER. THE PROTECTIVE BARRIER SHALL EXTEND AS DESCRIBED IN NOTE 10.
4. THE PROTECTIVE BARRIER SHALL EXTEND AT LEAST 10 FEET BEYOND THE POINT AT WHICH THE SIGNAL POWER TRANSMISSION WIRES ARE INSTALLED TO THE POINT AT WHICH THE TRACTION POWER FEEDER WIRES ARE INSTALLED. THE PROTECTIVE BARRIER SHALL EXTEND AT LEAST 10 FEET BEYOND THE POINT AT WHICH THE SIGNAL POWER TRANSMISSION WIRES ARE INSTALLED TO THE POINT AT WHICH THE TRACTION POWER FEEDER WIRES ARE INSTALLED. THE PROTECTIVE BARRIER SHALL EXTEND AT LEAST 10 FEET BEYOND THE POINT AT WHICH THE SIGNAL POWER TRANSMISSION WIRES ARE INSTALLED TO THE POINT AT WHICH THE TRACTION POWER FEEDER WIRES ARE INSTALLED.
5. MATERIALS TO BE USED FOR THE PROTECTIVE BARRIER SHALL BE APPROVED BY THE ELECTRIFICATION DEPARTMENT FOR APPROVAL.
6. THE PROTECTIVE BARRIER SHALL BE CONSTRUCTED TO BE IDENTICAL TO THE BARRIERS OF THE STANDARD ELECTRIC Traction SYSTEMS IN ORDER TO MAINTAIN AN APPROPRIATE WEIGHT BALANCE AND TO PREVENT A PROTECTIVE BARRIER FROM COLLAPPING UNDER THE WEIGHT OF A TRAIN.
7. TYPICAL DETAILS FOR FENCE BARRIERS OF SUBSTITUTES.
8. DRAWINGS SHOWN WITH PROTECTIVE BARRIERS SHALL BE IDENTICAL TO THE PROTECTIVE BARRIERS OF THE STANDARD ELECTRIC Traction SYSTEMS IN ORDER TO MAINTAIN AN APPROPRIATE WEIGHT BALANCE AND TO PREVENT A PROTECTIVE BARRIER FROM COLLAPPING UNDER THE WEIGHT OF A TRAIN.
9. THE PROTECTIVE BARRIER SHALL BE CONSTRUCTED TO BE IDENTICAL TO THE BARRIERS OF THE STANDARD ELECTRIC Traction SYSTEMS IN ORDER TO MAINTAIN AN APPROPRIATE WEIGHT BALANCE AND TO PREVENT A PROTECTIVE BARRIER FROM COLLAPPING UNDER THE WEIGHT OF A TRAIN.
10. SECTION ELEVATIONS OF THE OVERHEAD BARRAGE SHALL SHOW MINIMUM CLEARANCE, ANGLE, AND TRACK CLEARANCE AS INDICATED ON THE DRAWING.
11. ALL DIMENSIONS AND CLEARANCES SHALL BE AS SHOWN UNLESS OTHERWISE NOTED. ALL DIMENSIONS AND CLEARANCES SHALL BE AS SHOWN UNLESS OTHERWISE NOTED. ALL DIMENSIONS AND CLEARANCES SHALL BE AS SHOWN UNLESS OTHERWISE NOTED.



THIS DRAWING SUPERSEDES P.R.R. DRAWING ET-1448-D-4.

E. T. STANDARD  
ELECTRIC Traction SYSTEMS  
PROTECTIVE BARRIERS

Date: 08/20/20  
Scale: 1" = 10'-0"  
Sheet: 1 of 4  
ET-1448-D

Design: M.P. | Review: B.E.T. | Drawn: G.S.T.

1" = 10'-0"  
Scale: 1" = 10'-0"

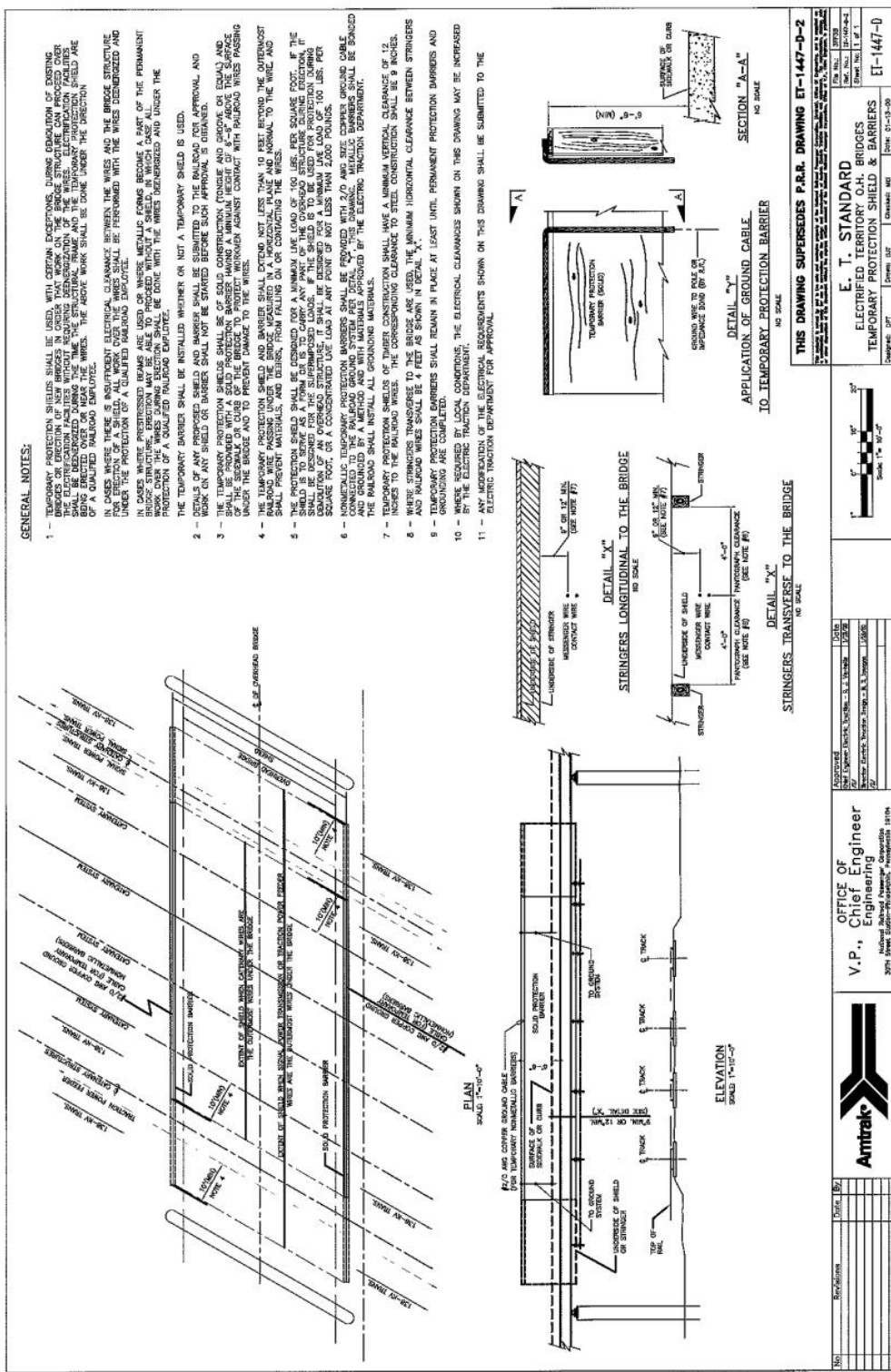
ELEVATION  
SCALE 1" = 10'-0"

PLAN  
SCALE 1" = 10'-0"

OFFICE OF  
V.P., Chief Engineer  
Engineering

3001 S.W. 12th Avenue, Suite 200  
Miami, Florida 33135-4500

Amtrak



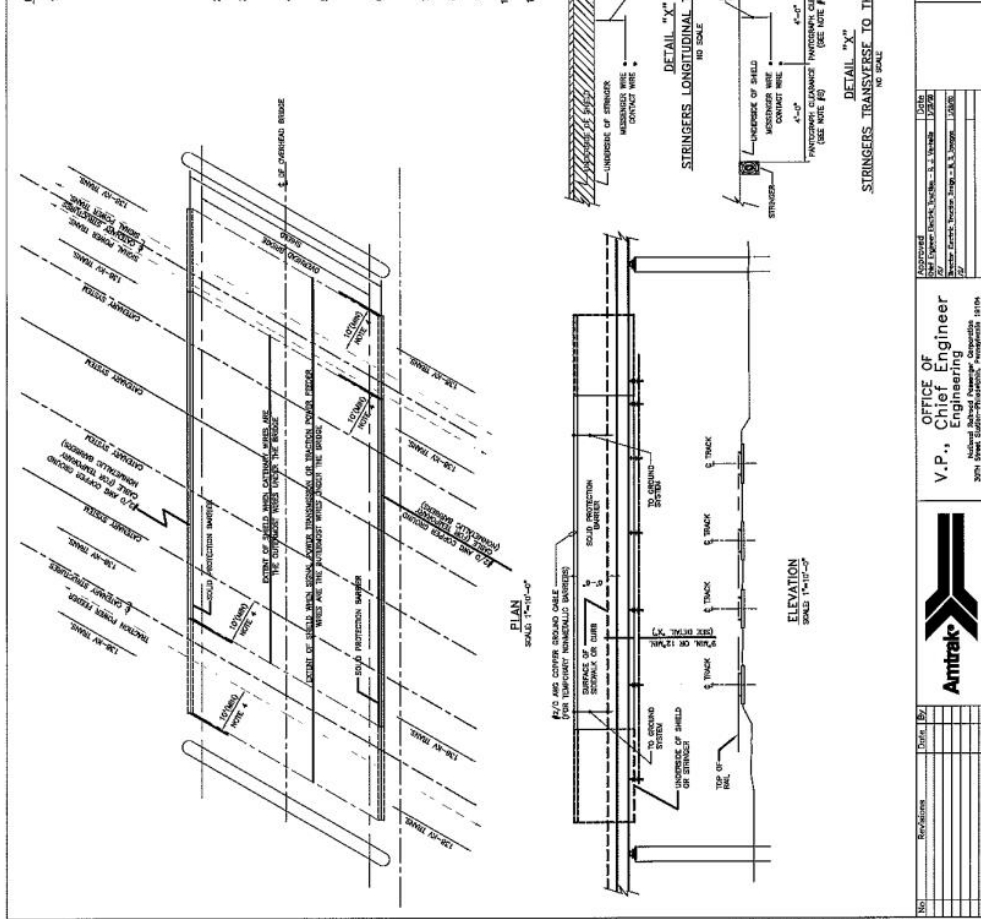
**GENERAL NOTES:**

- 1 - TEMPORARY PROTECTION SHIELDS SHALL BE USED, WITH CERTAIN EXCEPTIONS, DURING CONSTRUCTION OF EXISTING BRIDGES OR ERECTION OF NEW BRIDGES IN ORDER TO PROTECT THE BRIDGE STRUCTURE FROM DAMAGE TO THE BRIDGE STRUCTURE DURING THE TIME THE STRUCTURAL FRAME AND THE TEMPORARY PROTECTION SHIELD ARE BEING DEMONSTRATED. THE TEMPORARY PROTECTION SHIELD SHALL BE DEMONSTRATED DURING THE TIME THE STRUCTURAL FRAME AND THE TEMPORARY PROTECTION SHIELD ARE BEING DEMONSTRATED. THE ABOVE WORK SHALL BE DONE UNDER THE DIRECTION OF A QUALIFIED RAILROAD EMPLOYEE.
- 2 - IN CASES WHERE THERE IS INSUFFICIENT ELECTRICAL CLEARANCE BETWEEN THE WIRES AND THE BRIDGE STRUCTURE OR THE ERECTION OF A SHIELD, ALL WORK ON THE WIRES SHALL BE PERFORMED WITH THE WIRES DEMONSTRATED AND UNDER THE DIRECTION OF A QUALIFIED RAILROAD EMPLOYEE.
- 3 - IN CASES WHERE PROTECTED BEAMS ARE USED OR WHERE METALLIC FORMS BECOME A PART OF THE PERMANENT BRIDGE STRUCTURE, PROTECTION MAY BE ABLE TO PROCEED WITHOUT A SHIELD, IN WHICH CASE ALL WORK SHALL BE DONE UNDER THE DIRECTION OF A QUALIFIED RAILROAD EMPLOYEE.
- 4 - THE TEMPORARY PROTECTION SHIELD AND BARRIERS SHALL BE INSTALLED WHETHER OR NOT A TEMPORARY SHIELD IS USED.
- 5 - DETAILS OF ANY PROPOSED SHIELD AND BARRIER SHALL BE SUBMITTED TO THE RAILROAD FOR APPROVAL AND WORK ON ANY SHIELD OR BARRIER SHALL NOT BE STARTED BEFORE SUCH APPROVAL IS OBTAINED.
- 6 - THE TEMPORARY PROTECTION SHIELDS SHALL BE OF SOLID CONSTRUCTION, THICK AND ABOVE OR EQUAL TO THE THICKNESS OF THE PERMANENT BRIDGE STRUCTURE. THE SHIELD SHALL BE DEMONSTRATED UNDER THE DIRECTION OF A QUALIFIED RAILROAD EMPLOYEE.
- 7 - THE TEMPORARY PROTECTION SHIELD AND BARRIERS SHALL BE INSTALLED WHETHER OR NOT A TEMPORARY SHIELD IS USED.
- 8 - THE TEMPORARY PROTECTION SHIELDS SHALL BE OF SOLID CONSTRUCTION, THICK AND ABOVE OR EQUAL TO THE THICKNESS OF THE PERMANENT BRIDGE STRUCTURE. THE SHIELD SHALL BE DEMONSTRATED UNDER THE DIRECTION OF A QUALIFIED RAILROAD EMPLOYEE.
- 9 - THE TEMPORARY PROTECTION SHIELD AND BARRIERS SHALL BE INSTALLED WHETHER OR NOT A TEMPORARY SHIELD IS USED.
- 10 - WHERE PROTECTION SHIELDS OR BARRIERS SHALL BE INSTALLED WHETHER OR NOT A TEMPORARY SHIELD IS USED.
- 11 - ANY MODIFICATION OF THE ELECTRICAL REQUIREMENTS SHOWN ON THIS DRAWING SHALL BE SUBMITTED TO THE ELECTRIC TRACTION DEPARTMENT FOR APPROVAL.

**THIS DRAWING SUPERSEDES P.A.R. DRAWING ET-1447-D-2**

**E. T. STANDARD**  
ELECTRIFIED TERRITORY O.H. BRIDGES  
TEMPORARY PROTECTION SHIELD & BARRIERS  
ET-1447-D

Revised: 3/27 Sheet: 1 of 1 Date: 01-13-20



**DETAIL "X-X"**  
STRINGERS LONGITUDINAL TO THE BRIDGE  
NO SCALE

**DETAIL "Y-Y"**  
APPLICATION OF GROUND CABLE TO TEMPORARY PROTECTION BARRIER  
NO SCALE

**SECTION "A-A"**  
NO SCALE


**ELEVATION SPALD 14-10-07**

**STRINGERS TRANSVERSE TO THE BRIDGE**  
NO SCALE

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

**OFFICE OF Chief Engineer**  
**V.P., Chief Engineer**  
Engineering  
3075 STATE STREET, ANN ARBOR, MICHIGAN 48106

**Antrak**

 <b>ENGINEERING PRACTICES</b>	ORIGINAL ISSUE DATE <b>01/25/01</b>	NUMBER <b>EP3014</b>	
	REVISED DATE <b>10/01/2012</b>		
<b>TITLE</b> <b>MAINTENANCE AND PROTECTION OF RAILROAD TRAFFIC DURING CONTRACTOR OPERATIONS</b>	RECOMMENDED by <i>John Brun</i>	DATE <b>10/01/12</b>	PAGE <b>1</b>
	APPROVED by CHIEF ENGR, STRUCTURES <i>James Richter</i>	DATE <b>10/01/12</b>	OF <b>2</b>
	<b>SCOPE AND NATURE</b>		
	<p>This practice provides procedures for Contractors to follow, when working on Amtrak Right-of-Way, adjacent to Amtrak tracks, to assure the protection of trains and maintenance of scheduled railroad operations.</p>		
<b>SPECIAL REFERENCE</b>			
<p>Note: This information was included under former Engineering Practice 1305.</p> <p>Contractors shall comply with procedures detailed in the following specifications, when applicable:</p>			
<b>Section</b>	<b>Title</b>	<b>Revision No.</b>	<b>Revision Date</b>
<b>01141A</b>	Safety and Protection of Railroad Traffic and Property	4	10/01/12
<b>01142A</b>	Submission Documentation Required for Amtrak Review and Approval of Plans for Bridge Erection, Demolition and Other Crane/ Hoisting Operations over Railroad Right-of-Way	1	12/15/05
<b>01520A</b>	Requirements for Temporary Protection Shields for Demolition and Construction of Overhead Bridges and Other Structures	1	08/07/01
<b>02261A</b>	Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks	3	06/20/08
<b>SPECIAL MATERIALS</b>			
Not Applicable			
<b>PROCEDURE</b>			
<ol style="list-style-type: none"> <li>The Contractor shall conform to the applicable specifications.</li> <li>Amtrak I&amp;C shall assure that agencies and other third parties proposing construction on or adjacent to Amtrak Right-of-Way conform to Amtrak requirements detailed herein.</li> <li>Amtrak Design and Construction shall review the Contractor's proposed design and construction procedures for conformance with specifications, with sound engineering design practice and with the procedures detailed in the applicable Engineering Practice documents.</li> </ol>			

<b>TITLE</b>  <b>MAINTENANCE AND PROTECTION OF RAILROAD TRAFFIC DURING CONTRACTOR OPERATIONS</b>	ORIGINAL ISSUE DATE <b>01/25/01</b>	NUMBER <b>EP3014</b>												
	REVISED DATE <b>10/01/2012</b>													
		PAGE <b>2 OF 2</b>												
<p>4. Amtrak Construction shall monitor the activities of the Contractor on-site to assure compliance/ adherence to approved procedures throughout the construction period.</p> <p><b>REPORTING</b></p> <p>As detailed in the specifications.</p> <p><b>RESPONSIBILITY</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Amtrak I&amp;C Staff</td> <td style="width: 50%;">Comply with Procedure</td> </tr> <tr> <td>Director Project Initiation &amp; Development</td> <td>Assure Compliance</td> </tr> <tr> <td>Amtrak Design Staff</td> <td>Comply with Procedure</td> </tr> <tr> <td>Director Structures Design</td> <td>Assure Compliance</td> </tr> <tr> <td>Amtrak Construction Staff</td> <td>Comply with Procedure</td> </tr> <tr> <td>Deputy Chief Engineer Construction</td> <td>Assure compliance</td> </tr> </table>			Amtrak I&C Staff	Comply with Procedure	Director Project Initiation & Development	Assure Compliance	Amtrak Design Staff	Comply with Procedure	Director Structures Design	Assure Compliance	Amtrak Construction Staff	Comply with Procedure	Deputy Chief Engineer Construction	Assure compliance
Amtrak I&C Staff	Comply with Procedure													
Director Project Initiation & Development	Assure Compliance													
Amtrak Design Staff	Comply with Procedure													
Director Structures Design	Assure Compliance													
Amtrak Construction Staff	Comply with Procedure													
Deputy Chief Engineer Construction	Assure compliance													

SECTION 01141A – SAFETY AND PROTECTION OF RAILROAD TRAFFIC AND PROPERTY

PART 1 - GENERAL

1.1 SCOPE

- A. This specification describes the safety procedures and protection provisions for Contractors and Permittees entering and working upon railroad property.
- B. Use of this specification is as required by Amtrak, as described in Amtrak Engineering Practice EP3014.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 DEFINITIONS

- A. CHIEF ENGINEER: Amtrak Chief Engineer
- B. RAILROAD: National Railroad Passenger Corporation (Amtrak), and/or the duly authorized representative
- C. ENGINEERING PRACTICE: Amtrak Engineering Practices establish a system of uniform practices, notices and instructions for the Amtrak Engineering Department, providing current, permanent and temporary, departmental procedures and policies.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PRE-ENTRY MEETING

- A. Before entry of Permittee and/or Contractors onto Railroad's property, a pre-entry meeting shall be held at which time Permittee and/or Contractors shall submit for written approval of the Chief Engineer, plans, computations and a detailed description of proposed methods for accomplishing the work, including methods for protecting Railroad's traffic. Any such written approval shall not relieve Permittee and/or Contractor of their complete responsibility for the adequacy and safety of their operations.

### 3.2 RULES, REGULATIONS AND REQUIREMENTS

- A. Railroad traffic shall be maintained at all times with safety and continuity, and Permittee and/or Contractors shall conduct their operations in compliance with all rules, regulations, and requirements of Railroad (including these Specifications) with respect to any work performed on, over, under, within or adjacent to Railroad's property. Permittee and/or Contractors shall be responsible for acquainting themselves with such rules, regulations and requirements. Any violation of Railroads safety rules, regulations, or requirements shall be grounds for the immediate suspension of the Permittee and/or Contractor work, and the re-training of all personnel, at the Permittee's expense.

### 3.3 MAINTENANCE OF SAFE CONDITIONS

- A. If tracks or other property of Railroad are endangered during the work, Permittee and/or Contractor shall immediately take such steps as may be directed by Railroad to restore safe conditions, and upon failure of Permittee and/or Contractor to immediately carry out such direction, Railroad may take whatever steps are reasonably necessary to restore safe conditions. All costs and expenses of restoring safe conditions, and of repairing any damage to Railroad's trains, tracks, right-of-way or other property caused by the operations of Permittee and/or Contractors, shall be paid by Permittee.

### 3.4 PROTECTION IN GENERAL

- A. Permittee and/or Contractors shall consult with the Chief Engineer to determine the type and extent of protection required to insure safety and continuity of railroad traffic. Any Inspectors, Track Foremen, Track Watchmen, Flagman, Signalmen, Electric Traction Linemen, or other employees deemed necessary by Railroad, at its sole discretion, for protective services shall be obtained from Railroad by Permittee and/or Contractors. The cost of same shall be paid directly to Railroad by Permittee. The provision of such employees by Railroad, and any other precautionary measures taken by Railroad, shall not relieve Permittee and/or Contractors from their complete responsibility for the adequacy and safety of their operations.

### 3.5 PROTECTION FOR WORK NEAR ELECTRIFIED TRACK OR WIRE

- A. Whenever work is performed in the vicinity of electrified tracks and/or high voltage wires, particular care must be exercised, and Railroad's requirements regarding clearance to be maintained between equipment and tracks and/or energized wires, and otherwise regarding work in the vicinity of electrified tracks, must be strictly observed. No employees or equipment will be permitted to work near overhead wires, except when protected by a Class A employee of Railroad. **Permittee and/or Contractors must supply an adequate length of grounding cable (4/0 copper with approved clamps) for each piece of equipment working near or adjacent to any overhead wire.**

### 3.6 FOULING OF TRACK OR WIRE

- A. No work will be permitted within twenty-five (25) feet of the centerline of track or the energized wire or have potential of getting within twenty-five (25) feet of track wire without the

approval of the Chief Engineer's representative. Permittee and/or Contractors shall conduct their work so that no part of any equipment or material shall foul an active track or overhead wire without the written permission of the Chief Engineer's representative. When Permittee and/or Contractors desire to foul an active track, they must provide the Chief Engineer's representative with their site-specific work plan a minimum of twenty-one (21) working days in advance, so that, if approved, arrangements may be made for proper protection of Railroad. Any equipment shall be considered to be fouling a track or overhead wire when located (a) within fifteen (15) feet from the centerline of the track or within fifteen (15) feet from the wire, or (b) in such a position that failure of same, with or without a load, would bring it within fifteen (15) feet from the centerline of the track or within fifteen (15) feet from the wire and requires the presence of the proper Railroad protection personnel.

- B. If acceptable to the Chief Engineer's representative, a safety barrier (approved temporary fence or barricade) may be installed at fifteen (15) feet from centerline of track or overhead wire to afford the Permittee and/or Contractor with a work area that is not considered fouling. Nevertheless, protection personnel may be required at the discretion of the Chief Engineer's representative.

### 3.7 TRACK OUTAGES

- A. Permittee and/or Contractors shall verify the time and schedule of track outages from Railroad before scheduling any of their work on, over, under, within, or adjacent to Railroad's right-of-way. Railroad does not guarantee the availability of any track outage at any particular time. Permittee and/or Contractors shall schedule all work to be performed in such a manner as not to interfere with Railroad operations. Permittee and/or Contractors shall use all necessary care and precaution to avoid accidents, delay or interference with Railroad's trains or other property.

### 3.8 DEMOLITION

- A. During any demolition, the Contractor must provide horizontal and vertical shields, designed by a Professional Engineer registered in the state in which the work takes place. These shields shall be designed in accordance with the Railroad's specifications and approved by the Railroad, so as to prevent any debris from falling onto the Railroad's right-of-way or other property. A grounded temporary vertical protective barrier must be provided if an existing vertical protective barrier is removed during demolition. In addition, if any openings are left in an existing bridge deck, a protective fence must be erected at both ends of the bridge to prohibit unauthorized persons from entering onto the bridge.
- B. Ballasted track structure shall be kept free of all construction and demolition debris. Geotextiles or canvas shall be placed over the track ties and ballast to keep the ballast clean.

### 3.9 EQUIPMENT CONDITION

- A. All equipment to be used in the vicinity of operating tracks shall be in "certified" first-class condition so as to prevent failures that might cause delay to trains or damage to Railroad's property. No equipment shall be placed or put into operation near or adjacent to operating tracks without first obtaining permission from the Chief Engineer's representative. **Under no**

**circumstances shall any equipment or materials be placed or stored within twenty-five (25) feet from the centerline of an outside track, except as approved by the Site Specific Safety Work Plan.** To insure compliance with this requirement, Permittee and/or Contractors **must establish a twenty-five (25) foot foul line prior to the start of work** by either driving stakes, taping off or erecting a temporary fence, or providing an alternate method as approved by the Chief Engineer's representative. Permittee and/or Contractors will be issued warning stickers which must be placed in the operating cabs of all equipment as a constant reminder of the twenty-five (25) foot clearance envelope.

### 3.10 STORAGE OF MATERIALS AND EQUIPMENT

- A. No material or equipment shall be stored on Railroad's property without first having obtained permission from the Chief Engineer. Any such storage will be on the condition that Railroad will not be liable for loss of or damage to such materials or equipment from any cause.
- B. If permission is granted for the storage of compressed gas cylinders on Railroad property, they shall be stored a minimum of 25 feet from the nearest track in an approved lockable enclosure. The enclosure shall be locked when the Permittee and/or Contractor is not on the project site.

### 3.11 CONDITION OF RAILROAD'S PROPERTY

- A. Permittee and/or Contractors shall keep Railroad's property clear of all refuse and debris from its operations. Upon completion of the work, Permittee and/or Contractors shall remove from Railroad's property all machinery, equipment, surplus materials, falsework, rubbish, temporary structures, and other property of the Permittee and/or Contractors and shall leave Railroad's property in a condition satisfactory to the Chief Engineer.

### 3.12 SAFETY TRAINING

- A. All individuals, including representatives and employees of Permittee and/or Contractor, before entering onto Railroad's property and before coming within twenty-five (25) feet of the centerline of the track or energized wire must first attend Railroad's Contractor Orientation Computer Based Training Class. The Contractor Orientation Class will be provided electronically at [www.amtrakcontractor.com](http://www.amtrakcontractor.com). Upon successful completion of the course and test, the individual taking the course will receive a temporary certificate without a photo that is valid for three weeks. The individual must upload a photo of himself/herself that will be embedded in the permanent ID card. The photo ID will be mailed to the individual's home address and must be worn/displayed while on Railroad property. Training is valid for one calendar year. All costs of complying with Railroad's safety training shall be at the sole expense of Permittee and/or Contractor. The Permittee and/or Contractor shall appoint a qualified person as its Safety Representative. The Safety Representative shall continuously ensure that all individuals comply with Railroad's safety requirements. All safety training records must be maintained with the Permittee's and/or Contractor's site specific work plan.



3.13 NO CHARGES TO RAILROAD

- A. It is expressly understood that neither these Specifications, nor any document to which they are attached, include any work for which Railroad is to be billed by Permittee and/or Contractors, unless Railroad gives a written request that such work be performed at Railroad's expense.

END OF SECTION 01141A

## SECTION 01142A – SUBMISSION DOCUMENTATION REQUIRED FOR AMTRAK REVIEW AND APPROVAL OF PLANS FOR BRIDGE ERECTION, DEMOLITION AND OTHER CRANE/ HOISTING OPERATIONS OVER RAILROAD RIGHT-OF-WAY

## PART 1 - GENERAL

## 1.1 SCOPE

- A. Amtrak requires that a site-specific work plan for accomplishing hoisting operations be prepared for every applicable project, and for each type of lift on a project.
  - 1. The plan shall demonstrate adherence to Amtrak safety rules.
  - 2. The plan shall demonstrate constructibility.
  - 3. The plan shall minimize impact to rail operations.
  - 4. The approved plan will provide the basis for field inspection/ verification of the actual work.
- B. Preparation, review and approval of the Crane/ Hoisting site-specific work plan does not relieve the Contractor from meeting other Amtrak requirements for adequate planning and documentation of proposed work procedures within the Right-of-Way of the railroad..
- C. Current Amtrak safety rules shall be adhered to in every respect.
- D. Use of this specification is as required by Amtrak, as described in Amtrak Engineering Practice EP3014.

## 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

## 1.3 DEFINITIONS

- A. CHIEF ENGINEER: Amtrak Vice President, Chief Engineer
- B. RAILROAD: National Railroad Passenger Corporation (Amtrak), and/or the duly authorized representative
- C. ENGINEERING PRACTICE: Amtrak Engineering Practices establish a system of uniform practices, notices and instructions for the Amtrak Engineering Department, providing current, permanent and temporary, departmental procedures and policies.

## 1.4 SUBMISSION REQUIREMENTS

- A. Unless otherwise directed in the Contract, the Contractor shall submit five sets of plans and calculations to the authorized representative of the Chief Engineer, Structures, whose name and address will be provided at the project pre-construction meeting.
- B. Submitted calculations and plans shall be signed and sealed by a Professional Engineer, registered in the State in which the work will be performed.

- C. The Contractor shall revise and resubmit plans and calculations as many times as necessary, until a complete and correct site-specific work plan for crane/ hoisting operations has been approved.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

## 3.1 THE CONTRACTOR SHALL PROVIDE, AT A MINIMUM, THE FOLLOWING INFORMATION FOR REVIEW AND APPROVAL BY AMTRAK ENGINEERING STRUCTURES:

- A. Plan view showing location(s) of cranes, operating radii, with delivery and/or disposal locations shown. Provide all necessary dimensions for locating the elements of the plan.
- B. Plans and computations showing the weight of the pick.
- C. Crane rating sheets, demonstrating that cranes are adequate for 150% of the calculated pick weight. That is, the cranes shall be capable of picking 150% of the load, while maintaining normal, recommended factors of safety. The adequacy of the crane for the proposed pick shall be determined by using the manufacturer's published crane rating chart and not the maximum crane capacity. Crane and boom nomenclature is to be indicated.
- D. Calculations demonstrating that slings, shackles, lifting beams, etc. are adequate for 150% of the calculated pick weight.
- E. Location plan showing obstructions, indicating that the proposed swing is possible. "Walking" of load using two cranes will not be permitted. Rather, multiple picks and repositioning of the crane may be permitted to get the load to the needed location for the final pick, if necessary.
- F. Data sheet listing types and sizes of slings and other connecting equipment. Include copies of catalog cuts for specialized equipment. Detail attachment methods on the plans.
- G. A complete procedure, indicating the order of lifts and any repositioning or re-hitching of the crane or cranes.
- H. Temporary support of any components or intermediate stages, as may be required.
- I. A time schedule of the various stages, as well as a schedule for the entire lifting process.

END OF SECTION 01142A

SECTION 01520A – REQUIREMENTS FOR TEMPORARY PROTECTION SHIELDS FOR DEMOLITION AND CONSTRUCTION OF OVERHEAD BRIDGES AND OTHER STRUCTURES

PART 1 - GENERAL

1.1 SCOPE

- A. This engineering practice describes items to be included in the design and construction of temporary protection shields for construction overhead and near to Amtrak tracks.
- B. Use of this specification is as required by Amtrak, as described in Amtrak Engineering Practice EP3014.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 DEFINITIONS

- A. CHIEF ENGINEER: Amtrak Vice President, Chief Engineer
- B. RAILROAD: National Railroad Passenger Corporation (Amtrak), and/or the duly authorized representative
- C. ENGINEERING PRACTICE: Amtrak Engineering Practices establish a system of uniform practices, notices and instructions for the Amtrak Engineering Department, providing current, permanent and temporary, departmental procedures and policies.

1.4 SUBMISSION REQUIREMENTS

- A. Unless otherwise directed in the Contract, the Contractor shall submit five sets of plans and calculations to the authorized representative of the Chief Engineer, Structures, whose name and address will be provided at the project pre-construction meeting.
- B. Submitted calculations and plans shall be signed and sealed by a Professional Engineer, registered in the State in which the work will be performed.
- C. The Contractor shall revise and resubmit plans and calculations as many times as necessary, until a complete and correct site-specific work plan for crane/ hoisting operations has been approved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONTRACTORS WORKING ON OVERHEAD OR NEARBY DEMOLITION AND/OR CONSTRUCTION ADJACENT TO AMTRAK TRACKS, SHALL CONFORM TO THE FOLLOWING

...TEMPORARY PROTECTION SHIELDS...

01520A - 1

## DESIGN AND CONSTRUCTION REQUIREMENTS FOR TEMPORARY PROTECTION SHIELDING:

- A. The Contractor shall maintain a specified level of protection to railroad facilities, during demolition and construction activities that occur overhead and nearby Amtrak tracks, as shown on the Contract Plans, as detailed in the Contract Specifications, and as described below.
- B. Prior to the start of construction, the Contractor shall submit to Amtrak for review and approval, detailed, site specific plans for temporary protection shields. The plans will be reviewed as to the methods of erection, and as to whether or not the proposed installation will provide the required level of protection. No construction shall proceed until the Contractor has received written approval of the Contractor's complete, site specific plans, from Amtrak.
- C. The Contractor shall design the protection shields to conform to all applicable and governing federal, state and local laws and regulations.
- D. Drawings for the proposed temporary protection shields shall be signed and sealed by a Licensed Professional Engineer. Complete design calculations, clearly referenced to the drawings, and easy to review, shall be provided with submission of drawings.
- E. Protection shields shall be designed for the following, minimum load and size criteria.
  - 1. The horizontal shield design liveload on horizontal surfaces shall be the greater of a minimum of 100 pounds per square foot (psf) [5000 Pascals] or the anticipated liveload to be produced by the Contractor's anticipated operations. When determining the appropriate design live load, the designer shall consider factors such as the physical capacity of proposed debris-catching platforms to retain materials, and the type of equipment the platforms might support. Positive means of demolition and construction controls shall be provided to assure that debris that may collect on the shield will not exceed the design live load. The horizontal protection shield, in plan view, shall cover no less than the area directly over the tracks plus ten feet minimum beyond the centerline of the outermost tracks.
  - 2. The vertical shield shall be designed to carry a minimum 30 psf [1500 Pascals] allowance for wind load. The vertical shield shall extend a minimum of 6'-6" [1950 millimeters] above the top of the adjacent surface, such as curb or sidewalk. Anti-climb wings shall be installed at each end, as necessary, to restrict access to the railroad property.
- F. The vertical and horizontal clearance envelopes required for maintenance of railroad operations, shall be indicated on the site specific work plans. These clearances are subject to review and approval by Amtrak. If applicable, both temporary and permanent envelopes shall be indicated on the plans. The temporary protection shields shall be installed outside the limits of these minimum vertical and horizontal clearances shown on the site specific work plans.
- G. In electrified territory, temporary protection shields shall be bonded and grounded.
- H. Temporary protection shields shall be designed and constructed to prevent dust, debris, concrete, formwork, paint, tools, or anything else from falling onto the railroad property below.
- I. The temporary protection shields shall be attached to the structure in accordance with site specific work plans submitted by the Contractor and approved by Amtrak. Drilling in structural members and welding will generally not be permitted in members that are scheduled to remain in place in the reconstructed structure. For existing members scheduled for demolition or for later reconstruction, any proposed attachment shall be designed with consideration of potential existing, deteriorated conditions.
- J. The Contractor shall provide the Amtrak on-site representative, for review and approval prior to any construction activity in the effected area, a proposed construction schedule for the installation, maintenance and removal of the temporary protection shields.

- K. The temporary protection shields shall be installed prior to the start of any other work over the railroad in the effected areas. No construction shall proceed until the Amtrak on-site representative reviews and approves the Contractor's installed protection. Before proceeding with the work, Amtrak must be satisfied, in its sole judgment, that sufficient protection has been provided to proceed with the work.
- L. The Contractor shall install and remove temporary protection shields only when an Amtrak representative is on-site.
- M. The Contractor shall not install or remove temporary protection shields during train operations.
- N. Temporary protection shields shall remain in place for the duration of construction activities over and nearby the railroad in the effected areas. The Contractor may remove temporary construction only after approved by Amtrak on-site representatives.
- O. Where site specific conditions impose insurmountable restrictions to the design of temporary construction conforming to the limitations listed above, the design of temporary construction shall be developed in close coordination with Amtrak design review personnel. The Chief Engineer, Structures shall provide final approval of temporary construction that does not conform to the above limitations.

END OF SECTION 01520A

SECTION 02261A – REQUIREMENTS FOR TEMPORARY SHEETING AND SHORING TO SUPPORT AMTRAK TRACKS

PART 1 - GENERAL

1.1 SCOPE

- A. This engineering practice describes items to be included in the design and construction of temporary sheeting and shoring construction adjacent and proximate to Amtrak tracks.
- B. Use of this specification is as required by Amtrak, as described in Amtrak Engineering Practice EP3014.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 DEFINITIONS

- A. CHIEF ENGINEER: Amtrak Vice President, Chief Engineer
- B. RAILROAD: National Railroad Passenger Corporation (Amtrak), and/or the duly authorized representative
- C. ENGINEERING PRACTICE: Amtrak Engineering Practices establish a system of uniform practices, notices and instructions for the Amtrak Engineering Department, providing current, permanent and temporary, departmental procedures and policies.

1.4 SUBMISSION REQUIREMENTS

- A. Unless otherwise directed in the Contract, the Contractor shall submit five sets of plans and calculations to the authorized representative of the Chief Engineer, Structures, whose name and address will be provided at the project pre-construction meeting.
- B. Submitted calculations and plans shall be signed and sealed by a Professional Engineer, registered in the State in which the work will be performed.
- C. The Contractor shall revise and resubmit plans and calculations as many times as necessary, until a complete and correct site-specific work plan for temporary sheeting and shoring has been approved.

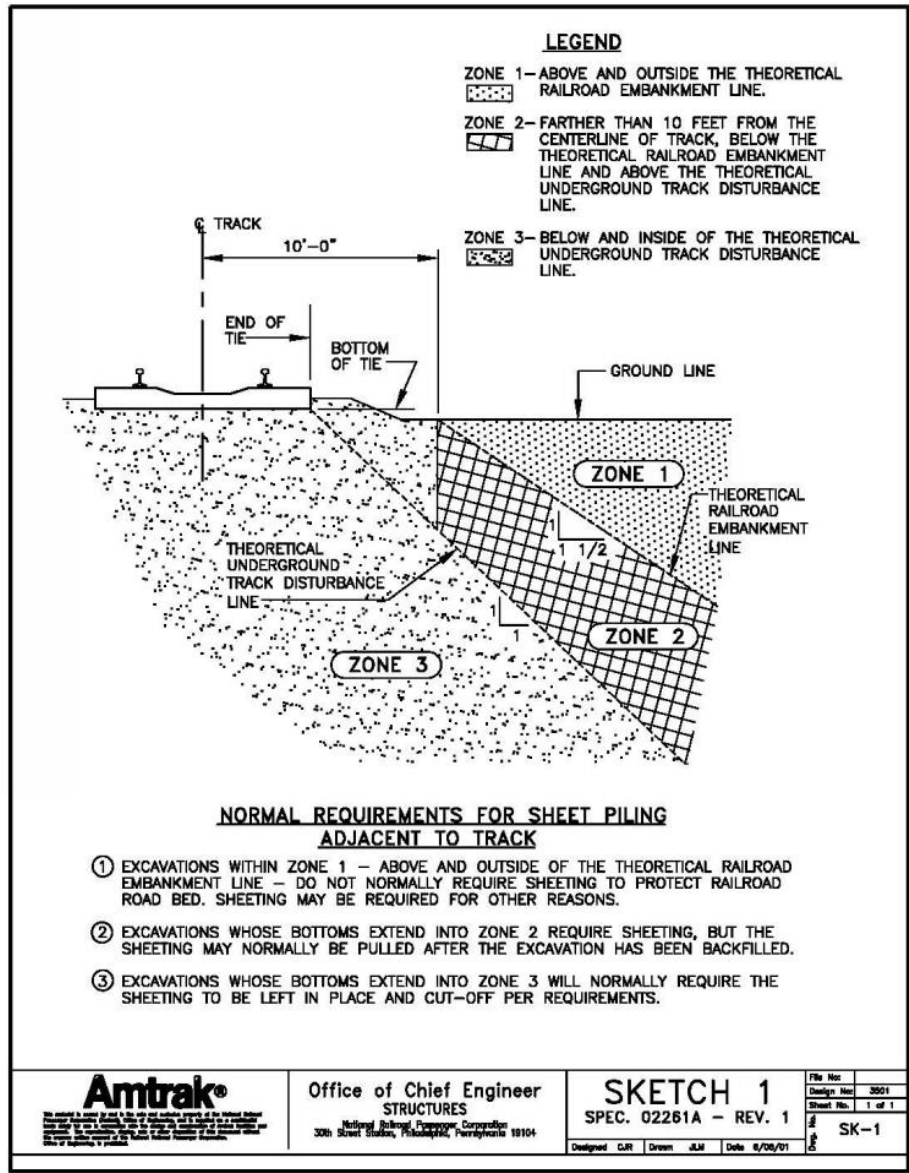
PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

- 3.1 CONTRACTORS INSTALLING TEMPORARY CONSTRUCTION SHEETING AND SHORING TO SUPPORT AMTRAK TRACKS SHALL CONFORM TO THE FOLLOWING:
- A. Footings for all piers, columns, walls, or other facilities shall be located and designed so that any temporary sheeting and shoring for support of adjacent track or tracks during construction, will not be closer than toe of ballast slope. The dimension from gage of rail to toe of ballast, along tangent track, is 7'-5"; see dimensions on Track standard plans for curved track dimensions.
  - B. USE OF SHEETING: When support of track or tracks is necessary during construction of the above-mentioned facilities, interlocking steel sheeting, adequately braced and designed to carry Cooper E80 live-load plus 50 percent impact allowance is required. Soldier piles and lagging will be permitted for track support ONLY when required penetration of steel sheet piling cannot be obtained, due to site-specific conditions that make steel sheet piling placement impracticable, in the opinion of the authorized, Amtrak design review engineer.
    - 1. For usual soil conditions and limited excavations, sheeting is required when the near-track excavation extends beneath or nearer to the track than the Theoretical Railroad Embankment Line. The Theoretical Railroad Embankment Line is defined as a line that starts at grade, ten foot from the centerline of the outer track, and extends downward, away from the track, at a slope of 1-1/2 horizontal to one vertical.
    - 2. For special soil conditions, such as soft organic soils and rock conditions, and for unusual excavation conditions, temporary supports for excavations may be necessary even when the limits fall beyond the Theoretical Railroad Embankment Line, requiring site specific analysis by a professional, geotechnical engineer.
    - 3. See Sketch SK-1, "Normal Requirements for Sheet Piling Adjacent to Tracks".
  - C. Exploratory trenches, three feet deep and 15 inches wide in the form of an "H", with outside dimensions matching the proposed outside dimensions of sheeting, shall be hand dug, prior to placing and driving the sheeting, in any area where railroad or utility underground installations are known or suspected. These trenches are for exploratory purposes only, and shall be backfilled and immediately compacted, in layers. This work shall be performed only in the presence of a railroad inspector.
  - D. Absolute use of track is required while driving sheeting adjacent to running track. Track usage shall be prearranged per standard procedures, through the Amtrak project representative.
  - E. Cavities adjacent to sheet piling, created by pile driving, shall be filled with sand, and any disturbed ballast shall be restored and tamped immediately.
  - F. Sheet piling cutoffs
    - 1. During construction, sheeting shall be cut off at an elevation no higher than the top of tie.
    - 2. At the completion of construction activities involving the use of sheet piling, sheet piling may be pulled if there will be no adverse impact to the railroad track support bed, as determined by the Amtrak site engineer. This will generally be permitted when both of these conditions are met:
      - a. the sheeting face is at least ten feet distant from the centerline of track, and
      - b. the bottom of the excavation that the sheeting supported prior to backfilling, does not fall within an assumed influence zone under the tracks. The assumed influence




- zone is defined as the area, as seen in cross-sectional view, falling beneath the Theoretical Underground Track Disturbance Line. This line is defined as a line that starts at the end and bottom of the ties, and extends from the track outward and downward at a one-to-one (45-degree) slope.
3. Sheet piling that is to be left in-place, shall be cut off below the ground line
    - a. at least eighteen inches below final ground line at the sheeting, and
    - b. no higher than 24 inches below the elevation of the bottom of the nearest ties
  4. See Sketch SK-1, "Normal Requirements for Sheet Piling Adjacent to Tracks".
- G. The excavation adjacent to the track shall be covered, ramped and protected by handrails, barricades and warning lights, as required by applicable safety regulations, and as directed by Amtrak.
- H. Final backfilling of excavation shall conform to project specifications.
- I. The Contractor shall provide Amtrak with a detailed schedule of proposed construction operations, detailing each step of the proposed temporary construction operations in proximity to Amtrak tracks, so that Amtrak may review and approve the proposed operations, and may properly inspect and monitor operations.
- J. Drawings for the proposed temporary sheeting and shoring shall be signed and sealed by a Licensed Professional Engineer. Complete design calculations, clearly referenced to the drawings, and easy to review, shall be provided with submission of drawings.
- K. Where site specific conditions impose insurmountable restrictions to the design of temporary construction conforming to the limitations listed above, the design of temporary construction shall be developed in close coordination with Amtrak design review personnel. The Chief Engineer, Structures shall provide final approval of temporary construction that does not conform to the above limitations.
  1. When Amtrak grants approval for sheeting closer than standard minimum clearances, the Contractor shall develop a survey plan, if not already required by the project, for the adjacent tracks, to be conducted prior to, during, and after the temporary sheeting construction operations. If settlement is detected, construction operations shall be suspended until the track has been returned to its initial condition, and stabilized, as determined by the Amtrak project site representative.
  2. The Contractor shall stockpile ten (10) tons of approved ballast at the project site, and maintain that amount in ready reserve, to allow for the possible need to restore track profile.
- L. Particular care shall be taken in the planning, design and execution of temporary construction, as relates to railroad slope protection and drainage facilities. Erosion and sediment control best management practices shall be designed and employed, as approved by Amtrak. Any unintended disruption to railroad drainage facilities, caused by the temporary construction, shall be promptly remedied, as directed by the Engineer, solely at the Contractor's cost.
- M. The following Information Sketch is attached:
  1. Figure No. SK-1: Normal Requirements for Sheet Piling Adjacent to Track



END OF SECTION 02261A

...TEMPORARY SHEETING AND SHORING TO SUPPORT AMTRAK TRACKS

02261A - 4

 <b>ENGINEERING PRACTICES</b>	ORIGINAL ISSUE DATE <b>04/24/01</b>	NUMBER <b>EP3016</b>	
	REVISED DATE <b>N/A</b>		
TITLE <b>STORM WATER DRAINAGE AND DISCHARGE FROM ADJACENT PROPERTY ONTO AMTRAK RIGHT-OF-WAY</b>	RECOMMENDED by <i>Anthony Scorpio</i>	DATE <b>4/25/01</b>	PAGE <b>1</b>
	APPROVED by CHIEF ENGR, STRUCTURES <i>James Richter</i>	DATE <b>4/27/01</b>	OF <b>2</b>
<p><b>SCOPE AND NATURE</b></p> <p>There are many areas along the railroad corridor that are receiving storm water from adjacent property that results in flooding during the smallest of storms. Increased storm water flow to the railroad property increases deposits of excessive amounts of sedimentation and could cause fouling of the track structure. With the introduction of the High Speed Rail Trains, passenger safety is of the utmost importance. Diminished track support from flooding and sedimentation will not be allowed.</p> <p>It is Amtrak's policy to limit the resultant discharge and drainage of storm water from the development of adjacent properties to no more than pre-existing conditions, as demonstrated by engineering analyses through governmental regulatory processes.</p> <p>It is Amtrak's policy to protect the railroad right-of-way from sediment, erosion and excess runoff during all stages of construction activities on adjacent properties, as demonstrated by engineering analyses through governmental regulatory processes.</p> <p><b>SPECIAL REFERENCE</b></p> <p>The following policy is to augment Specification 02861 of EP3005, Pipeline Occupancy Requirements and Specifications, and other Amtrak I&amp;C, design and construction standards.</p> <p><b>SPECIAL MATERIALS</b></p> <p>N/A</p> <p><b>PROCEDURE</b></p> <p>The discharge of storm water onto railroad property will be prohibited for all construction projects on or adjacent to Railroad property, unless the applicant can demonstrate that there will be a "zero net runoff" result in the peak flow and total volume based on a 100 Year Storm event, <u>and</u> that receiving waters downstream will not be impacted.</p> <p>Computations indicating this design and suitable topographic plans, prepared by a Professional Engineer, licensed in the state in which the work will be performed, shall be submitted to the Chief Engineer for approval at least 60 days in advance of construction. If the drainage is to discharge into an existing drainage channel on or under the Railroad Right of Way, a hydraulic analysis of the existing structures must be included.</p> <p>Formal approval of the proposed design, by the appropriate governmental agency or agencies, must be submitted with the computations. Control of soil erosion and sedimentation must be demonstrated on the design plans in accordance with the appropriate state and local regulations.</p>			

<b>TITLE</b>  <b>STORM WATER DRAINAGE AND DISCHARGE FROM ADJACENT PROPERTY ONTO AMTRAK RIGHT-OF-WAY</b>	ORIGINAL ISSUE DATE <b>04/24/01</b>	NUMBER <b>EP3016</b>
	REVISED DATE <b>N/A</b>	
		PAGE <b>2 OF 2</b>

The Contractor shall be responsible for control of the site and protection of railroad property during the entire construction project, through completion. The design of sedimentation, erosion and runoff control during construction shall accommodate conditions of every phase of construction.

Review, monitoring and approval process:

1. The Contractor shall conform to this Amtrak policy, and demonstrate conformance by standard Amtrak review submissions and approvals, as noted above.
2. Amtrak I&C shall assure that agencies and other third parties proposing construction on or adjacent to Amtrak Right-of-Way conform to Amtrak policy detailed herein.
3. Amtrak Design and Construction shall review the Contractor's proposed design and construction procedures for conformance with Amtrak policy, as demonstrated through appropriate engineering analyses and the government regulatory process.
4. Amtrak Construction shall monitor the activities of the Contractor on-site to assure compliance/ adherence to approved procedures throughout the construction period.

**REPORTING**

N/A

**RESPONSIBILITY**

Amtrak I&C Staff	Comply with Procedure
Director I&C	Assure Compliance
Amtrak Design Staff	Comply with Procedure
Director Structures Design	Assure Compliance
Amtrak Construction Staff	Comply with Procedure
Sr. Director Construction	Assure compliance



June 13, 2008

SPEC NO. 150 ©

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## STORMWATER MANAGEMENT POLICY

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### Scope

This specification is for designing stormwater management drainage facilities on property adjacent to Amtrak's Right-of-Way. These requirements are closely allied with the needs associated with the safety of high speed rail passenger service.

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## 1. Introduction

- 1.1. This specification has been developed to outline the National Railroad Passenger Corporation's (Amtrak) policies, criteria, and methodologies regarding hydrologic/hydraulic design of proposed developments adjacent to the Amtrak's right-of-way.
- 1.2. Reference to this specification will provide definitive guidelines for preparing thorough hydrologic/hydraulic design analyses in conformance with the requirements of Amtrak's Engineering Practices, Amtrak's Specification 63, and as specified herein. Close adherence to the provisions of this specification will reduce the review process time for hydrologic/hydraulics approval.

## 2. Policy

- 2.1. Amtrak reserves the right to review any development adjacent to the Amtrak ROW or facilities to ensure that: 1) the proposed development will not adversely affect the railroad and 2) improvements on Amtrak's land are in conformance with Amtrak's design criteria, construction specifications, and standard details.
- 2.2. Adverse impacts may include flooding, erosion, structural damage, and/or any safety hazard that may occur.
- 2.3. All submittals must be sent to Amtrak's Director of I & C Projects. The Director of I & C Projects will review the development plans and computations to confirm that:
  - All inlets, pipes, channels and other storm drain facilities constructed on Amtrak's property meet Amtrak criteria.
  - The hydraulic design of proposed drainage facilities, which connect directly to Amtrak drainage facilities either upstream or downstream, are adequate.
  - On-site drainage systems for proposed developments, which do not connect directly to Amtrak drainage facilities, will not indirectly result in an adverse impact to Amtrak facilities or ROW.
  - Proposed improvements do not create safety or erosion hazards.
  - Work within or adjacent to Amtrak does not cause an increases in flow or total runoff towards the railroad.
- 2.4. Amtrak's approval will not be issued until a complete set of final plans and computations as specified in these criteria has been received and reviewed.
- 2.5. These plans and computations must also be reviewed and approved by the local stormwater management-approving agency (town, city, county, state, etc.). Amtrak is not an approving agency for stormwater management facilities.

- 2.6. All storm water facilities must be designed to accommodate a storm with a 100 year recurrence interval as determined by using either the Soil Conservation Service (SCS) or the Rational Method, whichever is appropriate.
- 2.7. The applicant must also supply Amtrak with copies of all of the other approvals that are required for the proposed development; e.g., Non-Tidal Wetland and Waterway Permits, Tidal Wetlands License, Army Corps of Engineers Permits, Point Discharge Permits etc.
- 2.8. Computations must be provided that demonstrate that discharge from the proposed development for storm intervals of a 2; 5; 10; 25; and 100 year storms does not raise the existing flood water levels on the railroad property.
- 2.9. All storm water retention or detention facilities constructed up-gradient of the Amtrak right of way that may pose a risk to train operations must be constructed, inspected and maintained in accordance with the latest edition of the United States Department of Agriculture, Soil Conservation Service - Technical Release 60. Impoundment structures shall be considered a Class "C" dam. Relief from this requirement can only be obtained by submission of a letter from the appropriate State agency that regulates dam safety stating that Technical Release 60 does not apply at this specific location. The State agency must then dictate the classification of the proposed structure and the level of inspection and maintenance required.

Amtrak does not consider the United States Department of Agriculture Natural Resources Conservation Service – Conservation Practice Standard – Pond No - Code 378 to be applicable unless it is dictated as noted above. Code 378 clearly states the following:

**“CONDITIONS WHERE PRACTICE APPLIES**

This standard establishes the minimum acceptable quality for the design and construction of low hazard (class “a”) ponds if:

1. Failure of the dam **will not result in loss of life**; damage to homes, commercial or industrial buildings, main highways, or **railroads**; or in interruption of the use or service of public utilities.”

- 2.10. Most importantly, Amtrak’s review or lack of review does not release the owner, developer or their consultant from liability.

**3. Submittal Requirements**

- 3.1. The following material (if appropriate) shall be submitted for hydrologic/hydraulic review by Amtrak:
  1. County approved stormwater management (SWM) plans and computations or documentation from the County regarding their waiver of SWM.
  2. Pre-development drainage area map for the entire watershed, clearly indicating the existing contours both on site and off site. (1”=200’ scale or larger)
  3. Post-development drainage area map for the entire watershed, clearly indicating the proposed contours both on site and off site. (1”=200’ scale or larger)

4. A set of the latest approved post-development site plans, clearly indicating existing topographical features, proposed structure details, typical sections, pipe profiles, and contour grading.
  5. Complete storm drainage plan and hydraulic gradient profiles of both the existing and proposed storm drainage system from the proposed development for storm intervals of 2; 5; 10; 25; and 100 year.
  6. Complete hydraulic analyses for cross-culverts under Amtrak for the 100-year storm utilizing the Soil Conservation Service (SCS) Method.
  7. Complete storm sewer design computations for proposed closed storm drainage system for the 100-year storm utilizing the Rational Method.
  8. Complete hydraulic gradient computations for proposed and existing storm drainage systems for the 100-year storm, utilizing the Rational Method.
  9. Complete analyses, utilizing the SCS Method, for:
    - a. Channels adjacent to the Amtrak ROW for the 100-year storm.
    - b. Inlet / outlet channels to culverts for the 100-year storm.
  10. Complete hydrologic analysis/back-up data (eg.:  $t_c$ ,  $t_e$  path, curve numbers, soil types, TR-20 Schematic Diagrams, land uses, etc.).
- 3.2. The following standard programs can be used for the design computations:
- Culvert Analysis or HY-8 Computer Analysis
  - Peak Discharge using TR-55 *or* TR-20 Computer Analysis
  - Rational or Modified Rational Methods may be used for areas less than 20 acres.
  - Alternative methods required by local governing or regulating authorities, provided they are more restrictive than the above and use the 100 year storm event as the design standard.
- 3.3. Calculation shall be provided to show the derivation of the Runoff Curve Number (RCN) for the TR - 20 computer input forms. Supplementary computations sheets showing the derivation of "times of concentration" ( $t_c$ ) must also be submitted. TR-55 worksheets may be used to show these computations.
- 3.4. All computations are to be neatly prepared, well organized, and appropriately labeled so they can be easily reviewed. The computations shall also include references to all design charts and publications used in the preparation of the computations.
- 3.5. The pre- and post-development drainage area information shall include:



- An outline of the total drainage area to the point being analyzed and all sub-areas within the total watershed that are pertinent to the computations. The drainage area shall not be limited to the development site.
- The soil types within the watershed.
- The land uses within the watershed.
- All time-of-concentration ( $t_c$ ) flow paths investigated, showing the limits of overland flow, swale flow, ditch flow, pipe flow, stream flow, etc. The chosen path shall be clearly differentiated from all other paths investigated. When the  $t_c$  path changes with the recurrence interval, each path must be clearly identified.
- Existing and proposed storm drain and stormwater management systems (both on site and off site) serving the development and surrounding watershed.
- Drainage area and cross section numbers that agree with the design computations and computer output data.

#### 4. Methodology

4.1. The following methods shall be used in performing hydrologic computations for development projects that are to be reviewed by Amtrak.

1. The "United States Soil Conservation Service Hydrograph Method", utilizing either the TR-55 Tabular Hydrograph Method or the TR-20 program, shall be used for determining the discharges for design and analysis of culverts, SWM facilities, and open channels.
2. The Graphical Peak Discharge Method may be used only when development is within a homogeneous watershed (watershed subdivision not required), and reservoir routing is not required.
3. The Rational Method shall be used for determining the discharges for design and analysis of closed drainage systems (those consisting of pipes and similar structures). The Rational Method may also be used for areas of 20 acres or less. The Rational Method is defined by the following equation:  

$$Q=CiA$$
 Where :  
 Q - peak flow (cfs).  
 C - dimensionless runoff coefficient.  
 i - rainfall intensity (in/hr).  
 A - catchment area (acres).
4. Alternative methods that may be required by local governing or regulating authorities, provided they are more restrictive than the above and use the 100 year storm event as the design standard.

#### 5. Hydrology

- 5.1. The hydrologic computations shall be performed in conformance with the Methodology noted in Section 4 above for the site and as specified herein.
- 5.2. The following analyses may be required depending on the resulting adequacy of the drainage facilities:
  1. Pre-development (existing).
  2. Post-development analysis for the project site with full potential development in accordance with existing zoning for the site. Should this analysis demonstrate adequacy of the existing and/or proposed drainage facilities, no further analysis is required.
- 5.3. The entire watershed to the point of investigation is to be included in the hydrologic computations.
- 5.4. The latest available version of TR-55 or TR-20 is to be used in determining runoff by the Soil Conservation Service Method unless a different method is allowed by the provisions of paragraph 3.2 above. The standard SCS 24 hr. Type II rainfall distribution (Table #2) is to be used for the TR-20 program. The selection of sub-areas and cross sections for the reach routings for development of composite hydrographs shall be suitably justified and documented.
- 5.5. The applicant shall determine a representative time of concentration based upon land use, slopes, and soil groups. Several paths should be investigated in the process and the path representing the greatest contribution of runoff chosen (the most representative time is not necessarily the longest time). All flow paths shall be indicated on the drainage area maps and supported by backup computations.
- 5.6. Special considerations in unique circumstances may require other additional methods of analysis. Contact with the Amtrak's Director of I & C Projects is recommended when the designer is considering special cases.

## **6. Culvert Analyses**

- 6.1. The applicant shall provide an analysis for all proposed culverts under Amtrak and for all existing culverts that may be affected as a result of the proposed development. This may include culverts that are located beyond the property boundaries. These analyses shall include a review of the stability/capacity of the downstream channel and design of outfall protection measures.
- 6.2. Definition of a culvert: Any culvert under the railroad with or without a headwall, end section or protective end, whose primary function is to convey off-site runoff through the railroad, is considered to be a culvert. This definition applies even if an extended downstream storm drainage system is connected to the culvert. In addition, an entrance culvert parallel to the railroad with a downstream storm drainage system connected to it may also be considered a culvert. In these cases, a hydraulic gradient based upon the SCS methodology discharges will be required to determine the tailwater for the upstream culvert.

- 6.3. The headwater pool elevation for the design flood must not be higher than the bottom of the railroad tie based upon the proposed development and existing conditions for the off site portion of the watershed. The bottom of the railroad tie is approximately 1.43 feet below the top of the rail.
- 6.4. The post-development headwater pool elevations shall be determined taking into consideration the following:
  - Storage at the inlet of the culvert if appropriate.
  - Overflow into or from an adjacent drainage basin.
  - Tailwater elevations from downstream drainage, headwater pools, floodplains, and storm-water management facilities.
  - Extension of the culvert to accommodate railroad embankment widening.
  - Outflow from upstream storm-water management facilities.
- 6.5. Storm drain extensions that are proposed downstream of an existing culvert under Amtrak shall be adequately sized to handle the ultimate development of the watershed, as allowed by zoning, regardless of the capacity of the culvert. The plans must include profiles of all proposed culvert extensions.
- 6.6. Any development adjacent to an Amtrak facility must ensure that an existing flooding problem on the Amtrak facility will not be worsened as a result of the proposed development. In the event of increased discharges, applicants may (subject to county and state approval) upgrade or supplement an existing culvert to reduce the runoff to pre-development levels or below. Adequacy of the outfall must be addressed should this option be pursued. Should this prove to be infeasible, a storm-water management facility may be required.
- 6.7. Headwalls shall be provided on pipes. All culverts must have a minimum diameter of 18 inches for a length of less than 60 feet and 24 inches for a length of 60 feet or greater. As with all drainage design, railroad safety and stability is paramount in considering the location of culvert headwalls and end sections.
- 6.8. With any other special circumstance, coordination with Amtrak Engineering is recommended.

## **7. Off-site Drainage Design**

- 7.1. All proposed development adjacent to Amtrak shall include a storm drainage system along Amtrak's property that will intercept existing and proposed flows and discharge the system in accordance with Amtrak criteria. Waivers to this policy must be reviewed and approved by Amtrak Engineering.
- 7.2. The applicant shall prepare a pre- and post-development analysis for watercourses when runoff from the proposed development is directed toward the Amtrak property. Additional detention or diversion will be required if the peak discharge (cfs) from the development increases.

- 7.3. The applicant shall utilize one of the following options if Amtrak's review finds that an adequate drainage system has not been specified:
1. Provide additional inlet capacity; and/or
  2. Revise the site plan to reduce runoff to Amtrak. This may include re-grading for the proposed development and/or additional inlets or detention on-site.

## **8. Closed Storm Drainage Systems**

- 8.1. The applicant shall provide an analysis for all existing and proposed storm drainage systems under or adjacent to Amtrak which may be affected as a result of the proposed development. This frequently includes systems that are located beyond the property boundaries.
- 8.2. The 100-year post development storm, utilizing the Rational Method, shall be used for storm drainage pipe designs. Pipes should be initially sized to convey this discharge at or below full flow.
- 8.3. The submittal for review shall include the following:
- Plans, profiles and construction methods for the proposed system to meet the design requirements of Amtrak's EP 3005- Pipeline Occupancy – Specification 02081A.
  - Completed Storm Sewer Design for the 100-year storm frequency.
  - Hydraulic gradient computations for a 100-year storm. This must be plotted on the pipe profiles and be below the top of grate or manhole cover.
- 8.4. Channel conditions downstream from the storm drain outlet pipe and/or the Hydraulic Grade Line (HGL) of an existing downstream storm drain shall be carefully reviewed to determine the beginning elevation for the hydraulic gradient computations. Additionally, when a proposed system is directed toward a stormwater management facility, the 100-year water surface elevation must be used as the controlling tailwater elevation. A complete discussion of assumptions and backup computations shall be provided.
- 8.5. The 100-year storm hydraulic gradient shall be developed for the proposed storm drainage systems for post-development conditions to determine if flooding of the Railroad is exacerbated by the post development runoff. An analysis of the existing system must be performed to determine if flooding occurs or worsens as a result of the proposed development. If so, appropriate design revisions must be made.
- 8.6. The surface overflow flood route shall be plotted for all projects for the pre- and post-development conditions to identify potential flooding hazards.
- 8.7. General design requirements for designing pipes within the Amtrak ROW are found in Amtrak's Engineering Practice EP 3005 – "Pipeline Occupancy – Specification 02081A

## 9. Open Channels

- 9.1. The applicant shall provide an analysis for all proposed channels adjacent to Amtrak and any existing channel that may be affected as a result of the proposed development. This may include channels that are located beyond the property boundaries. All proposed channels are to be designed such that no adverse impact to the Railroad occurs.
- 9.2. The water surface elevations for new open channels for a 100-year frequency storm shall be at least 1 in. below the bottom of the railroad tie elevation.
- 9.3. Open channels shall be checked for velocity, depth of flow and type of lining for the design storm including locations in the channel where:
  - Other swales and ditches outlet into the channel
  - The typical section of the channel changes significantly (eg: the channel changes from a “vee” section to a trapezoidal section, the bottom width increases 2 feet or more, etc.). No “vee” ditches will be permitted on railroad property.
  - The grade of the channel changes (either flattens or steepens)
- 9.4. Specific items, that the design and analysis of the channels must include are:
  - Depth limitations as stated above.
  - All channels must have linings, which will not erode at design velocities.
  - Tributary channels shall be designed to intersect the railroad side ditch at an angle of between 30° and 60°.
  - Ditches must not change percent of grade in close proximity to headwalls or end sections. Changes in slopes at these locations may cause undermining or clogging of the structure, due to changes in velocity, and are therefore not allowed.

## 10. Stormwater Management (SWM)

- 10.1. SWM approval is the responsibility of the local approving agency. Amtrak is not an approving agency for SWM facilities. Amtrak is solely concerned with potential impacts to Amtrak facilities due to inadequate SWM.
- 10.2. The applicant shall provide complete design computations and construction plans for all proposed SWM facilities that are adjacent to Amtrak. All SWM facilities are to be designed or analyzed with the SCS Hydrograph Method. No other methods will be allowed. The SCS "Short-cut Method" is not acceptable. The SWM computations shall address the appropriate pre- and post-development discharge rates. In addition, computations based on the functional storm may be required so that Amtrak can perform a complete evaluation of the development. All soils data (soil type, runoff coefficient, etc) for water quality management shall be included with the SWM computations.
- 10.3. All SWM facilities for private development must be located outside Amtrak property.

10.4. The following should be considered when designing SWM facilities:

- Ponds downstream of railroad facilities must be adequately sized so that the hydraulic operation of upstream drainage systems for the railroad is not impacted.
- Emergency spillways directing flow onto Amtrak will not be allowed. The emergency spillway must discharge flow away from Amtrak or into an adequate channel where flow will not impact railroad operations.
- All detention facility designs must comply with the requirements contained in the Soil Conservation Service Publication TR – 60
- All dams adjacent to and upstream of Amtrak are to be Class “C” per TR-60 unless as determined in paragraph 2.9 above.
- A breach routing plan is required. A breach routing plan must route water away from Amtrak.
- Use of existing Amtrak SWM, such as detention basins, facilities by private applicants is not allowed.

**DESIGN EXCEPTION REQUEST (DER)** | 

This form is to be used when a project warrants an exception to established design standards. Complete Section 1 and 2 and attach supporting documents prior to submission to Amtrak for consideration.

<b>Section 1: Request Information</b>				
Project Name				
Project DER No.		Date		
Exception Location				
Requesting Agency		Requester	(name)	(title)
<b>Section 2: Design Exception Description (Provide brief concise statements)</b>				
Excepted Design Standard and section No.				
<small>Attach Design Standard, <u>unless</u> it is an Amtrak or AREMA Standard</small>				
Description of Exception				
Reason for Request				
<small>The potential impacts of a DER on: safety, capital costs, life cycle costs, future maintenance, or the right-of-way should be described in the Reason for Request field. Additional pages may be attached.</small>				
<b>Section 3: Amtrak Review Comments</b>				
Comments and Recommendation				
Reviewer Name		Title		
<b>Section 4: Amtrak Approval / Denial Status</b>				
APPROVE or DENY	Signature		Date	
	Name		Title	
APPROVE or DENY	Signature		Date	
	Name		Title	

**NOTES:**

CLEARANCE REQUIREMENTS SHOWN ON THIS PLAN APPLY TO ALL OVERHEAD BRIDGES, TROLLEY WIRE SUPPORT STRUCTURES, SIGNAL STRUCTURES AND TRACKS THAT ARE MAINTAINED AND OPERATED UNDER THE JURISDICTION OF THE RAILROADS REQUIRED BY LOCAL OR STATE AUTHORITIES.

STRUCTURES MUST NOT BE LOCATED NEARER TO THE TRACK THAN THE MINIMUM CLEARANCES SHOWN ON THIS PLAN. WHERE POSSIBLE, CONSIDERATION SHOULD BE GIVEN TO CENTER LINES, WINDING ROADWAYS, SHOULDERS AND WIDENED LOCATIONS ACCORDINGLY. AND THE STRUCTURES SHOULD BE LOCATED ACCORDINGLY.

FOR STANDARD DISTANCES BETWEEN TRACK CENTER LINES AND THE SPACING OF TRACKS WHERE NEAR TRACK AND MAINTENANCE OF TRACK CONSTRUCTION AND MAINTENANCE SPECIFICATIONS FOR INSPECTION, CONSTRUCTION AND MAINTENANCE OF TRACK CONSTRUCTION AND MAINTENANCE SPECIFICATIONS FOR INSPECTION, CONSTRUCTION AND MAINTENANCE OF TRACK.

RESTRICTIONS, NECESSITATING CLEARANCES CLOSER THAN THOSE SPECIFIED, THE MATTER MUST BE SUBMITTED TO THE CHIEF ENGINEER OF TRACK FOR ANY ADJUSTMENTS EXCEPTING TO THIS STANDARD.

MINIMUM CLEARANCES SHOWN ON THIS PLAN ARE FOR TANGENT LEVEL TRACK.

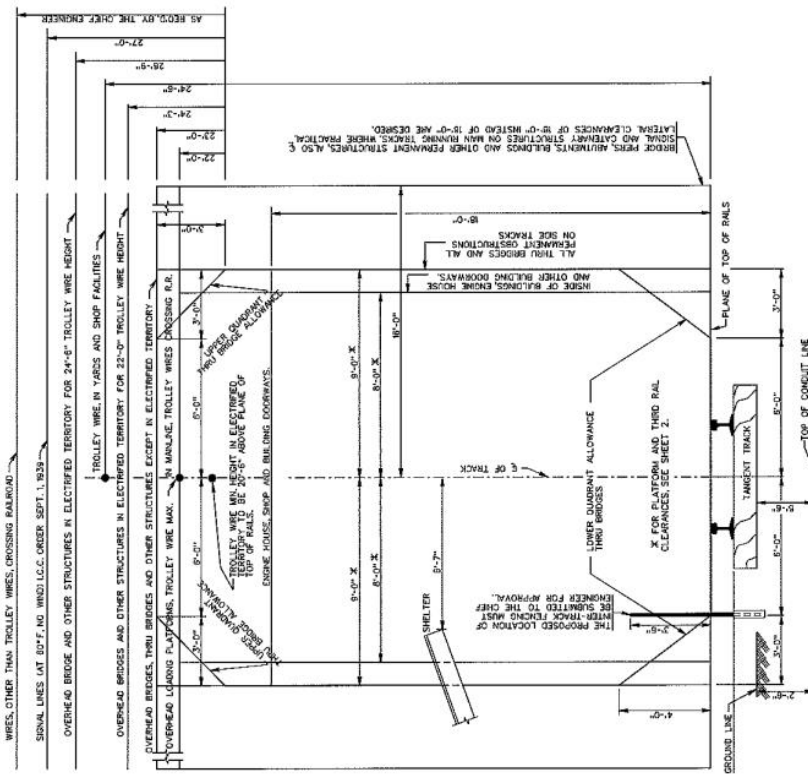
FOR CURVED TRACK THE FOLLOWING PROVISIONS APPLY:

VERTICAL - MEASURED VERTICALLY ABOVE HIGH RAIL EXCEPT FOR PASSENGER AND FREIGHT PLATFORMS WHICH ARE MEASURED PERPENDICULAR TO THE PLANE OF TOP OF RAIL.

LATERAL - MEASURED HORIZONTALLY AND VERTICALLY MEASURED PERPENDICULAR TO THE PLANE OF TOP OF RAIL.

IN ADDITION, THE MINIMUM CLEARANCE FOR OVERHEAD BRIDGES AND OTHER STRUCTURES SHALL BE FURTHER INCREASED BY 5 FEET FOR ELEVATED TRACK, SHALL BE FURTHER INCREASED BY 5 FEET ABOVE TOP OF LOW RAIL.

X FOR STATE CLEARANCE REQUIREMENTS, SEE AREA, MAINTAIN 3.0 LEGAL CLEARANCE REQUIREMENTS BY STATE.



**STANDARD TRACK PLAN**  
**MINIMUM ROADWAY CLEARANCES**

**OFFICE OF THE CHIEF ENGINEER OF TRACK**

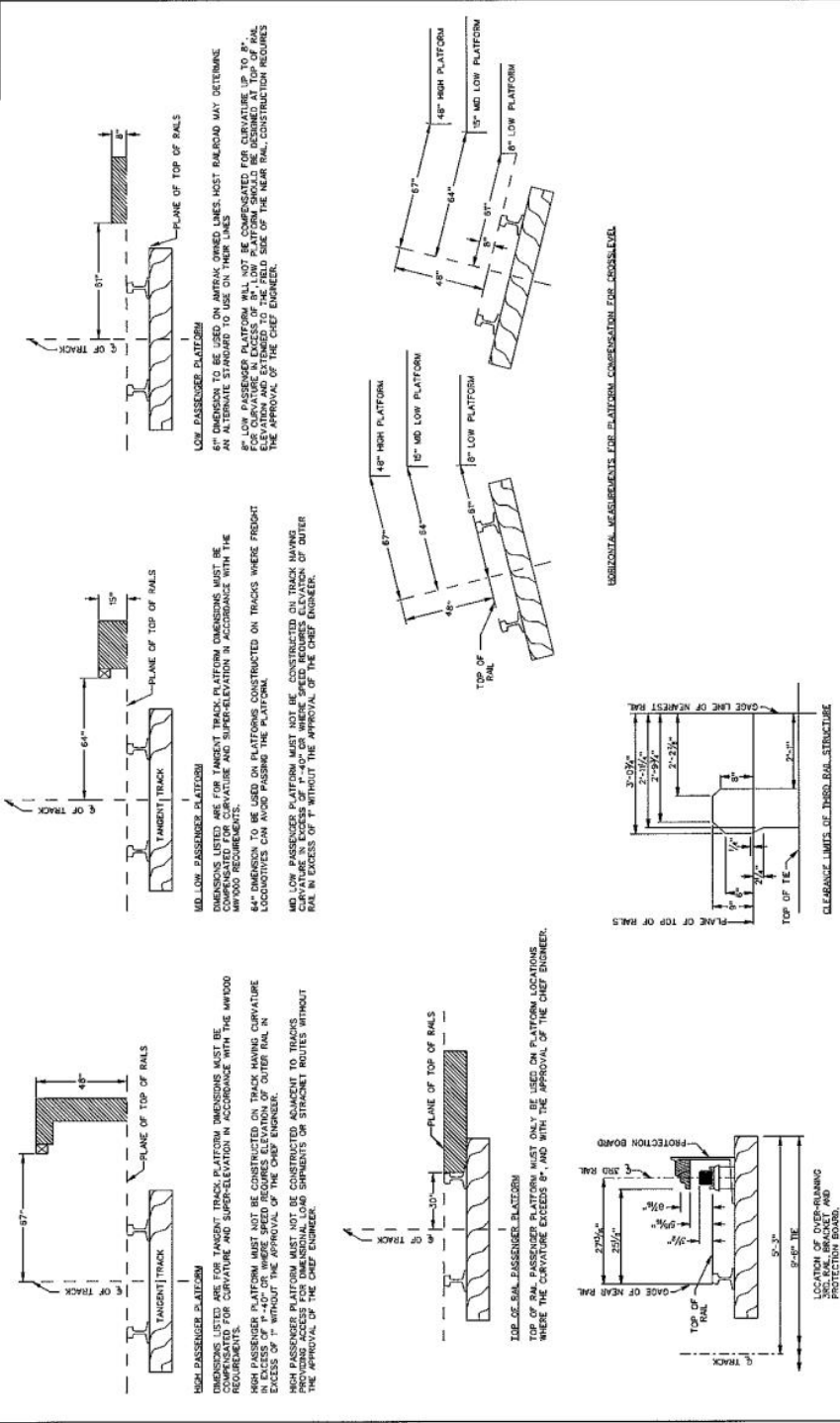
**Amtrak®**

Date: August 1, 2016 Approved

No.	Revision	Date	By	Checked By	Drawn By	Title	Scale	Sheet No.	Total Sheets

PHILADELPHIA, PA. 19104  
Date: August 1, 2016  
Approved





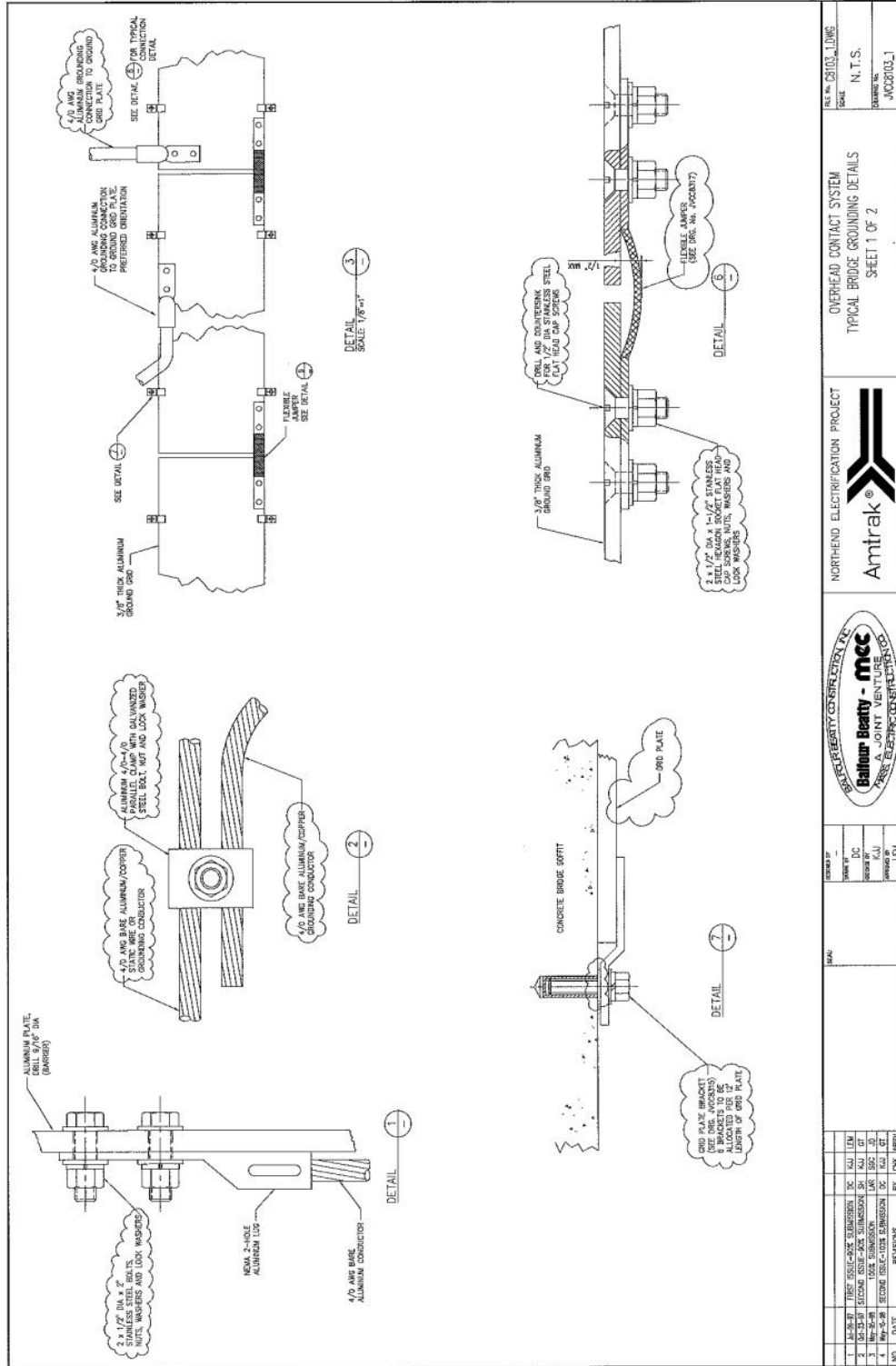
STANDARD TRACK PLAN	
MINIMUM ROADWAY CLEARANCES	
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OFFICE OF THE CHIEF ENGINEER OF TRACK  
 PHILADELPHIA, PA. DATE: August 1, 2018

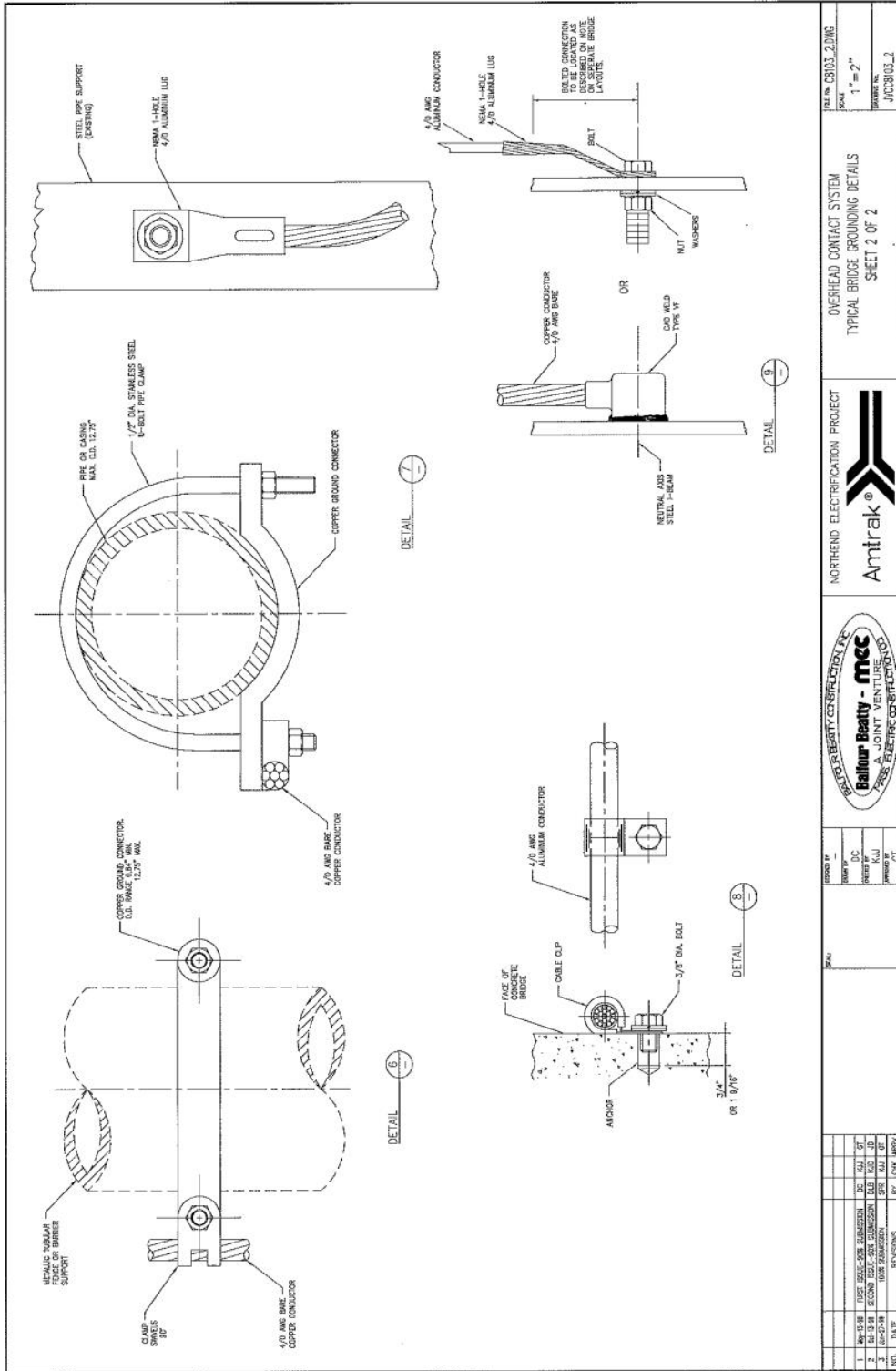


STANDARD TRACK PLAN  
 MINIMUM ROADWAY CLEARANCES





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FILE NO. CR103.2.DWG		SCALE 1" = 2"		DRAWING NO. JAC03103.2	
OVERHEAD CONTACT SYSTEM TYPICAL BRIDGE GROUNDING DETAILS SHEET 2 OF 2					
NORTHEAST ELECTRIFICATION PROJECT					
					
DESIGNED BY	DC	DATE	BY	DATE	BY
DRAWN BY	KJJ	REVISED BY	KJJ	DATE	BY
CHECKED BY	GT	APPROVED BY	GT	DATE	BY
DATE	REVISIONS	BY	DATE	BY	DATE
1	REVISED	DC	4/21	GT	
2	REVISED	KJJ	5/10	GT	
3	REVISED	GT	5/10	GT	

## **NOTICE TO CONTRACTOR - HAZARDOUS MATERIALS INVESTIGATIONS**

A limited hazardous materials site investigation has been conducted at Bridge Nos. 03330 & 03331, Route 349 NB/SB over Amtrak in Groton, Connecticut. The scope of inspection was limited to the representative components projected for impact.

At Bridge Nos. 03330 & 03331 the concrete decking/support beams and metal railing (galvanized) of the two bridges were unpainted therefore no lead paint was identified. No detectable amounts of lead paint ( $0.0 \text{ mg.cm}^2/\text{ND} < 0.10\%$  by weight) were identified on the painted concrete abutments/piers of both bridges.

Since no detectable amounts of lead were identified on the painted concrete abutments/piers of both bridges, any paint waste stream from the concrete abutments/piers would be characterized as non-hazardous non-RCRA waste.

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.

Suspect asbestos containing material in the form of gray seam caulking around foot posts of the railings was sampled and found to contain asbestos. Suspect asbestos containing material in the form of black expansion joint coating found along road seams and black tar coating on abutments and embankments were sampled and found to contain no asbestos. Due to inaccessibility, potentially ACM transite paneling is presently presumed to be attached to the underside of the concrete deck on both bridges directly over the tracks.

No bird/pigeon guano accumulations were identified in accessible areas on and below Bridge Nos. 03330 & 03331.

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. 0020801A – Asbestos Abatement

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. This document shall be available for review electronically.

- HazMat Inspection Letter, Bridge Nos. 03330/03331, Route 349 NB/SB over Amtrak, Groton, CT, TRC Environmental Corporation, May 23, 2016.

**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**

**Article 1.05.02 - Plans, Working Drawings, Shop Drawings, Product Data, Submittal Preparation and Processing and Designer's Action:** is amended as follows:

Add the following:

Each submittal shall include the name and contact information for an individual familiar with the submittal and who will be available to answer questions should they arise during the review.

**1.05.02(2) – Working Drawings:** is supplemented by the following:

When required by the contract documents or when ordered by the Engineer, the Contractor shall prepare and submit six (6) printed copies and one electronic copy in a pdf file format of working drawings, signed, sealed and dated by a qualified Professional Engineer licensed to practice in the State of Connecticut for review before fabrication, to the following:

Ms. Eileen Ego, P.E.  
Assistant District Engineer – District 2  
171 Salem Turnpike  
Norwich, CT 06360  
(860) 823-3249

Add the following to the first paragraph:

When Working Drawings are submitted to the District or Traffic, copies of the transmittal letter shall be sent to:

Close, Jensen and Miller, P.C.  
Attn: Mark F. Levesque, P.E.  
1137 Silas Deane Highway  
Wethersfield, CT 06109  
(860) 563-9375



**1.05.02(3)—Shop Drawings:** is amended as follows: Delete the first sentence in the first paragraph and substitute the following:

When required by the Contract or when ordered by the Engineer, the Contractor shall prepare and submit six (6) printed copies and one electronic copy in a pdf file format of the shop drawings, catalog cuts, data sheets and other descriptive literature, to the following for review and approval before fabrication:

H.W. Lochner, Inc.  
Attn: Mr. Brian Byrne, P.E.  
55 Hartland Street, Suite 401  
East Hartford, CT 06108  
(860) 760-5856

Add the following to the first paragraph:

When shop drawings, catalog cuts, data sheets and other descriptive literature are submitted for review and approval, copies of the transmittal letter shall be sent to:

Close, Jensen and Miller, P.C.  
Attn: Mark F. Levesque, P.E.  
1137 Silas Deane Highway  
Wethersfield, CT 06109  
(860) 563-9375

and to the District:

Ms. Eileen Ego, P.E.  
Assistant District Engineer – District 2  
171 Salem Turnpike  
Norwich, CT 06360  
(860) 823-3249

**Article 1.05.04 – Coordination of Special Provisions, Plans, Supplemental Specifications and Standard Specifications and Other Contract Requirements:**

*Add the following after the first sentence in the second paragraph:*

“Dimensions calculated by applying a scale to graphic representations shall not be considered reliable for the purposes of ordering materials or construction project elements.”

## **SECTION 1.06 - CONTROL OF MATERIALS**

Article 1.06.01 - Source of Supply and Quality:

Add the following:

For the following items the Contractor shall submit a complete description of the item, together with eight (8) copies of shop drawings, cuts and other descriptive literature which completely illustrates such items presented for formal approval. Such approval shall not change the requirements for a certified test report and materials certificate as may be called for.

Light Standards  
Conductors  
Luminaires  
Conduit  
Fuses and Fuse Holders  
Precast Foundation  
Service Items  
Temporary Illumination Unit  
Aerial Cable  
Handhole  
Junction Box

Required catalog cuts for all items listed above shall be submitted in one package at the same time. All approvals or disapprovals and comments will be returned in one package.

When required by the contract documents or when ordered by the Engineer, the Contractor shall prepare and submit (8) sets of catalog cuts and/or shop drawings for all illumination items in one package at the same time to the following for approval prior to ordering or fabrication.

Mr. Christopher Bonsignore  
Principal Engineer – Facilities Design  
Bureau of Engineering and Construction  
Connecticut Department of Transportation  
P.O. Box 317546  
Newington, Connecticut 06131-7546

Article 1.06.07 Certified Test Reports and Materials Certificate

- 1) For the materials in the following items, a certified Test Report will be required confirming their conformance to the requirements set forth in these plans or specifications or both. Should the consignee noted on a Certified Test Report be other than the Prime Contractor, then Materials Certificates shall be required to identify the shipment.

Light Standards  
Conductors  
Anchor Bolts  
Aerial Cable  
Temporary Illumination Unit

- 2) For the materials in the following items, a Materials Certificate will be required confirming their conformance to the requirements set forth in these plans or specifications or both.

Light Standards  
Conductors  
Luminaires  
Conduit  
Anchor Bolts  
Aerial Cable  
Temporary Illumination Unit

## **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 1.07.11 Opening of Section of project to Traffic or Occupancy:**

*Add the following sentence to the last paragraph;*

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



**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. Richard Russo  
District 2 Electrical Supervisor  
Department of Transportation  
Colchester, Connecticut  
(860) 537-8942/8943

National Railroad Passenger Corporation  
Attn: Ms. Kathryn Haywood, PE, CFM - Engineering - I&C  
30<sup>th</sup> Street Station, Box 64  
2955 Market Street  
Philadelphia, PA 19104  
(215) 349-4367

## **SECTION 1.08 - PROSECUTION AND PROGRESS**

### **Article 1.08.04 - Limitation of Operations - Add the following:**

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

#### **Route 349**

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 2:00 p.m. and 6:00 p.m.  
Saturday and Sunday between 10:0 a.m. and 6:00 p.m.

The Contractor will be allowed to halt Route 349 traffic for a period not to exceed 10 minutes to perform necessary work for the erection and setting of beams, and for the removal of the existing bridge superstructure, as approved by the Engineer, between 12:01 a.m. and 5:00 a.m. on all non-Holiday days.

#### **Ramps and Turning Roadways**

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

#### **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.

#### **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.

The Contractor will not be allowed to perform any work over an active travel path. During the course of active construction work, the Contractor shall close the lane or lanes directly below the work area for the entire length of time that the overhead work is being undertaken.

6/13/17

All Contractor work required to be performed on Amtrak's Right-of Way or above or adjacent to Amtrak tracks shall be coordinated and scheduled with Amtrak; the Contractor should refer to "Notice to Contractor – Work on Railroad Property" for additional information.

## **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**

<b>Mixture Designation</b>	<b>Lift Tolerance</b>
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.

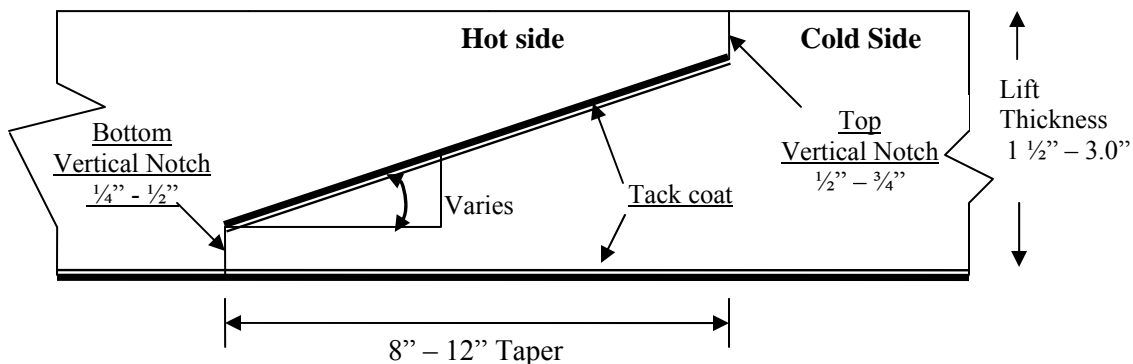
Surface Requirements:

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.

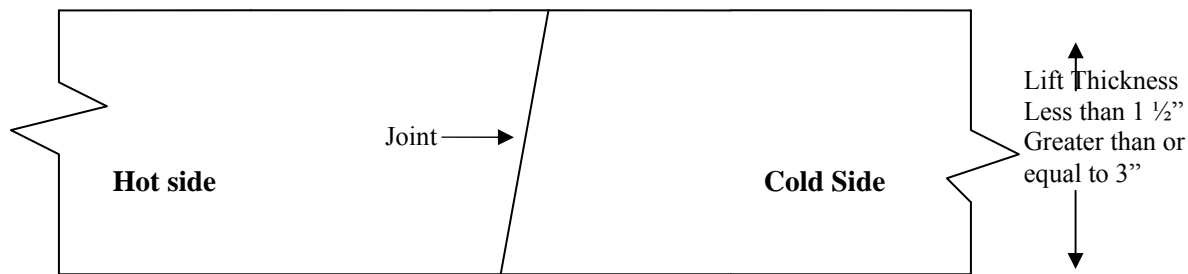
The taper portion of the wedge joint shall not be exposed to traffic for more than 5 calendar days.

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:**



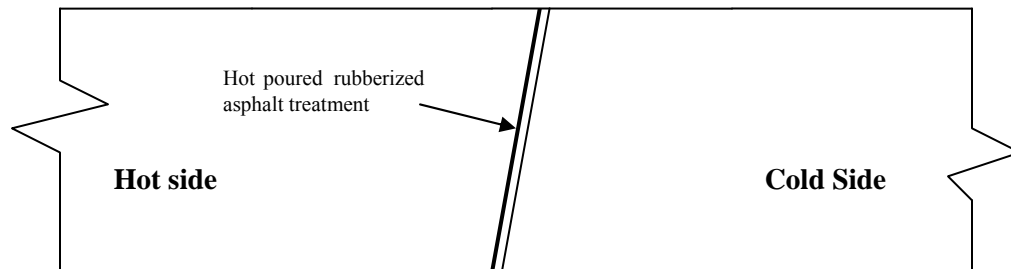
**FIGURE 4.06-2: Butt Joint**

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](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)**

<b>Length of Each Structure (Feet)</b>	<b>No. of Mat Cores</b>	<b>No. of Joint Cores</b>
≤ 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) <sup>(1)</sup>	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) <sup>(1)</sup>	2 plus	1 per structure	2 plus	1 per structure

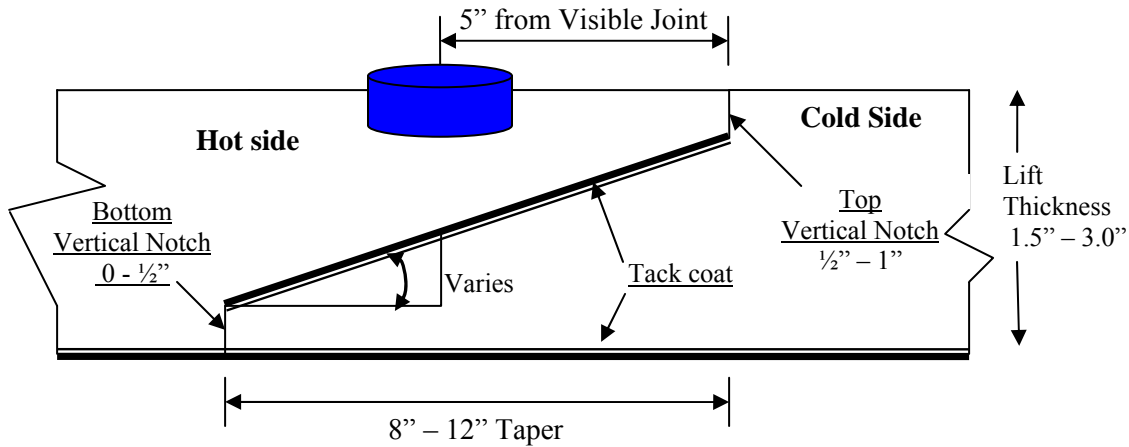
Note:

<sup>(1)</sup> 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.

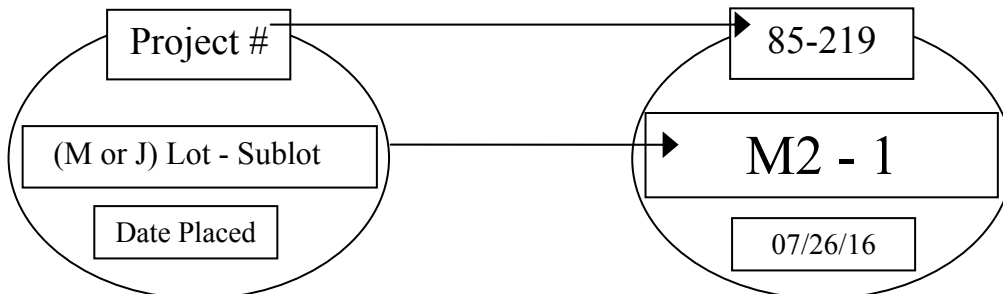
Method I, Notched Wedge Joint cores shall be taken so that the center of the core is 5 inches from the visible joint on the hot mat side (Figure 4.06-5).



**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<sub>A</sub>)** = [(L x W<sub>adj</sub>)/9] x (t) x 0.0575 Tons/SY/inch = (-) Tons

Where: L = Length (ft)

(t) = Actual thickness (inches)

W<sub>adj</sub> = (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<sub>T</sub>)** = A x t<sub>adj</sub> x 0.0575 = (-) Tons

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

t<sub>adj</sub> = 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<sub>W</sub>)** = 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<sub>SD</sub>)** = [(AdjAV<sub>t</sub> + AdjPB<sub>i</sub>) / 100] X Tons

Percent Adjustment for Air Voids = AdjAV<sub>t</sub> = [AdjAV<sub>1</sub> + AdjAV<sub>2</sub> + AdjAV<sub>i</sub> + ... + AdjAV<sub>n</sub>] / n

Where: AdjAV<sub>t</sub> = Total percent air void adjustment value for the lot  
 AdjAV<sub>i</sub> = 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 <sub>i</sub> ) (%)	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<sub>t</sub> = [(AdjPB<sub>1</sub> + AdjPB<sub>2</sub> + AdjPB<sub>i</sub> + ... + AdjPB<sub>n</sub>) / n

Where: AdjPB<sub>t</sub> = Total percent asphalt binder adjustment value for the lot  
 AdjPB<sub>i</sub> = 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 <sub>i</sub> ) (%)	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:

$\text{AdjAV}_t$  = Total percent AV adjustment value for the lot

$\text{AdjPB}_t$  = Total percent PB adjustment value for the lot

$\text{AdjVMA}_t$  = 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 ( $T_D$ )** =  $[\{(PA_M \times .50) + (PA_J \times .50)\} / 100] \times \text{Density Lot Tons}$

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

$PA_M$  = Mat density percent adjustment from Table 4.06-9

$PA_J$  = Joint density percent adjustment from Table 4.06-10



**TABLE 4.06-9: Adjustment Values for Pavement Mat density**

<b>Average Core Result Percent Mat Density</b>	<b>Percent Adjustment (Bridge and Non-Bridge) <sup>(1)(2)</sup></b>
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**

<b>Average Core Result Percent Joint Density</b>	<b>Percent Adjustment (Bridge and Non-Bridge) <sup>(1)(2)</sup></b>
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)

<sup>(1)</sup> ACRPD = Average Core Result Percent Density

<sup>(2)</sup> 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 10.00 - GENERAL CLAUSES FOR HIGHWAY  
ILLUMINATION AND TRAFFIC SIGNAL PROJECTS**

**Article 10.00.10** – (b), item 3. Functional Inspection, in the first paragraph after the 2<sup>nd</sup> sentence:  
Add the following:

The contractor shall have a bucket truck with crew on site during the Functional Inspection to make any necessary aerial signal adjustments as directed by the Engineer.

**Article 10.00.12** - Negotiations with utility company: Add the following:

The contractor shall give notice to utility companies a minimum of 30 days prior to required work or services to the utility company. Refer to Section 1.07 – Legal Relations and Responsibilities for the list of utility companies and representatives the contractor shall use.

The Contractor shall perform all work in conformance with Rules and Regulations of Public Utility Regulatory Authority (PURA) concerning Traffic Signals attached to Public Service Company Poles. The Contractor is cautioned that there may be energized wires in the vicinity of the specified installations. In addition to ensuring compliance with NESC and OSHA regulations, the Contractor and/or its Sub-Contractors shall coordinate with the appropriate utility company for securing/protecting the site during the installation of traffic signal mast arms, span poles or illumination poles.

When a span is attached to a utility pole, the Contractor shall ensure the anchor is in line with the proposed traffic signal span wire. More than 5 degree deviation will lower the holding strength and is not allowed. The Contractor shall provide any necessary assistance required by the utility company, and ensure the anchor and guy have been installed and properly tensioned prior to attaching the span wire to the utility pole.

## **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:

<b>CRCG Grading Requirements</b>	
<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**

<b>Notes:</b> (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> <sup>(1)</sup> 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 <sup>(1)</sup>	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 <sup>(1)</sup> ASTM D 5821, Minimum %	Fine Aggregate Angularity AASHTO T 304, Method A Minimum %	Flat and Elongated Particles <sup>(2)</sup> 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**

<b>Mix Type</b>	<b>Level</b>	<b>Binder Content Minimum</b>
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) <sup>(2)</sup>	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
5	AASHTO T 312 <sup>(2)</sup>	<sup>(1)</sup> Superpave Gyrotory molds compacted to N <sub>des</sub>
6	AASHTO T 329	Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method

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

<sup>(2)</sup> 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	<sup>(1)</sup> Superpave gyratory molds compacted to N <sub>des</sub>
6	AASHTO T 166	<sup>(2)</sup> Bulk specific gravity of bituminous concrete
7	AASHTO R 35	<sup>(2)</sup> 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:** <sup>(1)</sup> One set equals two six-inch molds. Molds to be compacted to N<sub>max</sub> for PPTs and to N<sub>des</sub> for production testing. The first subplot of the year will be compacted to N<sub>max</sub>

<sup>(2)</sup> 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 <sup>(2)</sup>
	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 <sup>(5)</sup>
VMA (%)	16.5		16.0		15.0		13.0		1.0 <sup>(6)</sup>
VA (%)	4.0		4.0		4.0		4.0		1.0 <sup>(7)</sup>
Gmm	JMF value		JMF value		JMF value		JMF value		0.030
Agg. Temp <sup>(3)</sup>	280 – 350F		280 – 350F		280 – 350F		280 – 350F		
Mix Temp <sup>(4)</sup>	265 – 325 F <sup>(1)</sup>		265 – 325 F <sup>(1)</sup>		265 – 325 F <sup>(1)</sup>		265 – 325 F <sup>(1)</sup>		
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
<b>T 30</b>	Section 7.2 thru 7.4 Samples are not routinely washed for production testing
<b>T 168</b>	<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>
<b>T 195</b>	Section 4.3 only one truck load of mixture is sampled. Samples are taken from opposite sides of the load.
<b>T 209</b>	<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>
<b>T 283</b>	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.

<b>AASHTO Standard Recommended Practices</b>	
<b>Reference</b>	<b>Modification</b>
<b>R 26</b>	<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>

## **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](mailto: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](http://www.ct.gov/dot)

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

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

**January 2013**

### **I. ABBREVIATIONS AND DEFINITIONS AS USED IN THIS SPECIAL PROVISION**

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

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

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

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

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

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

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

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

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

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

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

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

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

## **II. ADMINISTRATIVE REQUIREMENTS**

### **A. General Requirements**

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

In order to receive credit toward the Contract DBE goal, the firms utilized as DBE subcontractors or suppliers must be certified as DBEs in the type of work to be counted for credit by CTDOT’s Office of Contract Compliance prior to the date of the execution of the subcontract. Neither CTDOT nor the State of Connecticut’s Unified Certification Program (UCP) makes any representation as to any DBE’s

technical or financial ability to perform the work. Prime contractors are solely responsible for performing due diligence in hiring DBE subcontractors.

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

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

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

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

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

In addition, the report shall include:

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

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

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

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

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

## **B. Subcontract Requirements**

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

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

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

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

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

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

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

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

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

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

**C. Modification to Pre-Award Commitment**

Contractors may not terminate for convenience any DBE subcontractor or supplier that was listed on the pre-award DBE commitment without prior written approval of the OOC. This includes, but is not limited to, instances in which a Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Prior to approval, the Contractor must demonstrate to the satisfaction of the OOC, that it has good cause, as found in 49CFR Part 26.53 (f)(3), for termination of the DBE firm.

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

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

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

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

- Notify the OOC Division Chief immediately and make efforts to obtain a release of work from the firm.
- Submit documentation that will provide a basis for the change to the OOC for review and approval prior to the implementation of the change.
- Use the DBE Directory to identify and contact firms certified to perform the type of work that was assigned to the unable or unwilling DBE firm. The Contractor should also contact CTDOT's Office of Contract Compliance for assistance in locating additional DBE firms to the extent needed to meet the contract goal.

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

If the Contractor is unable to find a DBE replacement:

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

### **III. GOOD FAITH EFFORTS**

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

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

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

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

1. A detailed statement of the efforts made to replace an unable or unwilling DBE firm, and a description of any additional subcontracting opportunities that were identified and offered to DBE firms in order to increase the likelihood of achieving the stated goal.
2. A detailed statement, including documentation of the efforts made to contact and solicit bids from certified DBEs, including the names, addresses, and telephone numbers of each DBE firm contacted; the date of contact and a description of the information provided to each DBE regarding the scope of services and anticipated time schedule of work items proposed to be subcontracted and the response from firms contacted.
3. Provide a detailed explanation for each DBE that submitted a subcontract proposal which the Contractor considered to be unacceptable stating the reason(s) for this conclusion.
4. Provide documentation, if any, to support contacts made with CTDOT requesting assistance in satisfying the specified Contract goal.
5. Provide documentation of all other efforts undertaken by the Contractor to meet the defined goal. Additional documentation of efforts made to obtain DBE firms may include but will not be limited to:
  - Negotiations held in good faith with interested DBE firms, not rejecting them without sound reasons.
  - Written notice provided to a reasonable number of specific DBE firms in sufficient time to allow effective participation.
  - Those portions of work that could be performed by readily available DBE firms.

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

#### **IV. PROJECT COMPLETION**

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

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



the expiration of the three (3) year period, the records shall be retained until all litigation, claims, or audit findings involving the records are resolved.

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

## **V. SHORTFALLS**

### **A. Failure to meet DBE goals**

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

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

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

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

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

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

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

### **B. Administrative Remedies for Non-Compliance:**

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

1. A reduction in Contract payments to the Contractor as determined by CTDOT, not to exceed the shortfall amount of the **DBE goal**. The maximum shortfall will be calculated by multiplying the

Contract DBE goal (adjusted by any applicable GFE) by the final Contract value, and subtracting any verified final payments made to DBE firms by the Contractor.

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

## **VI. CLASSIFICATIONS OTHER THAN SUBCONTRACTORS**

### **A. Material Manufacturers**

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

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

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

### **B. Material Suppliers (Dealers)**

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

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

must apply:

- To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question.
- A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating or maintaining a place of business if the person both owns and operates distribution equipment for the products. Any supplementing of the regular dealers' own distribution equipment shall be by long term lease agreement, and not on an ad hoc or contract to contract basis.
- 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 #0020801A - ASBESTOS ABATEMENT**

### **Description:**

Work under this item shall include the abatement of asbestos containing materials (ACM) and associated work by persons who are knowledgeable, qualified, trained and licensed in the removal, treatment, handling, and disposal of ACM and the subsequent cleaning of the affected environment. ACM shall include material composed of any type of asbestos in amounts greater than one percent (1%) by weight. The Contractor performing this work shall possess a valid Asbestos Abatement Contractor license issued by the Connecticut Department of Public Health (CTDPH).

These Specifications govern all work activities that disturb asbestos containing materials. All activities shall be performed in accordance with, but not limited to, the current revision of the OSHA General Industry Standard for Asbestos (29 CFR 1926.1001), the OSHA Asbestos in Construction Regulations (29 CFR 1926.1101), the USEPA Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) Regulations (40 CFR Part 61 Subpart M), the CTDPH Standards for Asbestos Abatement, Licensure and Training (19a-332a-1 through 16, 20-440-1 through 9 & 20-441), and the CTDEEP Special Waste Disposal Regulations (22a-209-8(i)).

The asbestos abatement work shall include the removal and disposal of all ACM as identified in this Specifications prior to the planned renovation/demolition project.

Deviations from these Specifications require the written approval of the Engineer.

The Contractor may elect to utilize an Alternative Work Practice (AWP), if approved by the CTDPH and the Engineer prior to the initiation of the abatement activities. An AWP is a variance from certain CTDPH asbestos regulatory requirements, which must provide the equivalent or a greater measure of asbestos emission control than the standard work practices prescribed by the CTDPH.

### **Materials:**

All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description.

No damaged or deteriorating materials shall be used. If material becomes contaminated with asbestos, the material shall be decontaminated or disposed of as asbestos-containing waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.

Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating four (4) or six (6) mil thickness.

Six (6) mil polyethylene disposable bags shall have pre-printed OSHA/EPA/DOT labels and shall be transparent.

Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.

Surfactant is a chemical wetting agent added to water to improve penetration and shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent. The surfactant shall be mixed with water to provide a concentration one (1) ounce surfactant to five (5) gallons of water, or as directed by the manufacturer.

Spray equipment must be capable of mixing necessary chemical agents with water, generating sufficient pressure and volume; and equipped with adequate hose length to access all necessary work areas.

Sanders, grinders, wire brushes and needle-gun type removal equipment shall be equipped with a High Efficiency Particulate Air (HEPA) filtered vacuum dust collection system.

Containers for storage, transportation and disposal of asbestos containing waste material shall be impermeable and both air and watertight.

Labels and warning signs shall conform to OSHA 29 CFR 1926.1101, USEPA 40 CFR Part 61.152, and USDOT 49 CFR Part 172 as appropriate.

Encapsulant, a material used to chemically entrap asbestos fibers to prevent these fibers from becoming airborne, shall be of the type which has been approved by the Engineer. Use shall be in accordance with manufacturer's printed technical data. The encapsulant shall be clear and must be compatible with new materials being installed, if any.

Mastic removal chemicals shall be low odor and non-citrus based, with a flash point in excess of 140° F.

Any planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.

Air filtration devices and vacuum units shall be equipped with HEPA filters.

## Construction Methods:

### (1) Pre-Abatement Submittals and Notices

- (a) The Contractor shall submit, in accordance with CTDPH Standard 19a-332a-3, proper notification using the prescribed form, to the Commissioner, State of Connecticut, Department of Public Health not fewer than ten (10) days prior to the commencement of work as follows:
1. **The asbestos to be removed is exterior NESHAP Category II Non-Friable ACM, and it is not expected that the abatement procedures will render the Category II asbestos friable; thereby not categorizing it as NESHAP Regulated ACM (RACM); therefore not defining the removal as a CTDPH “abatement”; and as such the CT licensed Asbestos Abatement Contractor will not be required to file an Asbestos Abatement notification.**
- (b) Fifteen (15) working days prior to the commencement of asbestos abatement work, the Contractor shall submit to the Engineer for review and acceptance and/or acknowledgment of the following:
1. Permits and licenses for the removal, transport, and disposal of asbestos-containing or contaminated materials, including a CTDPH valid asbestos removal contractor’s license.
  2. Documentation dated within the previous twelve (12) months, certifying that all employees have received USEPA Model Accreditation Plan approved asbestos worker/supervisor training in the proper handling of materials that contain asbestos; understand the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis, and copies of all employees CTDPH asbestos worker and/or supervisor licenses.
  3. Documentation from the Contractor, typed on company letterhead and signed by the Contractor, certifying that all employees listed therein have received the following:
    - a. medical monitoring within the previous twelve (12) months, as required in 29 CFR 1926.1101;
    - b. respirator fit testing within the previous twelve (12) months as detailed in 29 CFR 1910.134 (for all employees who must also don a tight-fitting face piece respirator).
  4. Copies of the EPA/State-approved certificates for the proposed asbestos landfill.



- (c) No abatement shall commence until a copy of all required submittals have been received and found acceptable to the Engineer. Those employees added to the Contractor's original list will be allowed to perform work only upon submittal to, and receipt of, all required paperwork by the Engineer.

**(2) Asbestos Abatement Provisions:**

(a) General Requirements

The Abatement Contractor/Subcontractor shall possess a valid State of Connecticut Asbestos Contractor License. Should any portion of the work be subcontracted, the subcontractor must also possess a valid State of Connecticut Asbestos Contractor License. The Asbestos Abatement Site Supervisor employed by the Contractor shall be in control on the job site at all times during asbestos abatement work. All employees of the Contractor who shall perform work (i.e. Asbestos Abatement Site Supervisor, Asbestos Abatement Worker) shall be properly certified/licensed by the State of Connecticut to perform such duties.

All labor, materials, tools, equipment, services, testing, insurance (with specific coverage for work on asbestos), 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.

Prior to beginning work, the Engineer and Contractor shall perform a visual survey of each work area and review conditions at the site for safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.

The Contractor shall:

- Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the site.

- When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

Water service may not be available at the site. Contractor shall supply sufficient water for each shift to operate the decontamination shower units as well as to maintain the work areas adequately wet.

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.

Data provided regarding asbestos sampling conducted throughout the structure(s) is for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the presence and location of all asbestos containing materials. The Contractor shall verify all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA, USEPA, USDOT, DEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

The Engineer will provide a Project Monitor to oversee the activities of the Contractor. No asbestos work shall be performed until the Project Monitor is on-site. Pre-abatement, during abatement and post-abatement air sampling will be conducted as deemed necessary by the Project Monitor. Waste stream testing will be performed, as necessary, by the Project Monitor prior to waste disposal.

(b) Set-Up

The Contractor shall establish contiguous to the Regulated Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series, as detailed below. Access to the Regulated Area shall only be through this enclosure.

Access between rooms in the Worker Decontamination Enclosure System shall be through airlocks. Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be contiguously connected with taped airtight edges, thus ensuring the sole source of airflow originates from outside the regulated areas, once the negative pressure differential within the Regulated Area is established.

The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.

The Shower Room shall be of sufficient capacity to accommodate the number of workers. One shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm running water through the use of electric hot water heaters supplied by the Contractor. No worker or other person shall leave a Regulated Area without showering. Shower water shall be collected and filtered using best available technology and dumped down an

approved sanitary drain. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate.

The Contractor shall ensure that no personnel or equipment be permitted to leave the Regulated Area until proper decontamination procedures (including HEPA vacuuming, wet wiping and showering) to remove all asbestos debris have occurred. No asbestos-contaminated materials or persons shall enter the Clean Room.

Post warning signs meeting the specifications of OSHA 29 CFR 1910.1001 and 29 CFR 1926.1101 at each Regulated Area. In addition, signs shall be posted at all approaches to Regulated Areas so that an employee or building occupant may read the sign and take the necessary protective steps before entering the area. Additional signs may require posting following construction of workplace enclosure barriers.

**(c) Alternate set up requirements for exterior non-friable asbestos abatement procedures**

In lieu of the establishment of a negative pressure enclosure (NPE) system as described by CTDPH Sections 19a-332a-5(c), 5(d), 5(e), and 5(h), non-friable ACM will be removed from exterior work areas within an outdoor Regulated Area(s). The regulated work area will be established by the use of appropriately labeled barrier tape and postings in compliance with CTDPH 19a-332a-5(a) as well as OSHA 29 CFR 1926.1101. A remote personnel decontamination unit as specified in Section 19a-332a-6 will be required. This method shall only be utilized provided exposure assessment air sampling data collected during the removal of the exterior non-friable materials indicates that the exposure levels during removal of such materials do not exceed 0.1 asbestos f/cc. Should exposure assessment air sampling data exceed this level, and engineering efforts to reduce the airborne fiber levels not be successful in reducing the levels to less than 0.1 f/cc, removal shall occur within these areas under full containment conditions.

**(d) Personnel Protection**

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 CTDPH regulations.

The Contractor shall provide and require all workers to wear protective clothing in the Regulated Areas where asbestos fiber concentrations may reasonably be expected to exceed the OSHA established Permissible Exposure Limits (PEL) or where asbestos contamination exists. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.

Respiratory protection shall be provided and shall meet the requirements of OSHA as required in 29 CFR 1910.134, and 29 CFR 1926.1101 as well as the requirements of the CTDPH regulations. A formal respiratory protection program must be implemented in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134. The Contractor shall provide respirators from among

those approved as being acceptable for protection by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part II.

All other necessary personnel protective equipment (i.e. hardhat, work boots, safety glasses, hearing protection, etc.) required to perform the asbestos abatement work activities shall conform to all applicable federal, state and local regulations.

All other qualified and authorized persons entering into a Regulated Area (i.e. Project Monitor, Regulatory Agency Representative) shall adhere to the requirements of personnel protection as stated in this section.

(e) Asbestos Abatement Procedures

The Asbestos Abatement Site Supervisor, as the OSHA Competent Person shall be at the site at all times.

The Contractor shall not begin abatement work until authorized by the Project Monitor, following a pre-abatement visual inspection.

All workers and authorized persons shall enter and leave the Regulated Area through the Worker Decontamination Enclosure System, leaving contaminated protective clothing in the Equipment Room for reuse or disposal of as asbestos contaminated waste. No one shall eat, drink, smoke, chew gum or tobacco, or apply cosmetics while in a Regulated Area.

The following details the extent of each phase of operation designated for this project. Phase areas may be combined or divided at the direction of the Engineer. Proceed through the sequencing of the work phases under the direction of the Engineer.

**Bridge Nos. 03330 & 03331, Route 349 NB/SB over Amtrak, Groton**

**Phase 1 – Top side of bridge**

**Phase 1 includes the removal of:**

- **Grey caulking at base of guard rail (railing/parapet interface – both sides of bridge)**

**A regulated area(s) shall be established at the perimeter of the work area(s), and access shall be controlled by the Contractor. A remote personnel decontamination unit shall be utilized. Removal shall be undertaken in accordance with OSHA Class II and USEPA Asbestos NESHAP requirements.**

**Phase 2 – Under side of bridge**

**Phase 2 includes the removal of:**

- **Presumed transite panels on under sides of Bridge Nos. 03330/03331 over railroad tracks**

**Asbestos removal shall be performed by removing the entire transite panel intact without disturbance of the ACM in accordance with the CTDPH Regulatory Interpretation Memo of April 7, 2003 Regarding Intact Removal of Non-Friable Asbestos Containing Materials, OSHA Class II and USEPA Asbestos NESHAP requirements. No containment required or air clearances, material will be disposed of intact in two layers of 6-mil poly waste bags.**

**OR**

**A regulated area(s) shall be established at the perimeter of the work area(s), and access shall be controlled by the Contractor. A remote personnel decontamination unit shall be utilized. Removal shall be undertaken in accordance with OSHA Class II and USEPA Asbestos NESHAP requirements.**

During removal, the Contractor shall spray asbestos materials with amended water using airless spray equipment capable of providing a "mist" application to reduce the release of airborne fibers. Spray equipment shall be capable of mixing wetting agent with water and capable of generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the Regulated Area. Do not "flood" the area with hose type water supply equipment with the potential to create water releases from the regulated area.

The Contractor shall continue to spray the asbestos materials with amended water, as necessary, throughout removal activities to ensure the asbestos materials remain adequately wet. The asbestos materials shall not be allowed to dry out.

In order to minimize airborne asbestos concentrations inside the Regulated Area, the Contractor shall remove the adequately wetted asbestos in manageable sections. In addition, asbestos materials removed from any elevated level shall be carefully lowered to the floor.

The Contractor shall promptly place the adequately wet asbestos material in disposal containers (six (6) mil polyethylene bags/fiber drum/poly-lined dumpsters, etc.) as it is removed. Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting secured with tape. As the disposal containers are filled, the Contractor shall promptly seal the containers, apply caution labels and clean the containers before transportation to the equipment decontamination area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Small components and asbestos-containing waste with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be placed in clean drums and sealed with locking ring tops.

All waste containers shall be leak-tight, (typically consisting of two layers of 6 mil poly (or bags)), and shall be properly labeled and placarded with OSHA Danger labels, DOT shipping labels, markings and placards and USEPA NESHAP generators labels. Containers shall be decontaminated by wet cleaning and HEPA vacuuming within the equipment decontamination area prior to exiting the regulated area. Wet clean each container thoroughly before moving to Holding Area.

If at any time during asbestos removal, the Project Monitor should suspect contamination of areas outside the Regulated Area, the Contractor shall immediately stop all abatement work and take steps to decontaminate these areas and eliminate causes of such contamination. Unprotected individuals shall be prohibited from entering contaminated areas until air sampling and/or visual inspections determine decontamination.

After completion of abatement work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work the surfaces being cleaned shall be kept wet. Cleaning shall also include the use of HEPA filtered vacuum equipment.

The Contractor shall also remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris which may have splattered or collected on the polyethylene engineering controls/barriers.

Once the Regulated Area surfaces have dried, the Project Monitor shall perform a thorough post abatement visual inspection utilizing protocols from the ASTM Standard E1368-90 *Standard Practice for Visual Inspection of Asbestos Abatement Projects*. All surfaces within the Regulated Area, including but not limited to ledges, beams, and hidden locations shall be inspected for visible residue. Evidence of asbestos contamination identified during this inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractor's expense, until the standard of cleaning is achieved.

Once the area has received a satisfactory post-abatement visual inspection, any equipment, tools or materials not required for completion of the work, shall be removed by the Contractor from the Regulated Area.

(f) Air Monitoring Requirements

1. The Contractor shall:

- a. Provide air monitoring equipment including sample filter cassettes of the type and quantity required to properly monitor operations and personnel exposure surveillance throughout the duration of the project.
- b. Conduct personnel exposure assessment air sampling, as necessary, to assure that workers are using appropriate respiratory protection in

accordance with OSHA Standard 1926.1101. Documentation of air sampling results must be recorded at the work site within twenty-four (24) hours and shall be available for review until the job is complete.

2. The Project Monitor, acting as the representative of the Engineer during abatement activities, will:
  - a. Collect air samples in accordance with the current revision of the NIOSH 7400 Method of Air Sampling for Airborne Asbestos Fibers while overseeing the activities of the Abatement Contractor. Frequency and duration of the air sampling during abatement will be representative of the actual conditions at the abatement site. The size and configuration of the asbestos project will be a factor in the number of samples required to monitor the abatement activities and shall be determined by the Project Monitor. The following schedule of samples may be collected by the Project Monitor:
    1. Pre-Abatement (Optional)
      - a. Background areas
      - b. Area(s) adjacent to Work Area(s)
      - c. Work Area(s)
    2. During Abatement (Optional)
      - a. At the exhaust of air filtering device
      - b. Within Regulated Area(s)
      - c. Area(s) adjacent to Regulated Areas(s)  
(exterior to critical barriers)
      - d. At the Decontamination Enclosure System

Abatement Activity	Pre-Abatement	During Abatement	Post-Abatement
Exterior Non-Friable	---	PCM	---

If air samples collected outside of the Regulated Area during abatement activities indicate airborne fiber concentrations greater than original background levels, or greater than 0.1 f/cc, as determined by Phase Contrast Microscopy, whichever is larger, an examination of the Regulated Area perimeter shall be conducted and the integrity of barriers shall be restored. Cleanup of surfaces outside the Regulated Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming abatement activities.

(g) Post Abatement Work Area Deregulation

The Contractor shall remove all remaining polyethylene, including critical barriers, and Decontamination Enclosure Systems. HEPA vacuum and/or wet wipe any visible residue which is uncovered during this process. All waste generated during this disassembly process shall be discarded as ACM waste.

A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the abatement project remain.

The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the Engineer.

(h) Waste Disposal

Unless otherwise specified, all removed materials and debris resulting from execution of this project 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.

Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap floor sheeting 24-inches and shall be taped into place.

OSHA "Danger" signs must be attached to vehicles used to transport asbestos-containing waste prior to loading ACM waste. The signs must be posted so that they are plainly visible.

Waste haulers and disposal facilities utilized shall match those indicated on the submitted CTDPH notification.

Ensure all waste containers (bags, drums, etc.) are properly packed, sealed and labeled with USEPA NESHAP generator labels, OSHA danger labels and DOT shipping labels. For each shipment of ACM waste, the Contractor shall complete an EPA-approved asbestos waste shipment record.

Authorized representatives signing waste shipment records on behalf of the generator must have USDOT Shipper Certification training in accordance with HMR 49 CFR Parts 171-180.

Transport vehicles hauling ACM waste shall have appropriate USDOT placards visible on all four (4) sides of the vehicle.



The Contractor shall dispose of asbestos-containing and/or asbestos contaminated material at an EPA authorized site and must be in compliance with the requirements of the Special Waste Provisions of the Office of Solid Waste Management, Department of Environmental Protection, State of Connecticut, or other designated agency having jurisdiction over solid waste disposal.

Any asbestos-containing and/or asbestos-contaminated waste materials which also contain other hazardous contaminants shall be disposed of in accordance with the EPA's Resource Conservation and Recovery Act (RCRA), CTDEEP and ConnDOT requirements. Materials may be required to be stored on-site and tested by the Project Monitor to determine proper waste disposal requirements.

(i) Project Closeout Data:

1. Provide the Engineer, within 30 days of completion of asbestos abatement, a compliance package; which shall include, but not be limited to, the following:
  - a. Asbestos Abatement Site Supervisor job log;
  - b. OSHA personnel air sampling data;
  - c. Completed waste shipment records.

The Contractor shall submit the original completed waste shipment records to the Engineer.

**Method of Measurement:**

No measurement will be made for the work in this Section. The completed work shall be paid as a lump sum.

**Basis of Payment:**

The lump sum bid price for this item shall include the specialty services of the Asbestos Removal Contractor including: labor, materials, equipment, insurance, permits, notifications, submittals, personal air sampling, personal protection equipment, temporary enclosures, utility costs, incidentals, fees and labor incidental to the removal, transport and disposal of ACM, including close out documentation.

Final payment for asbestos abatement will not be made until all the project closeout data submittals have been completed (including waste shipment record(s) signed by an authorized disposal facility representative) and provided to the Engineer. Once the completed package has been received in its entirety, the Engineer will make the final payment to the Contractor.

<u>Pay Item</u>	<u>Pay Unit</u>
Asbestos Abatement	Lump Sum

**ITEM #0406275A - FINE MILLING OF BITUMINOUS CONCRETE (0" TO 4")**

**Description:** This work shall consist of the milling, removal, and disposal of existing bituminous concrete pavement.

**Construction Methods:** The Contractor shall remove the bituminous concrete material using means acceptable to the Engineer. The pavement surface shall be removed to the line, grade, and existing or typical cross-section shown on the plans or as directed by the Engineer.

The bituminous concrete material shall be disposed of offsite by the Contractor at an approved disposal facility unless otherwise stated in the Contract.

Any milled surface, or portion thereof, that is exposed to traffic shall be paved within five (5) calendar days unless otherwise stated in the plans or Contract.

The equipment for milling the pavement surface shall be designed and built for milling bituminous concrete pavements. It shall be self-propelled with sufficient power, traction, and stability to maintain depth and slope and shall be capable of removing the existing bituminous concrete pavement.

The milling machine shall be equipped with a built-in automatic grade averaging control system that can control the longitudinal profile and the transverse cross-slope to produce the specified results. The longitudinal controls shall be capable of operating from any longitudinal grade reference, including string line, contact ski (30 feet minimum), non-contact ski (20 feet minimum), or mobile string line (30 feet minimum). The transverse controls shall have an automatic system for controlling cross-slope at a given rate. The Engineer may waive the requirement for automatic grade or slope controls where the situation warrants such action.

The machine shall be able to provide a 0 to 4 inch deep cut in one pass. The rotary drum of the machine shall use carbide or diamond tipped tools spaced not more than  $\frac{5}{16}$  inch apart. The forward speed of the milling machine shall be limited to no more than 45 feet/minute. The tools on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture.

The machine shall be equipped with an integral pickup and conveying device to immediately remove material being milled from the surface of the roadway and discharge the millings into a truck, all in one operation. The machine shall also be equipped with a means of effectively limiting the amount of dust escaping from the milling and removal operation.

When milling smaller areas or areas where it is impractical to use the above described equipment, the use of a lesser equipped milling machine may be permitted when approved by the Engineer.

Protection shall be provided around existing catch basin inlets, manholes, utility valve boxes, and any similar structures. Any damage to such structures as a result of the milling operation is the Contractor's responsibility and shall be repaired at the Contractor's expense.

To prevent the infiltration of milled material into the storm drainage system, the Contractor shall take special care to prevent the milled material from falling into the inlet openings or inlet grates. Any milled material that has fallen into inlet openings or inlet grates shall be removed at the Contractor's expense.

**Surface Tolerance:** The milled surface shall provide a satisfactory riding surface with a uniform textured appearance. The milled surface shall be free from gouges, longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, improper use of equipment, or poor workmanship. The Contractor, under the direction of the Inspector, shall perform random spot-checks with a Contractor supplied ten-foot straightedge to verify surface tolerances at a minimum of five (5) locations per day. The variation of the top of two ridges from the testing edge of the straightedge, between any two ridge contact points, shall not exceed ¼ inch. The variation of the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed ¼ inch. Any unsatisfactory surfaces produced are the responsibility of the Contractor and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

The depth of removal will be verified by taking measurements every 250 feet per each pass of the milling machine, or as directed by the Engineer. These depth measurements shall be used to monitor the average depth of removal.

Where a surface delamination between bituminous concrete layers or a surface delamination of bituminous concrete on Portland cement concrete causes a non-uniform texture to occur, the depth of milling shall be adjusted in small increments to a maximum of +/- ½ inch to eliminate the condition.

When removing bituminous concrete pavement entirely from an underlying Portland cement concrete pavement, all of the bituminous concrete pavement shall be removed leaving a uniform surface of Portland cement concrete, unless otherwise directed by the Engineer.

Any unsatisfactory surfaces produced by the milling operation are the Contractor's responsibility and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

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

permanent limits of removal, a clean vertical face shall be established by saw cutting prior to paving.

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

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

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

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

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

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

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

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

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

The milling operation shall proceed in accordance with the requirements of the "Maintenance and Protection of Traffic" and "Prosecution and Progress" specifications, or other Contract requirements. The more stringent specification shall apply.

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

Any milled area that will not be exposed to live traffic for a minimum of 48 hours prior to paving shall require a vacuum sweeper truck in addition to, or in lieu of, mechanical sweeping. The vacuum sweeper truck shall have sufficient power and capacity to completely remove all millings from the roadway surface including any fine particles within the texture of the milled surface. Vacuum sweeper truck hose attachments shall be used to clean around pavement structures or areas that cannot be reached effectively by the main vacuum. Compressed air may be used in lieu of vacuum attachments if approved by the Engineer.

**Method of Measurement:** This work will be measured for payment by the number of square yards of area from which the milling of asphalt has been completed and the work accepted. No area deductions will be made for minor unmilled areas such as catch basin inlets, manholes, utility boxes and any similar structures.

**Basis of Payment:** This work will be paid for at the Contract unit price per square yard for “Fine Milling of Bituminous Concrete (0” to 4”).” This price shall include all equipment, tools, labor, and materials incidental thereto.

No additional payments will be made for multiple passes with the milling machine to remove the bituminous surface.

No separate payments will be made for cleaning the pavement prior to paving; providing protection and doing handwork removal of bituminous concrete around catch basin inlets, manholes, utility valve boxes and any similar structures; repairing surface defects as a result of the Contractors negligence; providing protection to underground utilities from the vibration of the milling operation; removal of any temporary milled or paved transition; removal and disposal of millings; furnishing a sweeper truck and sweeping after milling. The costs for these items shall be included in the Contract unit price.

Pay Item	Pay Unit
Fine Milling of Bituminous Concrete (0”to 4”)	S.Y.

## **ITEM #0406287A - RUMBLE STRIPS - AUTOMATED**

### **Description:**

Work under this item shall consist of installing rumble strips on asphalt highway shoulders where shown on the plans or where directed by the Engineer, and in conformance with these specifications.

### **Construction Methods:**

The Contractor shall pre-mark the location of the edge of the cut, and the beginning and ending points of the sections, prior to the installation of the rumble strips. The Engineer shall review and approve the locations.

The Contractor shall arrange for a technical representative, from the company which produces the milling machine to be used on the project, who will be required to be on-site from the beginning of the operation in order to ensure results that meet the requirements of the plans and specifications until such time the Engineer is satisfied.

Rumble strips should not be installed on bridge decks, in acceleration and deceleration lanes, at drainage structures, at loop detector sawcut locations, or in other areas identified by the Engineer.

### **Automated (Wide Shoulders):**

The equipment shall be able to install the rumble strips in sections where the shoulder width from the edge line to an obstruction is greater than or equal to 4 feet. Where there are no obstructions, the equipment shall be used in sections where the shoulder width from the edge line is a minimum of 3 feet. The equipment shall consist of a rotary type cutting head with a maximum outside diameter of 24" and shall be a minimum of 16" long. The cutting head(s) shall have the cutting tips arranged in such a pattern as to provide a relatively smooth cut (approximately 1/16 of an inch between peaks and valleys) in one pass. The cutting head shall be on its own independent suspension from that of the power unit to allow the tool to self align with the slope of the shoulder or any irregularities in the shoulder surface. The equipment shall include suitable provisions for the application of water to prevent dusting. The Contractor shall use a machine capable of creating the finished pattern at a minimum output of 60 rumble strips per minute.

### **Finished Cut (Automated or Manual)**

The rumble strips shall have finished dimensions of 7" (+/- 1/2") wide in the direction of travel and shall be a 16" (+/- 1/2") long measured perpendicular to the direction of travel. The depressions shall have a concave circular shape with a minimum 1/2" depth at center (maximum allowable depth is 5/8" measured to a valley). The rumble strips shall be placed in relation to the roadway according to the patterns shown in the plans or on the Rumble Strip Details. Alignment of the edge of the cut shall be checked and verified by the Engineer.

The cutting tool shall be equipped with guides to provide consistent alignment of each cut in relation to the roadway.

The Contractor shall pick up any waste material resulting from the operation in a manner acceptable to the Engineer. This waste material shall be disposed of in accordance with Subarticle 2.02.03-10(a).

The work area shall be returned to a debris-free state prior to re-opening to traffic.

The Contractor shall provide all traffic control according to the Maintenance and Protection of Traffic Specification included elsewhere in the contract.

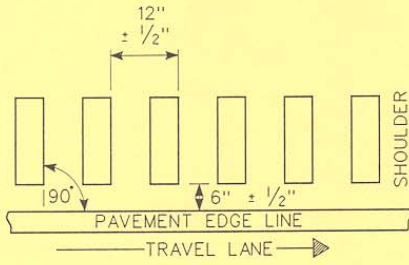
**Method of Measurement:**

This work will be measured for payment by the actual number of feet of shoulder where the rumble strips are placed and accepted. This distance shall be measured longitudinally along the edge of pavement with deductions for bridge decks, acceleration and deceleration lanes, drainage structures, loop detector sawcut locations, and other sections where the rumble strips were not installed.

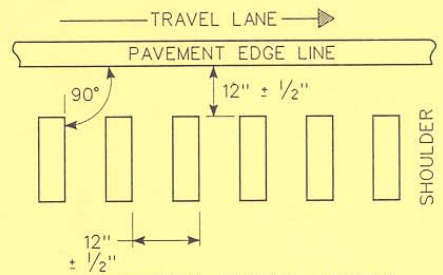
**Basis of Payment:**

This work will be paid for at the Contract unit price per foot for "Rumble Strips - Automated". The price shall include furnishing all equipment, tools, labor, a technical representative and work incidental thereto and also disposal of any waste material resulting from the operation. The Contractor will not be paid under the item "Rumble Strips - Manual" if the field conditions allow for the use of the "Rumble Strips - Automated" item, even if the manual method was used.

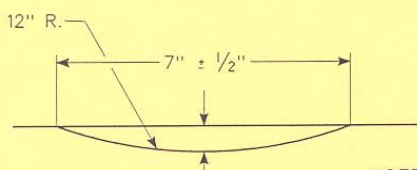
DETAILS AND SECTIONS OF RUMBLE STRIPS



LOCATION DETAIL (TYP.)  
LEFT SHOULDER



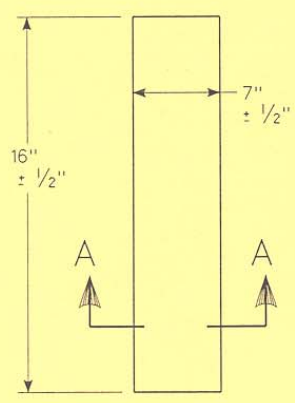
LOCATION DETAIL (TYP.)  
RIGHT SHOULDER



SECTION A-A  
NO SCALE

NOTES:

1. RUMBLE STRIP ALIGNMENT SHALL GENERALLY BE STRAIGHT AND OFFSET APPROXIMATELY 6" IN THE LEFT SHOULDER AND 12" IN THE RIGHT SHOULDER FROM THE OUTER EDGE OF THE EDGE LINE AND SHALL BE AT LEAST 12" FROM THE LONGITUDINAL JOINT IN COMPOSITE PAVEMENTS. THIS OFFSET MAY BE ADJUSTED TO ACCOMMODATE VARIATIONS IN THE EDGE LINE AND THE SHOULDER WIDTH.



PLAN DETAIL

FILE: RUMBLE.MDS

CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUR. OF ENGINEERING & HWY. OPERATIONS  
DIVISION OF TRAFFIC ENGINEERING

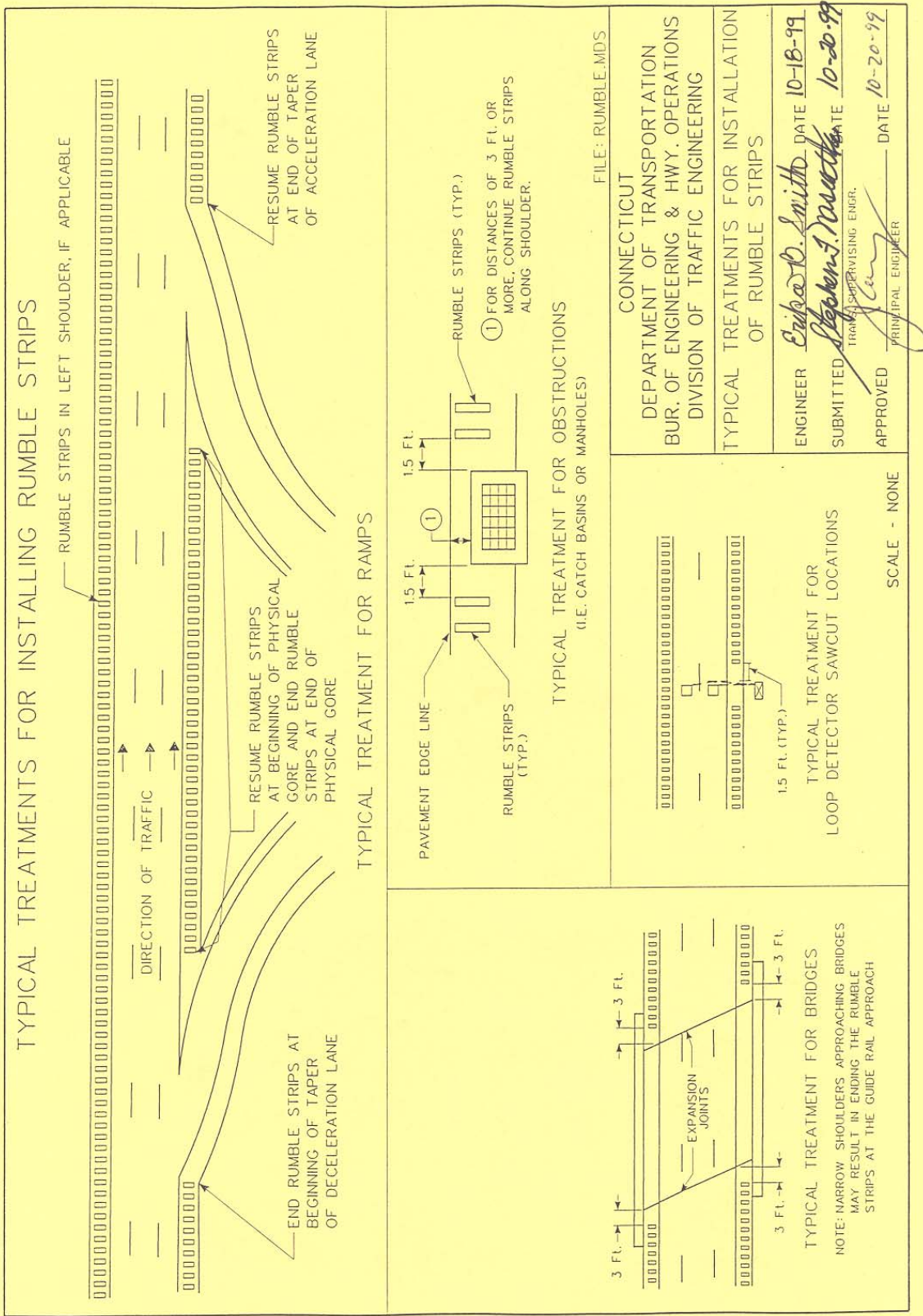
RUMBLE STRIP DETAILS

ENGINEER *Erika B. Smith* DATE 10-18-99  
 SUBMITTED *Stephen J. Masich* DATE 10-20-99  
TRANS. SUPERVISING ENGR.  
 APPROVED *[Signature]* DATE 10-20-99  
PRINCIPAL ENGINEER

SCALE - NONE

ITEM # 0406287A  
 ITEM # 0406288A





FILE: RUMBLE.MDS

CONNECTICUT  
 DEPARTMENT OF TRANSPORTATION  
 BUR. OF ENGINEERING & HWY. OPERATIONS  
 DIVISION OF TRAFFIC ENGINEERING

TYPICAL TREATMENTS FOR INSTALLATION OF RUMBLE STRIPS

ENGINEER *Erica P. Smith* DATE 10-18-99

SUBMITTED *Stephen J. MacArthur* DATE 10-20-99  
TRAFFIC SUPERVISING ENGR.

APPROVED *[Signature]* DATE 10-20-99  
PRINCIPAL ENGINEER

SCALE - NONE

ITEM # 0406287A  
 ITEM # 0406288A

## **ITEM #0406289A - REMOVAL OF RUMBLE STRIPS**

### **Description:**

Work under this item shall consist of removing rumble strips through milling and repaving with hot mix asphalt (HMA) where shown on the plans or where directed by the Engineer, and in conformance with these specifications. The surface lift of the existing pavement shall be removed by milling out the existing rumble strip to a depth of 1.5 to 2.5 inches. The milled surface shall be swept by hand or machine and then be blown clean with compressed air or a hot air lance. Tack coat is to be applied to the milled surface and any vertical or semi-vertical walls formed by the milling. The milled out area shall then be filled and compacted with HMA S0.375.

### **Definitions:**

Surface lift of pavement: The thickness of the last lift of pavement placed prior to performing crack sealing. A lift is defined as single bituminous-concrete mixture placed at a defined thickness in a single paver pass (or by handwork.)

### **Materials:**

Materials for this work shall consist of the following:

Hot-mix Asphalt (specifically HMA S0.375) conforming to the requirements of Sections 4.06 and M.04 of the Standard Specifications.

Tack coat conforming to the material requirements for tack coat in Sections 4.06 and M.04 of the Standard Specifications.

### **Equipment:**

Equipment for this work shall include, but is not limited to, the following:

Milling machine – A milling machine designed and built for milling HMA pavements. It shall be self-propelled with sufficient power, traction, and stability to maintain depth.

The rotary drum of the machine shall utilize carbide tip tools spaced not more than 5/8 inches apart. Use of a fine-milling drum with a tighter tooth spacing of 0.3 inches is desirable, but optional. The forward speed of the milling machine shall be limited to no more than 45 feet/minute. The tools on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture. It must include dust control equipment during the removal process.

It shall be capable of removing the existing pavement to a width of 2 to 10 inches wider than the rumble strip.

A wider milling width may be used in cases where two rumble strips are located near and parallel to each other, as may occur in a median area; see Construction Methods.

Sweeper – A hand broom is acceptable for smaller areas when approved by the Engineer. If a mechanized sweeper is used, it shall be equipped with a water tank and be capable of removing the millings and loose debris from the surface. Other sweeping or vacuum type equipment may be provided in lieu of the sweeper where acceptable by the Engineer.

Air compressor – The unit shall consist of an air compressor capable of producing 100 psi, oil free, compressed air for blowing the milled pavement surface clean.

Hot air lance – The unit shall be designed for cleaning and drying the pavement surface. It shall consist of an air compressor capable of delivering 100 psi, oil free heated air. The compressed air emitted from the tip of the lance shall be flame free and be capable of achieving a temperature of at least 1500°F.

Paving and compaction equipment – All equipment used to place and compact the hot mix asphalt required for this work shall meet the requirements of Section 4.06 of the Standard Specifications, except no grade and slope control shall be required. Also, due to the nature of this work, it is expected that much of the placement of hot mix asphalt will require hand work. Either vibratory plate compactors or rollers may be used for compaction.

**Construction Methods:**

The Contractor shall pre-mark the location of the beginning and ending points of the sections, prior to the removal of the rumble strips. The Engineer shall review and approve the limits of removal.

The width of milling shall be as specified on the Plans or other specifications. If no other width specification exists, the width of milling shall be 2 to 10 inches wider than the existing rumble strip. Rumble strips are typically about 16 inches wide. If there are two rumble strips located near and parallel to one another, as may occur in median areas, and if they both can be removed by a single pass of a wider milling machine without adversely affecting drainage, safety, or quality of results, then a wider milling machine may be used. In this case the length measured for pay will be the sum of the lengths of the two individual rumble strips. Milling widths wider than specified above may be used with the written permission of the Engineer.

The depth of removal shall be as shown on the Plans, or as detailed in specifications, or as directed by the Engineer, generally from 1.5 to 2.5 inches. The intent is to remove the surface lift. If there are no Plans or other specifications, mill 1.5 to 2.5 inches as needed to match the thickness of the surface lift. The Engineer may alter the milling depth based on conditions discovered as work is in progress. It is expected that the milling depth will not exceed 2.5 inches. If the surface lift is 3 inches thick and it is in good condition, as determined by the Engineer, mill only 1.5 inches deep, unless directed otherwise by the Plans, project specifications, or Engineer.

As specified in the requirements for milling, the milled surface shall be swept clean (by hand if necessary.) Once all millings are removed by sweeping, the milled areas shall be allowed to dry if necessary. Any moisture in or on the milled areas must be allowed to evaporate or be removed with the assistance of a hot air lance as specified above. Once the milled area is deemed dry by the

Engineer it shall be blown with compressed or hot lance air, as specified above, so that no debris or dust is present on or within the milled area.

Once deemed clean by the Engineer, the milled area, including the sides/walls of the milled area, shall receive an application of tack coat as specified above and in Section 4.06 of the Standard Specifications.

After the tack coat has had sufficient time to cure or break, HMA S0.375 (Superpave Level 2) shall be placed and compacted to the requirements above and in Section 4.06 of the Standard Specification. It shall be compacted to match the elevation of the surrounding pavement surface.

At all times the Contractor is required to meet the density and compaction and all other requirements specified in Sections 4.06 and M.04 of the Standard Specifications and any supplementals that have been issued by the bid date of the project.

The Contractor shall resurface the milled area prior to opening the roadway to traffic. The milled area shall be swept, cleaned with compressed air, tacked and repaved in the same day.

Precaution should be taken to avoid damage to the existing roadway materials that are to remain in place. If damage occurs, it must be repaired by the Contractor at no additional cost to the State. The methods employed in performing the work and all equipment, tools, machinery and plant used in handling material and executing any part of the work shall be subject to the approval of the Engineer before the work is started; and whenever found unsatisfactory, it shall be changed and improved as required by the Engineer.

The Contractor shall pick up any waste material resulting from the operation in a manner acceptable to the Engineer. This waste material shall be disposed of in accordance with Subarticle 2.02.03-10(a).

**Method of Measurement:**

This work will be measured for payment by the actual number of linear feet of rumble strips removed. This distance shall be measured longitudinally along the edge of pavement with deductions for bridge decks, acceleration and deceleration lanes, drainage structures, loop detector sawcut locations, and other sections where the rumble strips were not previously installed. If two rumble strips are near one another and are removed by a single milling machine pass, the length measured for pay will be the sum of the lengths of the two rumble strips.

**Basis of Payment:**

This work will be paid for at the Contract unit price per linear foot for "Removal of Rumble Strips." The price shall include the removal of the existing rumble strips, furnishing all materials, placement, and compaction of the HMA, equipment, tools, labor, and work incidental thereto and also disposal of any waste material resulting from the operation.

**Pay item**

Removal of Rumble Strips

**Pay Unit**

L.F.

## **ITEM #0406999A - ASPHALT ADJUSTMENT COST**

**Description:** The Asphalt Adjustment Cost will be based on the variance in price for the performance-graded binder component of hot mix asphalt (HMA), Polymer Modified Asphalt (PMA), and Ultra-Thin Bonded Hot-Mix Asphalt mixtures completed and accepted during the Contract.

**The Asphalt Price is available on the Department of Transportation website at:**

<http://www.ct.gov/dot/asphaltadjustment>

### **Construction Methods:**

An asphalt adjustment will be applied only if all of the following conditions are met:

#### **I. For HMA and PMA mixtures:**

- a. The HMA or PMA mixture for which the adjustment would be applied is listed as a Contract item with a pay unit of tons.
- b. *The total quantity for all HMA and PMA mixtures in the Contract or individual purchase order (Department of Administrative Service contract awards) exceeds 1000 tons or the Project duration is greater than 6 months.*
- c. The difference between the posted *Asphalt Base Price* and *Asphalt Period Price* varies by more than \$5.00 per ton.

#### **II. For Ultra-Thin Bonded HMA mixtures:**

- a. The Ultra-Thin Bonded HMA mixture for which the adjustment would be applied is listed as a Contract item.
- b. The total quantity for Ultra-Thin Bonded HMA mixture in the Contract exceeds:
  - i. 800 tons if the Ultra-Thin Bonded HMA item has a pay unit of tons.
  - ii. 30,000 square yards if the Ultra-Thin Bonded HMA item has a pay unit of square yards.

Note: The quantity of Ultra-Thin Bonded HMA measured in tons shall be determined from the material documentation requirements set forth in the Ultra-Thin Bonded HMA item Special Provision.

- c. The difference between the posted *Asphalt Base Price* and *Asphalt Period Price* varies by more than \$5.00 per ton.
- d. No Asphalt Adjustment Cost will be applied to the liquid emulsion that is specified as part of the Ultra-Thin Bonded HMA mixture system.

III. Regardless of the binder used in all HMA or PMA mixtures, the Asphalt Adjustment Cost will be based on PG 64-22.

The Connecticut Department of Transportation (CTDOT) will post on its website, the average per ton selling price (asphalt price) of the performance-graded binder. The average is based on the high and low selling price published in the most recent available issue of the **Asphalt Weekly Monitor**® furnished by Poten & Partners, Inc. under the “East Coast Market – New England, New Haven, Connecticut area,” F.O.B. manufacturer’s terminal.

The selling price furnished from the Asphalt Weekly Monitor ® is based on United States dollars per standard ton (US\$/ST).

**Method of Measurement:**

Formula: $HMA \times [PG\%/100] \times [(Period\ Price - Base\ Price)] = \$ \underline{\hspace{2cm}}$
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Where

- **HMA:**
  1. For HMA, PMA, and Ultra-Thin Bonded HMA mixtures with pay units of tons:  
The quantity in tons of accepted HMA, PMA, or Ultra-Thin Bonded HMA mixture measured and accepted for payment.
  2. For Ultra-Thin Bonded HMA mixtures with pay units of square yards:  
The quantity of Ultra-Thin Bonded HMA mixture delivered, placed, and accepted for payment, calculated in tons as documented according to the Material Documentation provision (Construction Methods, paragraph G) of the Ultra-Thin Bonded HMA Special Provision.
- **Asphalt Base Price:** The asphalt price posted on the CTDOT website 28 days before the actual bid opening posted.
- **Asphalt Period Price:** The asphalt price posted on the CTDOT website during the period the HMA or PMA mixture was placed.
- **PG%:** Performance-Graded Binder percentage
  1. For HMA or PMA mixes:
    - PG% = 4.5 for HMA S1 and PMA S1
    - PG% = 5.0 for HMA S0.5 and PMA S0.5
    - PG% = 6.0 for HMA S0.375, PMA S0.375, HMA S0.25 and PMA S0.25

2. For Ultra-Thin Bonded HMA mixes:

PG% = Design % PGB (Performance Graded Binder) in the approved job mix formula, expressed as a percentage to the tenth place (e.g. 5.1%)

The asphalt adjustment cost shall not be considered as a changed condition in the Contract as result of this provision since all bidders are notified before submission of bids.

**Basis of Payment:** The "Asphalt Adjustment Cost" will be calculated using the formula indicated above. A payment will be made for an increase in costs. A deduction from monies due the Contractor will be made for a decrease in costs.

The sum of money shown on the Estimate and in the itemized proposal as "Estimated Cost" for this item will be considered the bid price although the adjustment will be made as described above. The estimated cost figure is not to be altered in any manner by the bidder. If the bidder should alter the amount shown, the altered figure will be disregarded and the original cost figure will be used to determine the amount of the bid for the Contract.

Pay Item	Pay Unit
Asphalt Adjustment Cost	est.

**ITEM #0503151A - REMOVAL OF SUPERSTRUCTURE (SITE NO. 1)****ITEM #0503152A - REMOVAL OF SUPERSTRUCTURE (SITE NO. 2)**

Work under this item shall conform to the requirements of Section 5.03, amended as follows:

**5.03.01-Description:** Delete the first two paragraphs and replace with the following:

Work under this item shall consist of the removal and satisfactory disposal of the superstructure to the limits identified on the plans. Those items to be removed and disposed of shall include, but not be limited to: precast concrete beams, concrete diaphragms, concrete deck, waterproofing materials, bridge deck overlay, bridge parapets, metal beam rail, metal fencing, abandoned conduits, curbing, light poles and their concrete pedestals, bearings, and temporary steel and timber shoring as shown on the plans or as directed by the Engineer.

**5.03.03-Construction Methods:** Add the following:

1. Removal of Superstructure:
  - a. The Contractor shall submit to the Engineer for review in accordance with Article 1.05.02, his proposed demolition sequence together with working drawings, and calculations showing the stability analysis of the superstructure during all stages of removal, and for debris shielding. Proper supports shall be provided, as necessary, to stabilize all structural members during the removal process. Acceptance of the Contractor's plans shall not be considered as relieving the Contractor of any responsibility.
  - b. The Contractor shall provide adequate debris shielding below the structure to prevent debris, tools and/or other materials from dropping into the areas below the structure. The debris shield shall be designed in accordance with Amtrak requirements. The Contractor shall submit working drawings for the debris shielding for any work that is being done above the Amtrak right-of-way. No installation will be permitted without approval of the Engineer and Amtrak.
  - c. The Contractor's means and methods for removal of all superstructure elements shall be clearly shown on the working drawings. Crane placements, pick weights, saw cutting limits and methods and all other necessary information to convey and enumerate the demolition process shall be provided as part of the working drawing submittal.
  - d. All working drawings and associated plans and calculations shall be signed and sealed by a Professional Engineer licensed to practice in the State of Connecticut.



- e. A suggested method for superstructure removal is shown on drawings. The Contractor may propose an alternate method, subject to the approval by the Engineer. The alternate method is to conform to all requirements described in drawings, specifications, special provisions and will need to be approved by Amtrak.
- f. Before beginning removal of superstructure in all spans, the Contractor must have received approval of his proposed method of superstructure demolition and temporary protective fence (bridge) designs where required; and must have installed any temporary protective barriers required to satisfy the plans and specifications. The extent and limits of protective barriers is to prevent all construction debris, material, tools, equipment or any other waste from entering into all areas below the bridge within the railroad right-of-way.
- g. All removed material shall become the property of the Contractor and shall be properly disposed of off-site.
- h. With approval of the Engineer and Amtrak, the existing protective metal rail may be reused and relocated as "Temporary Protective Fence (Bridge)"
- i. The superstructure removal shall not result in damage to any permanent construction (new or existing) nor to adjoining property. If any damage does occur, it shall be repaired by the Contractor to the satisfaction of the Engineer at no additional expense to the State.

All work shall proceed as directed by and to the satisfaction of the Engineer in accordance with the details shown on the plans and the requirements of the Special Provisions "Maintenance and Protection of Traffic" and "Prosecution and Progress," contained elsewhere in these Specifications.

**5.03.04-Method of Measurement:** Delete the article and replace with the following:

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

**5.03.05-Basis of Payment:** Delete the article and replace with the following:

This work will be paid for at the contract lump sum price for "Removal of Superstructure (Site No. \_\_\_)", for the site number specified, which price shall include the removal and disposal of the superstructure components, as herein described, and all equipment, tools and labor incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Superstructure (Site No. ___)	l.s.

## **ITEM #0520032A - ELASTOMERIC CONCRETE HEADERS**

### **Description:**

Work under this item shall consist of saw-cutting, removal and disposal of hot mix asphalt, membrane waterproofing and existing elastomeric headers; placing and furnishing all required labor, equipment, material, and perform all operations necessary for the installation of elastomeric concrete for bridge expansion joint headers, in accordance with the detail as shown on the plans, as directed by the Engineer, and in accordance with the requirements of these specifications. It shall also include cleaning and sealing parapet joints.

### **Component Materials:**

Provide a field-mixed bridge joint header elastomeric concrete material. The elastomeric concrete material shall be field-mixed and shall consist of two-part polymer, kiln-dried pre-graded aggregate, and bonding agent with the material being supplied as a unit by the Manufacturer.

A Materials Certificate will be required in accordance with Article 1.06.07 certifying the conformance of the elastomeric concrete for bridge expansion joint headers components 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 contact information, expiration date, mixing instructions, material safety data sheets and the Manufacturer's lot/batch number. All materials must be stored in accordance with the Manufacturer's written recommendations and as approved by the Engineer. Materials whose shelf-life has expired shall not be used in the project.

Provide material that complies with the following minimum requirements at either 14 days or at the end of the specified curing time. In addition to the following requirements, provide bridge elastomeric concrete header should be resistant to water absorption, chemical, UV, ozone exposure and capable of withstanding temperature extremes.

<b>Elastomeric Concrete Properties at 24 hr. Cured Stage</b>	<b>Test Method</b>	<b>Requirement</b>
Compressive Strength, Method B	ASTM C 579	Min. 2,000 psi
Bond Shear Strength	ASTM C 882	Min. 700 psi
Abrasion Resistance Wear Index	ASTM C 501	Max. 1
Resilience	ASTM D 695	Min. 70%
Durometer Hardness	ASTM D 2240	Min. 50
Bond Strength to Concrete	ASTM C 882	Min. 450 psi

The following Elastomeric Concrete products or their approved equal are qualified for use under this item:

1. Silspec 900 Polymer Nosing System  
SSI Commercial & Highway Construction Materials  
430 S. Rockford  
Tulsa, OK 74150  
Tel: (800) 888-8909  
Website: <http://www.ssicm.com>
  
2. WaboCrete II  
Watson Bowman Acme Corp.  
95 Pineview Dr.  
Amherst, NY 14228  
Tel: (716) 691-7566  
Website: <https://wbacorp.com>

Backer Rod: All backer rods shall satisfy the requirements of ASTM D5249, Type 1.

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.

A Materials Certificate for the backer rod and parapet sealant shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07

**Construction Methods:**

An experienced technical representative from the manufacturer, acceptable to the Engineer, shall be present during initial installations of the bridge elastomeric concrete joint header to provide the Contractor aid and independent instruction as required to obtain an installation satisfactory to the Engineer. The technical representative must certify that the bridge elastomeric concrete joint header was installed to the manufacturer's recommendations.

Work under this item shall consist of saw-cutting, removal and disposal of hot mix asphalt, membrane waterproofing and existing elastomeric headers; installing the bridge elastomeric concrete header 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".

Elastomeric concrete is moisture sensitive. Therefore, new decks and deck ends that have been reconstructed or patched should be properly cured. The Contractor should follow the manufacturer's recommendations for curing and substrate moisture before installation of elastomeric concrete headers.

Tools, equipment, and techniques used to prepare the bridge elastomeric concrete header shall be approved by the Engineer and the Manufacturer's technical representative prior to the start of construction.

Provide sufficient material in storage at the site prior to beginning construction to complete the entire bridge elastomeric concrete header as detailed on the plans or as directed by the Engineer.

The Contractor shall saw cut the hot mix asphalt overlay full depth in order to delineate the location of the elastomeric concrete headers. At the time of installation of the bridge elastomeric concrete header, all existing material shall be removed from the bridge joint header. All surfaces in the bridge header shall be cleaned of all dust, dirt, debris, frost free and other loose materials as recommended by the Manufacturer. Additionally, the bonding surfaces shall be sandblasted if recommended by the Manufacturer. Following sandblasting, when required, the surfaces shall again be wiped clean to remove any remaining dust.

Prepare and apply bonding agent to areas specified by Manufacturer and in accordance with manufacturer's instruction. The bonding agent shall be allowed to cure and undisturbed for a minimum of one hour prior to installation of the bridge elastomeric concrete header or longer if required by the Manufacturer or the Engineer.

The mixing and installation of the two-part bridge elastomeric concrete header shall be done in strict conformance with the Manufacturer's written recommendations including the use of static mixing devices if so indicated. Traffic must not be allowed on the newly-placed bridge elastomeric concrete header to let the material cure properly prior to opening the work area to traffic according to the Manufacturer specification. During curing time the bridge elastomeric concrete header should be protected from any damages.

Form, place and cast the bridge elastomeric concrete headers to smoothly match the surface of the finished roadway. Finish the surface to a moderately rough texture such as that produce by a wood float. The completed headers shall be parallel and straight within 1/8 inch in 10 feet of length.

Whenever sandblasting is performed under this specification the Contractor shall take adequate measures to ensure that the sandblasting 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. The Contractor shall ensure that the sealant is placed in accordance with the manufacturer's recommended thickness requirements. If the sealant is not placed within the tolerance of the manufacturer's thickness, the contractor shall remove and replace the sealant at his own expense.

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.

**Method of Measurement:**

This work will be measured for payment by the number of cubic feet of bridge elastomeric concrete header installed into the final work, measured on the length-basis for the material required to construct the header from face-of-curb to face-of-curb, multiplied by the nominal header depth and widths as indicated on the plans or as ordered by the Engineer. Elastomeric concrete material in the parapet curb will not be measured for payment.

Only a single measurement will be taken along each installed joint, regardless of the number of recesses, opening or voids filled with the elastomeric concrete header material. Measurement will be taken along the centerline of the joint, between the outer limits of the installed material.

**Basis of Payment:**

This work will be paid for at the contract unit price per cubic foot for "Elastomeric Concrete Headers", complete in place, including the cost of saw-cutting of hot mix asphalt overlay to delineate the vertical edges of the elastomeric concrete headers; removal and disposal of hot mix asphalt, membrane waterproofing and existing elastomeric headers; and sandblasting and cleaning of the bonding surfaces; mixing, constructing and curing the elastomeric concrete headers; and the cost of all services associated with the technical representative, placing and furnishing all required labor, all other materials, equipment, tools, and labor incidental thereto and perform all operations necessary for the installation of elastomeric concrete for bridge expansion joint headers. It shall also include cleaning and sealing parapet joints.

The silicone sealant will not be measured for payment but will be included in the contract unit price.

Providing the Manufacturer's Representative and the Manufacturer's warranty will be incidental to the item "Elastomeric Concrete Headers".

Pay Item

Elastomeric Concrete Headers

Pay Unit

c.f.

**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. This shall also include saw cutting the existing concrete to create shelves as depicted on the plans or as recommended by the joint manufacturer. The preformed joint seal shall seal the deck surface in accordance with the plans and prevent water from seeping through the joint area.

Additionally, this work shall include the installation and removal of a temporary expansion joint system for the width of the Stage 2 traffic conditions on the newly placed bridges and that accommodates the movement range shown in the plans and these specifications.

**Materials:**

The preformed joint seal shall be one of the following:

1. Silicoflex Joint Sealing System:  
RJ Watson, Inc  
11035 Walden Ave.  
Alden, NY 14004  
Tel: (716) 901-7020  
Website: <http://www.rjwatson.com>
  
2. V-Seal Expansion Joint System:  
D.S. Brown Company  
300 East Cherry Street  
North Baltimore, OH  
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>

The temporary expansion joints shall be sized and selected to accommodate 1 inch of total

movement and shall consist of a flexible foam backer rod and self-leveling sealant or an equal. The temporary expansion joint is anticipated to be used under traffic conditions for 3 to 6 months.

The flexible, closed cell synthetic foam backer rod for the temporary expansion joint shall meet the following requirements:

1. ASTM D545: 10 psi minimum in compression
2. ASTM D1752, Type II
3. ASTM D5249, Type II
4. 50% larger than joint opening
5. W.R. Meadows Ceramar, or an approved equal

The multi-component, self-leveling polyurethane sealant shall meet the following requirements:

1. ASTM C719: 25% movement capability, minimum
2. ASTM D412: 125 psi minimum tensile strength
3. ASTM D412: 240% elongation, minimum
4. Thickness as required within this Specification
5. BASF MasterSeal SL2, or an approved equal

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 ft.)
- 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. 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 sandblasting is performed under this Specification, the Contractor shall take adequate measures to ensure that the sandblasting 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. The Contractor shall choose a joint system that accommodates the geometry of this project.

At parapets or walls, the joint sealing element shall be upturned at the parapet/wall for a continuous seal through this transition. Use of a prefabricated piece (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 (BEJS by EMSEAL exempt from this requirement). 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 curblines and higher are allowed to be field fabricated.

Temporary Expansion Joint:

The concrete surfaces shall be cleaned and prepared in accordance with the manufacturer’s requirements, before installation of the joints. Follow the manufacturer’s requirements for installation of the backer rod and sealant.

Set the joint to a uniform depth, with the surface of the sealant 1/2” +/- 1/4” below the temporary wearing surface. The backer rod shall be set a distance below the temporary wearing surface equal to the width of the opening +/- 1/4”.

Prior to the installation of the permanent joint, remove and dispose of the temporary expansion joint and prepare the surfaces as required within this specification.

**Method of Measurement:**

This work will be measured for payment by the number of linear meter of preformed joint seal installed. The measurement will be made at the top surface and along the centerline of the permanent joint and shall include all portions of the installation in the roadway, and within parapets. There will not be any separate measurement for the temporary expansion joint.

**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 cleaning, preparation, materials, equipment, tools, and labor incidental thereto.

The contract unit price shall also include the installation, removal and disposal of a temporary expansion joint as described in this specification and the plans, and any additional preparation of the concrete surfaces required for the permanent joint after the temporary expansion joint is removed.

The contract unit price shall also include the pre-installation survey of the existing joint

opening and the cost of assistance from a technical representative of the selected joint system. This shall also include saw cutting the existing concrete to create shelves as depicted on the plans or as recommended by the joint manufacturer.

Pay Item

Preformed Joint Seal

Pay Unit

l.f.

## **ITEM #0521021A - STEEL-LAMINATED ELASTOMERIC BEARINGS**

**Description:** Work under this item shall consist of furnishing and installing steel-laminated elastomeric bearings as shown on the plans, as directed by the Engineer and in accordance with these specifications.

### **Materials:**

1. **Elastomer:** The elastomeric compound, used in the construction of the bearings, shall contain only virgin polychloroprene (Neoprene) as the raw polymer. The elastomer compound shall be low temperature grade 3 (as defined by the testing requirements), have a Shore "A" Durometer hardness as shown on the plans and meet the requirements of the AASHTO LRFD Bridge Construction Specifications.
2. **Steel Laminates:** The internal steel laminates, used for reinforcement, shall be mild, cold-rolled steel conforming to ASTM M270, Grade 36, or ASTM A1008, Grade C, or an approved equal.
3. **Fabrication and Fabrication Tolerances:** The fabrication and fabrication tolerances of elastomeric bearings shall conform to the requirements of the AASHTO LRFD Bridge Construction Specifications.

If guide pins or other devices are used to control the side cover over the steel laminates, any exposed portions of the steel laminates shall be sealed by vulcanized patching.

4. **Testing:** The materials for the elastomeric bearing and the finished bearings themselves shall be subjected to testing. The testing shall conform to the requirements of the AASHTO LRFD Bridge Construction Specifications.

Test bearings, in addition to the bearings shown on the plans, shall be furnished for each type (size and thickness) of bearing for destructive testing.

5. **Marking:** Each steel-laminated elastomeric bearing shall have marked on it, with indelible ink, the following: the manufacturer's identification code or symbol, and the month and year of manufacture, the orientation, order number, lot number, bearing identification number, and elastomer type and grade (Neoprene, Grade 3). The markings should be placed on a side of the bearing that is visible after installation.
6. **Certification:** The Contractor shall furnish a Certified Test Report, confirming that the elastomeric bearings satisfy the requirements of these specifications, in conformance with the requirements set forth in Article 1.06.07.
7. **Adhesive:** The adhesive, for bonding the shims, shall be a long lasting, high strength, cold applied, air cured, water and heat resistant material specifically formulated for bonding neoprene and shall meet the following requirements:

Property	Requirement	ASTM Test Procedure
Adhesion	30 lbs/in.	D429, Method B
Hardness	50 ± 5 Shore A points	D2240
Tensile Strength, min	1800 psi	D412
Elongation before breaking, min.	750 %	D412

**Construction Methods:** Before fabricating any materials, the Contractor shall submit shop drawings to the Engineer, for review and approval, in accordance with Subarticle 1.05.02. These drawings shall include, but not be limited to, the following information: manufacturers name, complete details of the bearings, material designations, nominal hardness of the elastomer, the quantity of bearings required, including test bearings, and the location of the bearing identification.

Bearing areas upon which the elastomeric bearings, will be set shall be cleaned of all debris. Bearing areas shall be carefully finished, by grinding if necessary, to a smooth, even, level surface at the required elevation, and shall show no variations from a true plane greater than 1/16 of an inch over the entire area upon which the elastomeric bearings are to rest.

The elastomeric bearings shall be installed as shown on the plans. The elastomeric bearings shall be installed when the temperature of the ambient air and the bearings is between 40°F to 80°F and has been within this range for at least 2 hours.

Adhesive bonding of the elastomeric bearings to steel and concrete surfaces is not permitted.

Welding will not be permitted with the elastomeric bearings in place unless there is more than 1 1/2" of steel between the weld and the elastomer. In no case shall the elastomer be exposed to temperatures greater than 400°F. Welding shall conform to the requirements of Subarticle 6.03.03-3(c).

The elastomeric bearings shall bear uniformly on all surfaces under full dead load. If uniform bearing is not present, the gaps beneath the bearing shall be filled with elastomeric shims. The Contractor, in the presence of the Engineer, shall measure the gaps to determine the limits of the areas requiring shims.

The Contractor shall raise the superstructure and install shims as required to provide uniform bearing of the bearings. The individual shims shall be bonded to the elastomer portion of the bearing with adhesive applied over the entire shim interface. The surface preparation, application and curing of the adhesive shall be in accordance with the manufacturers recommendations. If shims in excess of 1/8" are required, multiple shims shall be bonded together. Shimming of areas that vary in thickness shall be done by stepping the shims.

**Method of Measurement:** This work will be measured for payment by the number of cubic inches of elastomeric bearing pads, installed and accepted. No allowance shall be made for test bearings.

6/05/17

**Basis of Payment:** This work will be paid for at the contract unit price per cubic inch of "Steel-Laminated Elastomeric Bearings", complete in place, which price shall include all materials, equipment, tools and labor incidental thereto, including all the cost of furnishing test pads.

Pay Item

Steel-Laminated Elastomeric Bearings

Pay Unit

c.i.

## **ITEM #0601032A - ROADWAY PARAPET WALL**

**Description:** This item will consist of furnishing and constructing a roadway parapet wall comprised of cast-in-place concrete components at the locations, grades, and to the dimensions and details shown on the contract plans, and in accordance with these specifications.

### **Materials:**

Subbase shall conform to the requirements of Article M.02.06, Grading "B".

Reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

Cast-in-place concrete shall conform to the requirements of Article M.03.01. Concrete shall conform to the requirements of Class "A" Concrete with a minimum 28 day compressive strength of 3000 psi.

Joint sealant shall be a single component non-sag silicone sealant that conforms to the requirements of ASTM D5893.

### **Construction Methods:**

Subbase shall be placed in accordance with the requirements of Article 2.12.03.

Cast-in-place concrete shall be constructed as shown on the plans and in accordance with the requirements of Article 6.01.03.

Sleeves and detailing to accommodate the metal beam rail anchorage shall be cast with the roadway parapet walls.

**Method of Measurement:** This work will be measured for payment along the centerline of the top of the roadway parapet wall and will be the actual number of linear feet of roadway parapet wall installed and accepted.

**Basis of Payment:** This work will be paid for at the contract unit price per linear foot for "Roadway Parapet Wall" as shown on the plans, complete in place, which price shall include all reinforcing steel, concrete materials, penetrating sealer protective compound, transportation, equipment, tools and labor incidental thereto.

Excavation associated with the placement of roadway parapet wall shall be paid under the respective item.

The furnishing and placement of subbase shall be paid under the respective item.

The furnishing and placement of fence anchorages located within the wall proper shall be paid under the respective item.

Pay Item

Roadway Parapet Wall

Pay Unit

l.f.

**ITEM #0601073A - CLASS "S" CONCRETE**

**SECTION 6.01 – CONCRETE FOR STRUCTURES** is supplemented 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 as detailed on the plans or as directed by the Engineer.

Work under this item shall consist of removing loose concrete, deteriorated concrete, and concrete overlaying hollow areas, and patching these areas as well as spalled and scaled areas with Class "S" Concrete formed to the original contour. Work under this item shall also consist of removing sound concrete beneath stirrups in order to properly anchor the Class "S" repair material in place. The work shall also include any saw cutting or chiseling, sandblasting and cleaning of all areas. Work under this item shall also include sandblasting and cleaning any exposed reinforcing steel, and coating the exposed reinforcing steel with zinc-rich primer prior to placing concrete.

The Contractor shall not perform any repair work without prior approval by the Engineer for location and limits.

**Article 6.01.02-Materials:** Materials shall conform to Section M.03 as modified herein below:

M.03.01 - General Composition of Concrete Mixes is supplemented to include Class "S" Superplasticized concrete.

<u>TYPE</u>	<u>28 DAY MIN. COMPR. STR.</u>	<u>PROPORT. BY WT. APPROX.</u>	<u>WATER PER BAG MAX.</u>	<u>CEM. FACTOR</u>
Class "S"	4000 PSI	1:2.16:2.20	5.7 (Gals.)	7.0 (Bags/C.Y.)

1 - Coarse Aggregate:

(c) 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.

9- Admixtures:

(c) Delete in its entirety and substitute the following:



(c) 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" to 6.5" 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.

10 - Curing Materials:

(c) Liquid Membrane Forming Compound: Add the following:

No liquid membrane forming compound shall be used for Class "S" concrete.

16 - Zinc Primer: (New) Add the following:

The single component zinc primer shall conform to Federal Specification TT-P-641, Type 1 and shall be brush applied in two successive coats.

**Article 6.01.03 - Construction Methods:**

Article 6.01.03 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.

5- Composition: Add the following:

Class "S" concrete shall conform to the requirements as specified in 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.

6- Consistency: Add the following:

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.

7- Mixing 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.

Note: The Contractor shall also have measuring graduates marked 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.

19- Curing Concrete: Add the following:

Concrete shall be cured by leaving forms on for seven (7) days and wetting them frequently.

25- Material Storage: (New) Add the following:

The Contractor shall store and maintain the A.E.A. and the HRWR materials in clean original containers as delivered by the manufacturer.

26- Work Procedure: (New) Add the following:

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" beneath the stirrups.

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, new reinforcing steel shall be installed in accordance with the plans. Where existing steel is determined by the Engineer to have insufficient cover, the cover shall be increased to a minimum of 2 inches. New steel shall be attached to existing steel as directed by the Engineer.

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 determine 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 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" 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 feet of concrete placed, and accepted by the Engineer. Reinforcing steel will not be measured for payment.

**Article 6.01.05 – Basis of Payment:** Add the following:

"Class "S" Concrete" will be paid for at the contract unit price per cubic foot, complete in place, which price shall include locating and removing unsound material, saw cutting or chiseling, sandblasting, cleaning, application of zinc primer on the existing reinforcing steel, welded wire fabric, forming, placing, curing, stripping and finishing new concrete, and all materials, equipment, tools, labor and clean-up incidental thereto.

Pay Item  
Class "S" Concrete

Pay Unit  
c.f.

## **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 single component zinc-rich shall conform to Federal Specification TT-P-641, Type 1, 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 operations.

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 pound size hammers shall be used for general chipping and removal. 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 the single component zinc-rich primer, brush applied (Note: the second coat shall only be applied after the first has dried). Applications of the zinc primer shall be in accordance with the manufacturer's printed instructions.

If the existing reinforcing steel is severely corroded or damaged, the Engineer shall 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 time 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 struck 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, zinc primer on the reinforcing steel, and all materials, equipment, tools, labor and work incidental thereto.

Pay Item

Variable Depth Patch

Pay Unit

c.f.

## **ITEM #0601954A - EPOXY INJECTION CRACK REPAIR**

**Description:** This item shall consist of surveying the existing areas, locating all cracks to be repaired under this item, and rebonding the cracked concrete structures with a two component modified epoxy resin system injected into the cracked structure under low pressure using continuous positive displacement metering and mixing equipment as directed in accordance with these specifications.

Work under this item is limited to crack widths greater than 1/16" and less than 1/4". The Contractor shall not perform any repair work without prior approval by the Engineer for locations, limits, and type of repairs.

**Materials:** The modified epoxy resin shall be a pre-qualified epoxy resin (see Appendix A). A Materials Certificate and a Certificate of Compliance in accordance with Article 1.06.07 shall accompany each batch or lot of the material delivered to the job site, to verify the epoxy resins conformance with the manufacturers supplied infrared spectroscopy test results.

A batch of each component will be defined as that quantity of material that has been subjected to the same unit chemical or physical mixing process intended to make the final product substantially uniform.

Each component shall be packaged in steel containers not larger than 5 gallons in volume. The containers shall have lug type crimp lids with ring seals, shall be new, not less than 0.024-inch nominal thickness, and shall be well sealed to prevent leakage. If a lining is used in the containers it shall be of such character as to resist any action by the components. Each container shall be clearly labeled with the designation (component A or B), manufacturer's name, and date of manufacturer, batch number and the following warning:

**CAUTION:** This material will cause severe dermatitis if it is allowed to come in contact with the skin or eyes. Use gloves and protective creams on the hands. Should this material contact the skin, wash thoroughly with soap and water. Do not attempt to remove this material from the skin with solvents. If any gets in the eyes, flush for 10 minutes with water and secure immediate medical attention.

Any material, which shows evidence of crystallization or a permanent increase in viscosity or settling of pigments that cannot be readily redispersed with a paddle, shall not be used.

**Construction Methods:** A survey shall be undertaken by the Contractor on the area designated to be repaired, under the direction and to the satisfaction of the Engineer, to determine the exact limits and location of the area to be repaired under this item.

At the time of mixing, components A and B and the substrate temperature shall be between 50° and 85° Fahrenheit, unless the material has been pre-qualified at a temperature less than 75° Fahrenheit, in which case this lesser temperature shall govern the use of the material. Any heating



of the adhesive components shall be done by application of indirect heat. Immediately prior to filling the tanks of the mixing equipment, each component shall be thoroughly stirred with a paddle. Separate paddles shall be used to stir each component.

Injection ports shall be inserted in the cracks at intervals not less than the thickness of the concrete being injected. At the end of a crack or at a point where the thickness of the crack becomes less than .005 inches, the first port shall be half the distance from this point. The Contractor may use either surface injection ports or insertable injection ports as recommended by the manufacturer of the epoxy.

Drilling of the injection ports shall be done with a hollow drill bit to which vacuum is applied with an industrial vacuum cleaner (such as Black and Decker No. 95 Vackar or equivalent). The drill shall not contact any steel reinforcing or pre-stressing strands or ducts. A pachometer shall be used to locate the embedded steel.

Spacing of the ports shall be such that the injected adhesive will substantially fill the crack without excessive waste. If necessary to meet this requirement, the spacing of the ports shall be revised as approved by the Engineer as the injection process progresses.

The surface of the crack between ports shall be sealed with tape or other temporary surface sealant, which is capable of retaining the epoxy adhesive in the crack during pressure injection, and shall remain in places until the epoxy has hardened. Sealant tape and/or temporary surface sealant shall also be removed and any spillage of epoxy shall also be removed. No clean up on surfaces not generally viewed by the public will be required unless the surface sealant will interfere with subsequent surface treatments.

Epoxy adhesive shall be pumped into the cracks through the injection ports. The pump, hose, injection gun and appurtenances shall properly proportion and mix the epoxy and shall be capable of injecting the epoxy at a sufficient rate and pressure to completely fill all designated cracks. A suitable gasket shall be used on the head of the injection gun to prevent the adhesive from running down the face of the concrete. Pumping pressure shall be kept as low as practicable.

The temperature of the concrete shall not be less than 50° Fahrenheit at the time epoxy is injected, unless the epoxy has been pre-qualified at a lower temperature as hereinbefore provided, in which case the lower temperature shall govern.

For a crack with uniform thickness, the epoxy adhesive shall be forced into the first port at one end of the crack until adhesive runs in substantial quantity from the next adjacent port. The first port shall then be sealed and injection started at the next port. Injection shall then continue from port to port in this manner until the crack is fully injected.

Cracks with non-uniform thickness shall have the epoxy adhesive forced into the port at the widest separation in the crack until adhesive runs in substantial quantity from the two adjacent ports. The first port shall then be sealed and injection started at the adjacent port corresponding to the shortest length of the crack. Injection shall then continue from port to port in this manner until the

short side of the crack is fully injected. Then, beginning with the port that is filled with epoxy adhesive but not sealed, injection shall continue from port to port until the crack is fully injected.

For slanting or vertical cracks, pumping shall start at the lower end of the crack. Where approximately vertical and horizontal cracks intersect, the vertical crack below the intersection shall be injected first. The ports shall be sealed by removing the fitting, filling the void with epoxy and covering with tape or surface sealant.

Before starting injection work and at 2-hour intervals during injection work when requested by the Engineer, a 3-fluid ounce sample of mixed epoxy shall be taken from the injection gun. Should these samples show any evidence of improper proportioning or mixing, injection work shall be suspended until the equipment or procedures are corrected.

Samples obtained above shall be used directly, without further stirring, to make test pieces for the Slant Shear Strength on Dry Concrete. One test piece shall be made at the beginning, middle and end of daily operations. The samples shall be allowed to cure for 7 days in the "Concrete Cylinder Curing Box". On the 7th day the samples shall be removed to the laboratory and tested in accordance with the requirements for Slant Shear Strength (see Appendix A, attached).

Each sample shall be numbered consecutively and dated (with a waterproof marker) and it shall be noted which sample represents which part of the structure.

**Technical Advisor:** The Contractor shall provide the Engineer with a notarized statement showing a specific record of epoxy injection repairs actually made by the Contractor and/or a specific record of training of his employees in epoxy injection repairs as taught by the manufacturer of the epoxy product. If the statement is not produced or is deemed insufficient by the Engineer, the Contractor shall obtain the services of a Technical Advisor who is employed by the manufacturer of the epoxy resin. The Technical Advisor shall assist the Engineer and the Contractor in the correct use of the injection resin. The Advisor shall be a qualified representative approved by the Engineer, and shall be at the site of the work when the work begins in connection with the epoxy injection and at such other times as the Engineer may request until completion of this item.

**Method of Measurement:** This work will be measured for payment by the number of linear feet, which have been designated by the Engineer to be injected and which were subsequently filled with epoxy, shall be measured.

Where cracks are designated for injection on opposite sides of a concrete member and the epoxy adhesive injected on one side penetrates through the members to completely fill the crack on the opposite side, payment will be made for the cracks in both sides as though injection had been performed on both sides, except that no payment will be made for such cracks on the opposite side that were not designated by the Engineer for injection.

Where a crack designated for injection extends around the corner of a concrete member, the length of crack on both faces will be measured for payment.

**Basis of Payment:** This work will be paid for at the contract unit price per linear foot for "Epoxy Injection Crack Repair", complete in place, which price shall include all work and services called for herein including all preparation, materials, equipment, tools, labor and cleanup incidental thereto.

Pay Item

Epoxy Injection Crack Repair

Pay Unit

L.F.

## APPENDIX A

### Prequalification Procedure

The Prequalification Procedure shall consist of the following test procedure on the mixed epoxy resin at a temperature of 77°F, unless the Contractor desires to use the material at a lower temperature than 50°F, in which case the lower temperature shall be used to condition the material and test pieces.

**TEST:                    VISCOSITY**

Requirements:        900 centipoise max. @20°F (±2°)  
4,000 centipoise max. @any test temperature

Test Method:        ASTM D 2393

**TEST:                    GEL TIME (POT LIFE)**

Requirement:        4 to 60 minutes

Test Method:

A.     Apparatus

1. Unwaxed paper cups, 8 oz., 2¼ inches at base (Dixie Cup No. 4338 or equivalent).
2. Wooden tongue depressor with ends cut square (Puritan No. 705 or equivalent).
3. Stainless steel spatula with blade 6" x 1" and with end cut square.
4. Stopwatch, 1 second or smaller divisions.
5. Balance, 0.1 gram divisions.

B.     Test Procedure

1. Condition both A and B components to required temperature (±2°F).
2. Measure proper volumes of well-mixed components A and B into an 8-oz. unwaxed cup to yield total mass of 60 (±2.0 grams).
3. Start stopwatch immediately and mix components for 60 seconds, stirring with a wooden tongue decompressor taking care to scrape the sides and bottom of the cup periodically.
4. Place the sample at the required temperature (±2°F) on a wooden bench top, which is free of excessive drafts.
5. Probe the mixture once with the tongue depressor every 30 seconds starting 4 minutes from the time of mixing.
6. The time at which a soft stringy mass forms in the cup is the gel time.

**TEST: SLANT SHEAR STRENGTH ON WET CONCRETE**

Requirements: 1700 psi min. after 7 days of cure in air at the required temperature ( $\pm 2^{\circ}\text{F}$ )

**TEST: SLANT SHEAR STRENGTH ON DRY CONCRETE**

Requirements: 4500 psi min. after 7 days of cure in air at the required temperature ( $\pm 2^{\circ}\text{F}$ )

**TEST: SLANT SHEAR STRENGTH****A. Materials**

1. Ottawa sand, ASTM C109
2. Portland cement, Type II
3. Water

**B. Apparatus**

1. Suitable mold to make diagonal concrete mortar blocks with a square base with 2-inch sides and having one diagonal face 2" x 4" starting about 3/4-inch above the base. The diagonal faces of two such blocks are bonded together producing a block of dimensions 2" x 2" x 5".
2. Block made from the following composition:
  - Ottawa sand, ASTM C109 30.1 lbs.
  - Portland cement, Type II 12.1 lbs.
  - Water 4.8 lbs.

Cure blocks 28 days in a fog room. Dry and lightly sandblast diagonal faces.

3. Suitable test press.

**B. Test Procedure**

Condition the components for 4 hours at the required temperature ( $\pm 2^{\circ}\text{F}$ ). Without entrapping air, stir the separate components for 30 seconds and place the proper volumes of each component on a plate and mix with a spatula for 60 + 5 seconds. Apply a coat approximately 0.010-inch thick to each diagonal surface. Place four 1/8-inch square pieces of shim stock 0.012-inch thick on one block to control final film thickness. Before pressing the coated surface together, leave the blocks so that the coated surfaces are horizontal until the epoxy reacts slightly to prevent excessive flow. Press diagonal surfaces of each block together by hand and remove excess epoxy adhesive.

Align the blocks so that the ends and sides are square and form a block 2" x 2" x 5". Use blocks of wood or metal against each 2" x 2" end, to keep diagonal faces from slipping until epoxy hardens.

After the required cure time, apply a suitable capping compound to each of the 2" x 2" bases, and test by applying a compression load with a Universal Test Machine or other suitable testing apparatus at the rate of 5000 lbs./min, until failure.

Report results in pounds per square inch

$$= \frac{\text{Load in Pounds}}{4}$$

For wet shear strength, soak another set of blocks in water for 24 hours at the required temperature ( $\pm 2^{\circ}\text{F}$ ). Remove and wipe off excess water. Prepare, cure, and test sample according to above test procedure.

**TEST:                    TENSILE STRENGTH**

Requirements:            4500 psi Min.

**TEST:                    ELONGATION**

Requirements:            15% Max.

Test Method:            TENSILE STRENGTH AND ELOGATION

A. Apparatus

1. Leveling table about 12" x 8" with removable rim ¼-inch thick by ½-inch wide.
2. Mylar or similar plastic sheeting 0.004-inches thick.
3. Air circulation oven capable of maintaining 158°F ( $\pm 3^{\circ}\text{F}$ ).
4. Cutting die, Figure I
5. Thickness gauge, ⅛-inch.
6. Release agent, non-silicone type.

B. Procedure

1. Place Mylar sheet on leveling table.
2. Coat inside edge and bottom of rim with the release agent and secure to table with screws.
3. Level the table.
4. Mix sufficient volume of well-mixed component A and well mixed component B in the proper volumes so as to be able to form a layer ⅛-inch deep when placed inside the ring on the leveling table.
5. Introduce as few bubbles as possible during mixing.

6. Flush surface of epoxy with a heat gun or Bunsen burner to remove air bubbles on surface. Repeat if necessary.
7. Allow the specimen to cure for 18 hours at the required temperature ( $\pm 2^{\circ}\text{F}$ ).
8. Remove specimen from table and strip off Mylar sheet. Cure specimen for 5 hours at  $158^{\circ}\text{F}$  ( $\pm 3^{\circ}\text{F}$ ).
9. Allow specimen to cool to the required temperature and cut specimens using cutting die shown in Figure I.
10. Proceed as specified in ASTM D 638, using 0.2-inches/minute test rate and 1-inch gauge length.

**TEST:                    INFRARED SPECTROSCOPY**

Requirement:            Infrared Spectroscopy Tests shall be obtained of Components A and B

Test Method:            RECORDING SPECTROPHOTOMETER

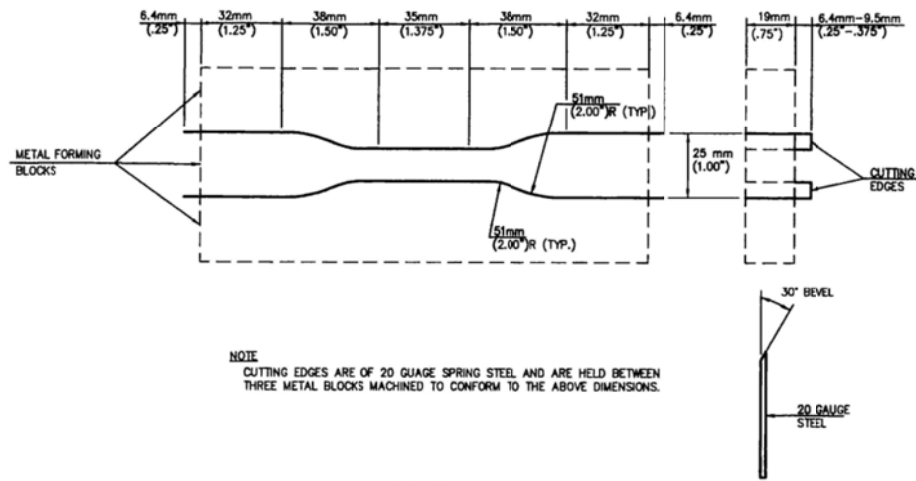
A. Apparatus

1. Perkin–Elmer Model 137-B Infracord Spectrophotometer, automatic recording system from 2.5 microns to 15 microns with a two-speed recorder. Comparable results can be obtained with similar resolution.
2. Disk holder for a one-inch diameter disk.
3. Two sodium chloride crystal disks one-inch in diameter.
4. Sorvall SS-3 Automatic Superspeed Centrifuge, or comparable centrifuge, which is able to separate the liquid and solid phases of the epoxy components without previous dilution with solvents.

B. Procedure

1. Place about 15 grams of component A into a stainless steel centrifuge table.
2. Counterbalance with component B in a second centrifuge tube.
3. Centrifuge the two components at 17000 rpm until there is a supernatant liquid layer present in each tube. This takes 20 to 30 minutes.
4. Place a drop of component A liquid layer on a sodium chloride disk.
5. Place another sodium chloride disk over the drop, rotate, and press down until the liquid has flowed into a uniform layer of proper thickness between the two sodium chloride disks.
6. Place the disks in the holder and run an absorption curve with the infrared spectrophotometer.
7. More or less liquid may be used between the disks so as to produce a maximum absorption of 0.7 to 1.0 for the strongest absorption point on the curve.
8. Clean the disks with toluene and dry.
9. Repeat steps 4 through 8 with the liquid layer from component B.

- Record each curve in order that they may be used for comparison purposes with lots of material delivered to the job site.



**FIGURE 1**  
**CUTTING DIE FOR TENSILE TEST**  
N.T.S.



## **ITEM #0602936A - DRILLING AND GROUTING REINFORCING BARS**

### **Description:**

Work under this item shall consist of drilling, coring or a combination of coring and drilling of holes in the existing structural concrete or masonry and grouting reinforcing bars into the holes. All work shall be as shown on the plans and as directed by the Engineer.

### **Materials:**

The grout shall be a non-shrink grout conforming to Article M.03.05.

Prior to installation, the Contractor shall submit manufacturer's specifications and installation for the chemical anchoring material to the Engineer in accordance with Article 1.05.02. A Materials Certificate shall be required for the adhesive bonding material in accordance with Article 1.06.07, certifying the conformance of this material to the requirements stated herein.

### **Construction Methods:**

Holes for the reinforcement shall be drilled or cored, and shall be located and sized as shown on the plans. The holes shall clear the existing reinforcement as applicable and provide the minimum cover as shown on the plans. A pachometer shall be used to locate existing reinforcing steel where drilling in reinforced concrete is required. If existing reinforcing is encountered during the drilling operation, the holes shall be relocated and the incomplete holes shall be filled with grout and finished smooth and flush with the adjacent surface.

Unless noted on the plans, the depth and diameter of a hole shall conform to the grout manufacturer's recommendations for the diameter of the rebar being anchored such that the grouted rebar will be able to develop in tension 125 percent of its specified yield strength. The minimum compressive strength of the existing concrete shall be assumed to be 3,000 psi for purposes of calculating minimum embedment depths unless otherwise noted.

Hole drilling methods shall not cause spalling, cracking or other damage to the existing concrete. The Contractor is responsible for the type of drilling or coring equipment used and those areas damaged by the Contractor during drilling or coring shall be repaired by him in a manner suitable to the Engineer and at no expense to the State. If the drilling method causes spalling, cracking or other damage, the contractor shall stop work with that method and submit another method for approval prior to proceeding further.

In some cases, drill holes will be required at intersecting angles. Plan out the location of the holes to avoid drilling through newly placed bars or holes.

Each finished hole shall be blown clean with an air jet, then flushed with clean water. In the water-flushing operation, the pressure hose shall be extended to the bottom/end of the hole several times

and withdrawn gradually each time. After flushing, the holes shall be left full of clean water for a minimum period of 2 hours. Immediately prior to the grouting operation, all water shall be removed and the free water on the wall of the hole shall be removed with an air jet or clean rags.

The grout shall be mixed and placed strictly in accordance with the recommendations of the manufacturer. The grout shall completely fill the space around the reinforcing bar.

**Method of Measurement:**

This work will be measured for payment by the number of linear feet of drilled or cored holes in which bars are embedded and accepted. Holes encountering reinforcing steel that are terminated and patched will not be measured for payment.

**Basis of Payment:**

This work will be paid for at the contract unit price per linear foot for "Drilling and Grouting Reinforcing Bars", which price shall include drilling or coring and preparing holes, and grouting the reinforcing bars. It shall also include all material, except reinforcement and all equipment, tools and labor incidental thereto.

Reinforcing bars will be paid for under item "Deformed Steel Bars - Epoxy Coated".

<u>Pay Item</u>	<u>Pay Unit</u>
Drilling and Grouting Reinforcing Bars	l.f.

**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 #0822005A - TEMPORARY PRECAST CONCRETE BARRIER CURB (STRUCTURE)**

**Description:** Work under this item shall consist of furnishing, installing, and removing temporary concrete barrier curb (TPCBC) and anchor bolts for use on structures as shown on the plans. This work shall also include furnishing and installing anchor bolts and the later removal of anchor bolts at the specific locations shown on the plans.

It is anticipated that no TPCBC (Structure) can be relocated, due to AMTRAK restrictions and requirements.

Over the railroad, Temporary Protective Fence (Bridge) will be installed on the structure mounted TPCBC. See that Special Provision for additional information.

### **Materials:**

1. The barrier shall be precast concrete conforming to Article 8.21.02-1.
2. Manufacturer identification and casting date shall be permanently marked on each barrier unit by means of a non-corrosive metal or plastic tag in the location shown on the plan. When used barrier is furnished, the Contractor shall provide documentation stating from where the material came, what project it will be used on, the casting dates, and certification that the barrier conforms to all State requirements.
3. Reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.
4. Lifting hooks, keys, bolts, devices and attachments shall be of the size indicated on the plans or of a design satisfactory for the purpose intended as approved by the Engineer.
5. Removable anchor bolts shall conform to ASTM A307. Heavy hex nuts shall conform to AASHTO M291. The plate washers shall conform to AASHTO M223, Grade 36. The anchor bolts, nuts, and plate washers shall be hot-dip galvanized in accordance with AASHTO M232 and M111 as applicable.
6. Loop bars shall be bent from smooth bar steel conforming to AISI 1018 (Hot-rolled). Ends shall be hot-dip galvanized in accordance with AASHTO M111.
7. Threaded connection rods shall be steel conforming to AASHTO M 314 (ASTM F1554) Grade 55 except that threads and nominal diameters shall conform to ANSI B1.13M for Class 6g threads. The rod shall be threaded for a minimum of 4 inches at each end. Plain steel washers shall be manufactured in accordance with ANSI B18.22M. Heavy hex nuts shall conform to AASHTO M 291M for Class 10S and shall conform to the geometry defined in ANSI B18.2.4.6M. The threaded

connection rods, washers, and nuts shall be hot-dip galvanized after fabrication in accordance with the requirements of Class C of AASHTO M232.

8. The chemical anchor material shall be a resin compound specially formulated to secure bolts in concrete against tension pull-out. The Contractor shall select the chemical anchor material in accordance with Article M.03.07.
9. Non-shrink grout shall conform to Subarticle M.03.05.
10. Barrier shall be accepted on the basis of the manufacturer's certification, as defined in Article M.08.02-4.
11. Sealant for patching holes in bituminous overlays shall be a cold-applied bituminous sealer conforming to M.08.01-15.
12. Anchor Bolts/Threaded Connection Rods-Certified Test Reports: The Contractor shall submit a Certified Test Report and a Materials Certificate in conformance with Article 1.06.07 and a sample of all anchor bolts, threaded connection rods, nuts, and washers for testing prior to their installation. The Contractor shall not install any anchor bolts or threaded connection rods prior to receipt of the approved test results and approval by the Engineer.
13. Delineators shall conform to Article 8.22.02.
14. Install anchorages as needed for the Contractor's design and detailing of the Temporary Protective Fence (Bridge).

### **Construction Methods:**

1. Fabrication: The barrier shall be precast concrete in conformance with the pertinent requirements of Article 8.21.03 and the plans, except that penetrating sealer protective compound is not required.
2. Installation: The barrier shall be placed as shown on the plans or as directed by the Engineer.

The barriers shall be anchored to the concrete deck or approach slab in accordance with the plans and the following:

- a) **Prestressed Deck Units:** Threaded inserts with matching anchor bolts shall be used for securing the barrier to prestressed deck units. The threaded inserts shall be cast into the deck units during fabrication as necessary to accommodate stage construction.

- b) Chemical Anchoring: This consists of drilling holes in concrete deck or approach slabs, placing removable bolts in the holes, and securing the bolts with a pre-approved chemical anchor material.

The anchor bolts shall be treated with a resin coating which will enable their removal from the deck.

The Contractor shall submit the following to the Engineer for approval: type of drill, diameter of bit, method of cleaning holes, and method of placement of chemical anchor material. Also include specification and recommendation for the coating material from the chemical anchor material manufacturer.

Drilling methods shall not cause spalling, cracking, or other damage to the concrete. Those areas damaged by the Contractor shall be repaired by him in a manner suitable to the Engineer and at no expense to the State.

When reinforcing steel is encountered during the drilling of the holes, the Contractor shall attempt to angle the hole to by-pass the bar. If this cannot be accomplished, then the bar shall be drilled through.

The anchor bolts shall extend to the bottom of the holes and be hammer tapped to insure full penetration. The chemical anchor material shall be installed in accordance with the written directions supplied by the manufacturer of the chemical anchor material.

The barrier shall be anchored down by torquing the bolts "snug tight", which is defined as the tightness attained after several impacts from an impact wrench. No part of the bolt head shall project above the outer surface of the barrier.

3. Connection of Barrier Units: The barrier shall be joined together with threaded connection rods, washers, and heavy hex nuts in accordance with the plans.
4. Cutting of Anchor Bolts: Where ordered by the Engineer, protruding anchor bolts shall be cut off flush with the surface of the concrete deck. The bolts shall then be ground down below the surface of the deck and the space filled in with non-shrink grout. At the Contractor's option, the anchor bolts may be pre-coated with a material recommended by the chemical anchoring material's manufacturer which will allow for complete removal of the anchor bolts.
5. Patching with Non-Shrink Grout: After removal of the barrier and threaded inserts, holes in newly constructed concrete decks or approach slabs shall be blown clean with an air jet and filled in with non-shrink grout. The non-shrink grout shall be mixed and placed in strict accordance with the manufacturer's directions. The non-shrink grout shall be finished flush with the deck surface. Allow grout to cure a

minimum of 24 hours before placing sealant in any remaining hole in the bituminous wearing surface.

- 6. Delineators: Delineators shall be installed on top of the barrier in accordance with Article 8.22.03-3 and the plans.
- 7. General: The barrier shall be kept in good condition at all times by the Contractor during all stages of construction. Any damaged material shall be replaced by the Contractor at his expense.

When the barrier is no longer required, it shall be removed from the work site and become the property of the Contractor.

**Method of Measurement:** Temporary structure barrier will be measured for payment along the centerline at the top of the barrier and will be the actual number of linear feet of temporary structure barrier furnished, installed, and accepted.

**Basis of Payment:** This work will be paid for at the contract unit price per linear foot for "Temporary Precast Concrete Barrier Curb (Structure)", complete in place, which price shall include all furnishing, transportation, storage, materials, including concrete, reinforcing steel, connection rods, and removable anchor bolts, drilling holes in the deck, initial installation, final removal, and hole patching, and which price shall also include hardware and incidental materials, equipment, tools, and labor incidental thereto. Each temporary structure barrier will be paid for once regardless of the number of times it is used on the project. Any temporary barrier units that become lost, damaged or defaced shall be replaced by the Contractor at no cost to the State.

Delineators will be paid for in accordance with Article 12.05.05.

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Precast Barrier Curb (Structure)	l.f.

## **ITEM #0904902A - TEMPORARY PROTECTIVE FENCE (BRIDGE)**

### **Description:**

This bridge or barrier mounted temporary fence shall be at the locations shown on the plans and shall meet the requirements of Amtrak Section 01520A - "Requirements for Temporary Protection Shields for Demolition and Construction of Overhead Bridges and Other Structures".

Work shall include the design and detailing of the protective fence's proposed mounting and anchorage to the Temporary Precast Concrete Barrier Curb (Structure). Existing temporary fence may be reused if determined acceptable by the Engineer.

See "NTC - Work on Railroad Property" for Amtrak requirements.

### **Materials:**

New materials shall conform to the requirements of Amtrak Section 01520A. Any existing section that is designated for reuse must be approved by the Engineer.

### **Construction Methods:**

The Contractor shall submit working drawings and design calculations for temporary protection shields and their anchorages and supports in accordance with the requirements of Article 1.05.02(2) and Amtrak Section 01520A. The working drawings and design calculations shall be prepared, sealed and signed by a Professional Engineer, licensed in the state of Connecticut. The furnishing of such plans shall not serve to relieve the Contractor of any part of his responsibility for the safety of the work or for the successful completion of the project.

The Contractor shall fabricate, erect, maintain, remove and dispose of all bridge or barrier mounted temporary protective fence in accordance with Amtrak Section 01520A.

It is anticipated that the Temporary Protective Fence (Bridge) will be installed on Temporary Precast Barrier Curb (Structure). The Contractor shall develop the design and details to anchor and mount to the standard barrier section. Other means of supporting the protective fence, independent of the TPCBC can be submitted to the Engineer and Amtrak for review. Alternate means of support shall meet all requirements of this project and will be the full responsibility of the contractor.

The length of the Temporary Protective Fence (Bridge) shall extend at least 25 feet beyond the centerlines of outside tracks (Track 1 and Track 4).

Unless and until express permission is granted by Amtrak and the Engineer, the Temporary Protective Fence (Bridge) cannot be relocated between construction stages.

**Method of Measurement:**

This work will be measured for payment by the number of linear feet of completed and accepted structure mounted temporary protective fence (bridge), measured from outside to outside of terminal posts.

**Basis of Payment:**

This work shall be paid for at the contract unit price per linear foot for “TEMPORARY PROTECTIVE FENCE (BRIDGE),” for the fabrication, installation, maintenance, removal and disposal of such fence, which price shall include all material, equipment, tools and labor incidental thereto.

Pay Item

Temporary Protective Fence (Bridge)

Pay Unit

l.f.

## **ITEM #0904949A - METAL BRIDGE RAIL (SOLID PANEL) (8' HIGH)**

### **Description:**

Work under this item shall consist of fabricating and installing metal bridge railings, consisting of extruded aluminum channels connected to aluminum posts, as shown on the plans, as directed by the Engineer and in accordance with this specification.

The Metal Bridge Rail system shall extend up to a point at least 8 feet above the riding surface at the curb line.

This item includes the supply and delivery of spare panels and posts.

### **Materials:**

Materials for this work shall conform to the following requirements:

#### 1. Metal Bridge Rail:

Railing posts, post connection devices, splice bars and rails shall be extruded aluminum and conform to the requirements of ASTM B221, aluminum alloy 6061-T6.

Base plates for railing posts shall be made of aluminum plate and conform to the requirements of ASTM B209, aluminum alloy 6061-T6.

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 A167, Types 302 through 305.

#### 2. Preset Anchorage:

The preset anchorage shall be fabricated as detailed on the contract plans. Preset anchorages configured differently from those detailed on the plans may be used provided they utilize the same materials described below and are approved by the Engineer prior to fabrication.

The wire struts shall be cold-drawn and conform to ASTM A510, Grade 1030 with minimum tensile strength of 100 ksi. These wire struts shall be securely welded to the ferrules with the welds capable of developing the tensile strength of the struts and the ferrules. Steel welding shall be in accordance with the American Welding Society "Structural Welding Code-Steel", AWS D1.1-2015.

The ferrules, either open end or closed end, shall conform to ASTM A108, Grade 12L14. A



plastic cap shall be provided for sealing the bottom of each open end ferrule before placing concrete. Closed end ferrules shall provide a minimum full thread length of 2". Removable plastic washers of the same diameter as the ferrules and approximately 3/32" in thickness shall be provided for the top of each ferrule and shall be left in place until the temporary supporting bolts are removed. Removable plastic caps shall be provided for sealing the top of each ferrule until the erection of railing posts.

After fabrication, the preset anchorage shall be hot-dip galvanized in accordance with ASTM A153. The bolts shall be "free running" in the ferrules after galvanization.

Bolts for the preset anchorage shall be stainless steel heavy hex head and shall conform to the requirements of ASTM F593, Group 1 (AISI Type 304). The manufacturer's symbol and the grade shall be clearly marked on the bolt heads. Nuts shall be stainless steel and conform to the requirements of ASTM F594, Group 1. Washers shall be stainless steel and conform to the requirements of ASTM A167, Types 302 through 305.

### 3. Molded Pads:

Molded pads shall be manufactured from new un-vulcanized elastomer and unused synthetic fibers, with a weight proportion of fiber content equal to approximately one-half of the total weight of the pad. The pads shall be formed into single sheets of 1/8" minimum thickness, with a tolerance of plus or minus 10 percent. Pads shall have a Shore A Durometer hardness within the range of 70 to 90.

### 4. Submittals:

The Contractor shall furnish a Materials Certificate in conformance with the requirements of Article 1.06.07 for the following materials: Railing posts, post connection devices, splice bars, rails, base plates, preset anchorages, bolts, washers and molded pads.

A sample preset anchorage, and samples of all sizes of bolts and washers used with the metal bridge rail, shall be submitted to the Engineer for approval prior to incorporation into the project.

All submittals and shop drawings for the metal rail system will be reviewed by Amtrak and the Engineer.

### 5. Spare Panels and Posts:

Produce and provide enough spare panel sections for 2 full panel sections and include 3 additional posts. These spare parts shall be delivered to the local maintenance shed, in coordination with the Resident Engineer.

### **Construction Methods:**

Before fabricating any materials, the Contractor shall submit shop drawings to the Engineer for

approval in accordance with Article 1.05.02. These drawings shall include but not be limited to the following information: A layout plan showing all railing support bracket spacings, expansion joint locations relative to parapet joints, elevation view detailing the vertical profiles and material designations.

Aluminum welding shall be in accordance with the American Welding Society "Structural Welding Code-Aluminum", AWS D1.2.

The preset anchorages shall be fabricated for installation of vertical posts. The anchorages shall be firmly and accurately held in position prior to and during the placing of concrete.

The railings shall be accurately fabricated and installed as shown on the plans. Lengths of channel rails shall extend between posts. Welding of two or more rails to form an element will not be allowed.

Posts shall be installed plumb and parallel to one another.

Accommodate the horizontal curvature of the bridge in the detailing of the posts and railings. Provide shims as needed for secure and accurate connections. Railings can be curved, if necessary by cold bending or by hot bending. Provide procedures for review and acceptance prior to cold or hot bending of any member.

Aluminum railings shall be carefully adjusted prior to fixing in place to ensure proper matching at abutting joints and correct alignment and curvature throughout their length. After installation, all rails and posts shall be free of burrs, sharp edges and irregularities.

**Method of Measurement:**

This work will be measured for payment by the actual number of linear feet of metal bridge rail completed and accepted, measured along the rail from end to end of channel.

**Basis of Payment:**

This work will be paid for at the contract unit price per linear foot for "Metal Bridge Rail (Solid Panel) (8' High)" complete and accepted in place, which price shall include all materials, spare panel sections, equipment, tools, labor and work incidental thereto.

Pay Item

Metal Bridge Rail (Solid Panel) (8' High)

Pay Unit

l.f.

## **ITEM #0917010A - REPAIR GUIDERAIL**

**Description:** Work under this item shall consist of the repair of newly installed guiderail. It shall be repaired in the locations originally installed and fabricated in conformity with the lines, designations, dimensions, and details shown on the plans or as ordered by the Engineer.

**Materials:** The material for guiderail shall meet the requirements as specified within the original applicable contract items.

When repairing guiderail, the Contractor shall reuse any undamaged existing guiderail elements, timber rail, wire rope, appropriate posts, delineators, lap bolts, and other hardware within the project limits as approved by the Engineer to repair the guiderail. The Contractor shall use new materials when any components of the existing railing are damaged or missing and cannot be obtained from other guiderail systems being removed or converted within the Project limits.

**Construction Methods:** The repair of guiderail shall be in accordance with construction methods as specified within the original applicable contract items.

Guiderail, including end anchors, which has been installed in final condition and accepted by the Engineer, shall be eligible for reimbursement for repairs subject to the conditions described below. If multiple runs are to be installed in a single stage as indicated in the contract documents, determination for reimbursement shall be made when all runs within the stage are complete and accepted as previously described. On projects without designated stages, guiderail installations must be complete and serving the intended function as determined by the Engineer.

When newly installed guiderail is damaged by public traffic, the following conditions must be satisfied prior to reimbursement for payment;

The damage must have been caused solely by the traveling public.

The Contractor shall provide satisfactory evidence that such damage was caused by public traffic; such as accident reports obtained from the Connecticut Department of Public Safety, police agencies or insurance companies; statements by reliable, unbiased eyewitnesses; or identification of the vehicle involved in the accident.

The Contractor shall attempt to collect the costs from the person or persons responsible for the damage and provide documentation of those efforts to the satisfaction of the Engineer.

If such evidence cannot be obtained, the Engineer may determine that the damage was not caused by the Contractor and reimbursement for payment is warranted.

This repair provision does not relieve the Contractor of the requirements of Section 1.07, any other contractual requirements for maintenance and protection of traffic and final acceptance and relief of responsibility for the project.

The Contractor shall remain responsible for the safety and integrity of the guiderail system for the duration of the project. In the event the guiderail is damaged, the Contractor shall provide sufficient cones, drums and other traffic control devices to provide safe passage by the public. When ordered by the Engineer, the Contractor shall furnish replacement parts and immediately repair the guiderail, but in no case more than 24 hours after notification from the Engineer. In non-emergency situations, the guiderail shall be repaired within 72 hours. The repaired guiderail or anchorages, when completed, shall conform to these specifications for a new system. The Contractor shall be responsible for the removal and the proper disposal of all damaged material and debris.

**Method of Measurement:** Guiderail damaged solely by the traveling public will be measured for payment. Damage caused by the Contractor's equipment or operations will not be measured for payment.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for repair of guiderail will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount bid for the contract.

**Basis of Payment:** Repair of guiderail will be paid for in accordance with Article 1.09.04 as required to restore the rail to its full working condition in conformance with these specifications for a new system. There will be no payment for maintenance and protection of traffic for work associated with this item unless, in the opinion of the Engineer, the sole purpose of the maintenance and protection of traffic is for repair of the guiderail.

<u>Pay Item</u>	<u>Pay Unit</u>
Repair Guiderail	est.

## **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 #0971101A - MAINTENANCE AND PROTECTION OF TRAFFIC  
(SITE NO. 1)**

**ITEM #0971102A - MAINTENANCE AND PROTECTION OF TRAFFIC  
(SITE NO. 2)**

**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 349 (Clarence B. Sharp Highway)**

The Contractor shall maintain and protect a minimum of two lanes of traffic in each direction, each lane on a paved travel path not less than 12 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 a minimum of one lane of traffic in each direction, on a paved travel path not less than 12 feet in width.

During stage construction the Contractor shall maintain and protect traffic as shown on the Maintenance and Protection of Traffic plan sheets.

When necessary for the erection and removal of beams and with prior approval from the Engineer, the Contractor will be allowed to halt ramp and turning roadway traffic for a period not to exceed 10 minutes to perform the work. If more than one 10-minute period is required, the Contractor shall allow all stored vehicles to proceed through the work area prior to the next stoppage.

**Ramps and Turning Roadways**

The Contractor shall maintain and protect existing traffic operations.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall be allowed to maintain and protect a minimum of one lane of traffic in each direction, on a paved travel path not less than 12 feet in width.

**All Other Roadways**

The Contractor shall maintain and protect existing traffic operations.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall be allowed to maintain and protect a minimum of one lane of traffic in each direction, on a paved travel path not less than 11 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.

**Pavement Markings - Limited Access Highways, Turning Roadways and Ramps**

During construction, the Contractor shall maintain all pavement markings throughout the limits of the project.

**Interim Pavement Markings**

The Contractor shall install painted pavement markings, which shall include lane lines (broken lines), shoulder edge lines, stop bars, lane-use arrows and gore markings, on each intermediate course of bituminous concrete pavement and on any milled surface by the end of the work day/night. All painted pavement markings will be paid under the appropriate items.

If the Contractor does not install permanent Epoxy Resin Pavement Markings by the end of the work day/night on exit ramps where the final course of bituminous concrete pavement has been installed, the Contractor shall install temporary 12 inch wide white stop bars. The temporary stop bars shall consist of Temporary Plastic Pavement Marking Tape and shall be installed by the end of the work day/night. Stop bars may consist of two 6 inch wide white markings or three 4 inch wide white markings placed side by side. The Contractor shall remove and dispose of these markings when the permanent Epoxy Resin Pavement Markings are installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

If an intermediate course of bituminous concrete pavement will be exposed throughout the winter, then Epoxy Resin Pavement Markings should be installed unless directed otherwise by the Engineer.

**Final Pavement Markings**

The Contractor should install painted pavement markings on the final course of bituminous concrete pavement by the end of the work day/night. If the painted pavement markings are not installed by the end of the work day/night, then Temporary Plastic Pavement Marking Tape shall be installed as described above and the painted pavement markings shall be installed by the end of the work day/night on Friday of that week.

If Temporary Plastic Pavement Marking Tape is installed, the Contractor shall remove and dispose of these markings when the painted pavement markings are installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

The Contractor shall install permanent Epoxy Resin Pavement Markings in accordance with Section 12.10 entitled "Epoxy Resin Pavement Markings, Symbols, and Legends" after such time as determined by the Engineer.

**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, during the course of active construction work on overhead signs and structures, shall close the lanes directly below the work area for the entire length of time overhead work is being undertaken. At no time shall an overhead sign be left partially removed or installed.

If applicable, when an existing sign is removed, it shall be either relocated or replaced by a new sign during the same working day.

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.

Construction vehicles entering travel lanes at speeds less than the posted speed are interfering with traffic, and shall not be allowed without a lane closure. The lane closure shall be of sufficient length to allow vehicles to enter or exit the work area at posted speeds, in order to merge with existing traffic.

**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.

**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) Under certain situations when the safety of the traveling public and/or that of the workers may be compromised due to conditions such as traffic volume, speed, roadside obstructions, or sight line deficiencies, as determined by the Engineer and/or State Police, traffic may be briefly impeded while installing and/or removing the advance warning signs and the first ten traffic cones/drums only. Appropriate measures shall be taken to safely slow traffic. If required, traffic slowing techniques may be used and shall include the use of Truck Mounted Impact Attenuators (TMAs) as appropriate, for a minimum of

one mile in advance of the pattern starting point. Once the advance warning signs and the first ten traffic cones/drums are installed/removed, the TMAs and sign crew shall continue to install/remove the pattern as described in Section 5 and traffic shall be allowed to resume their normal travel.

- 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 travelpath 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 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 “Type ‘D’ Portable Impact Attenuation System”. 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. When it is used as a TMA and is in the proper location as specified, and then it should be paid at the specified hourly rate for “Type ‘D’ Portable Impact Attenuation System”. 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 then is used as a Flashing Arrow, the unit should be paid as a “Type ‘D’ Portable Impact Attenuation System” for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove), and is also paid for the day 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

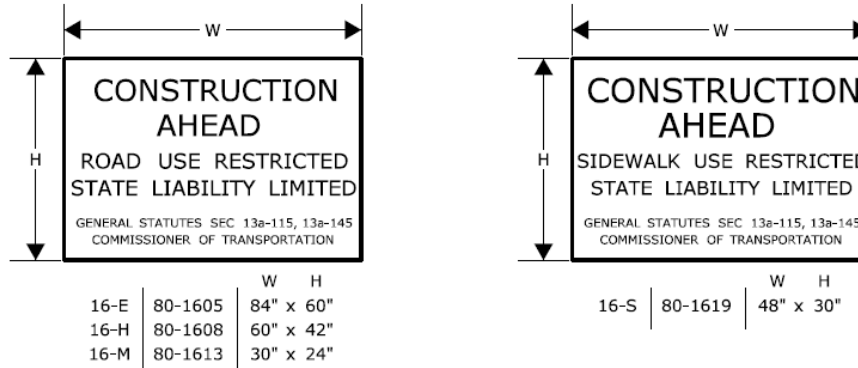
For any other message(s), approval must be received from the Office of Construction prior to their use. No more than two (2) displays shall be used within any message cycle.

**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.

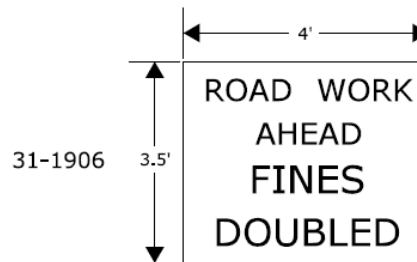
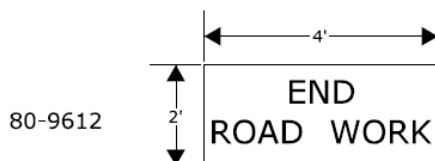
### REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

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

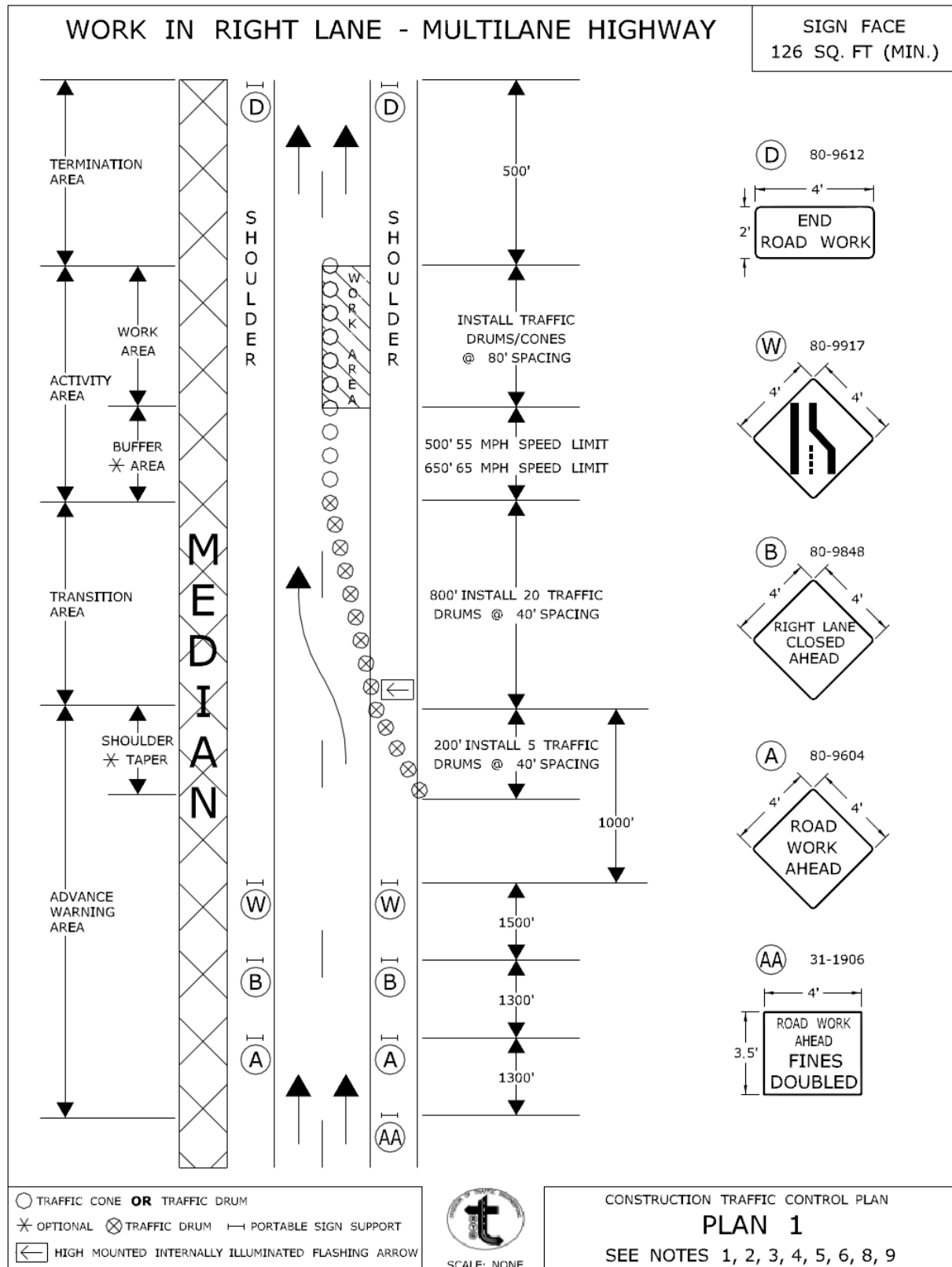


SCALE: NONE

### CONSTRUCTION TRAFFIC CONTROL PLAN NOTES

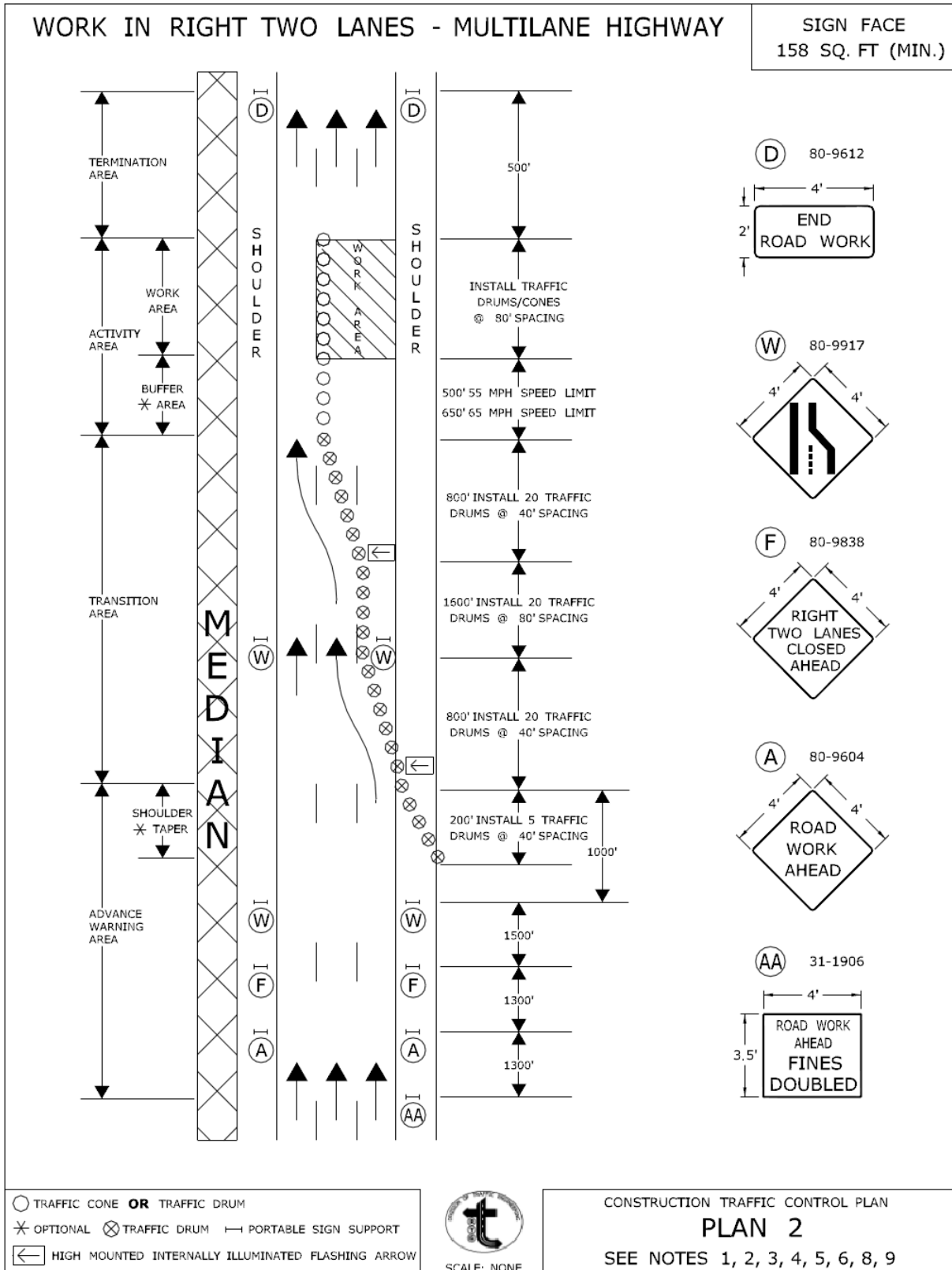
CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED  Charles S. Harlow  
2012.06.05 15:50:35-0400  
PRINCIPAL ENGINEER



CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*  
PRINCIPAL ENGINEER  
Charles S. Harlow  
2012.06.05 15:51:00-0400'

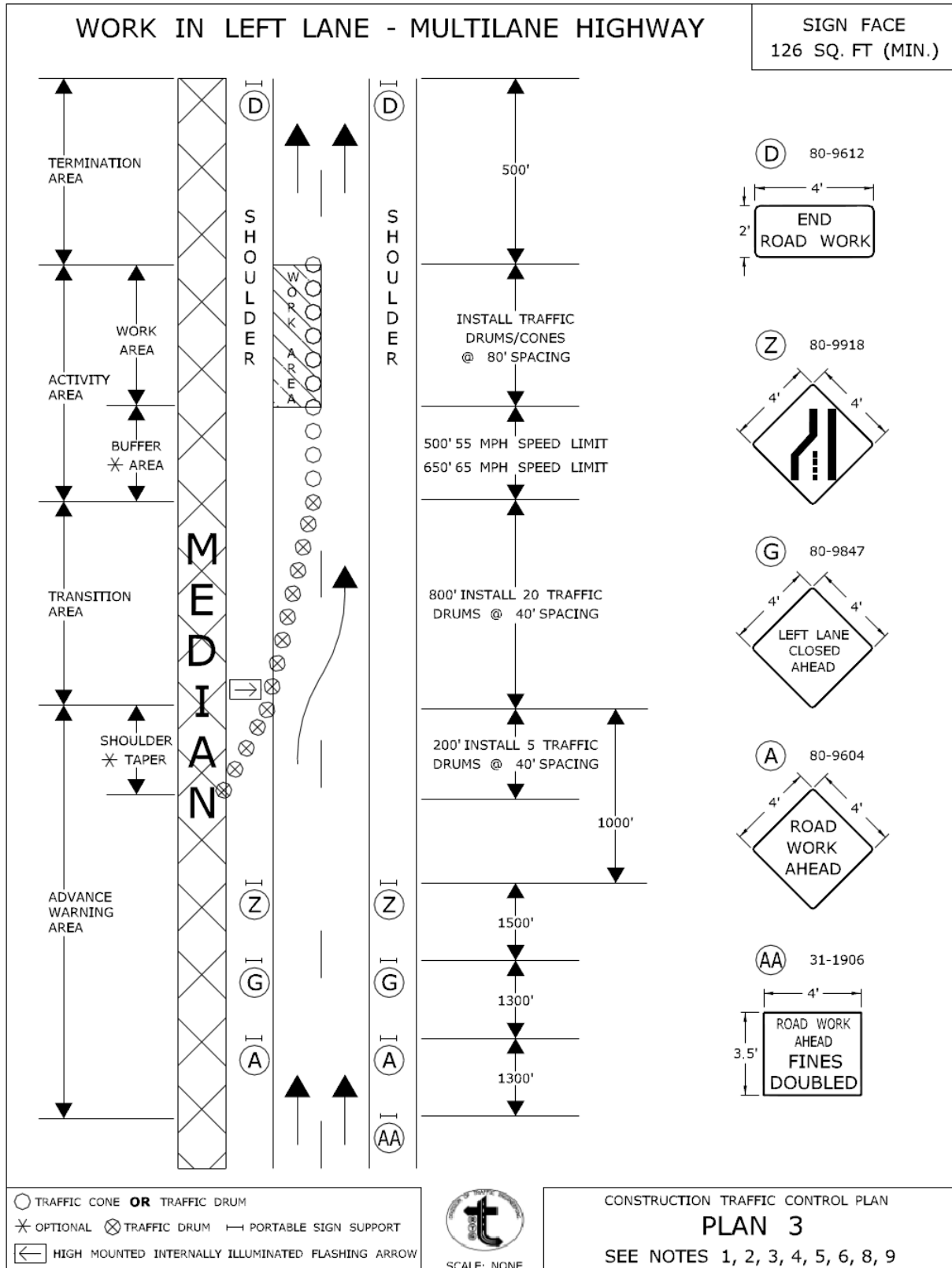


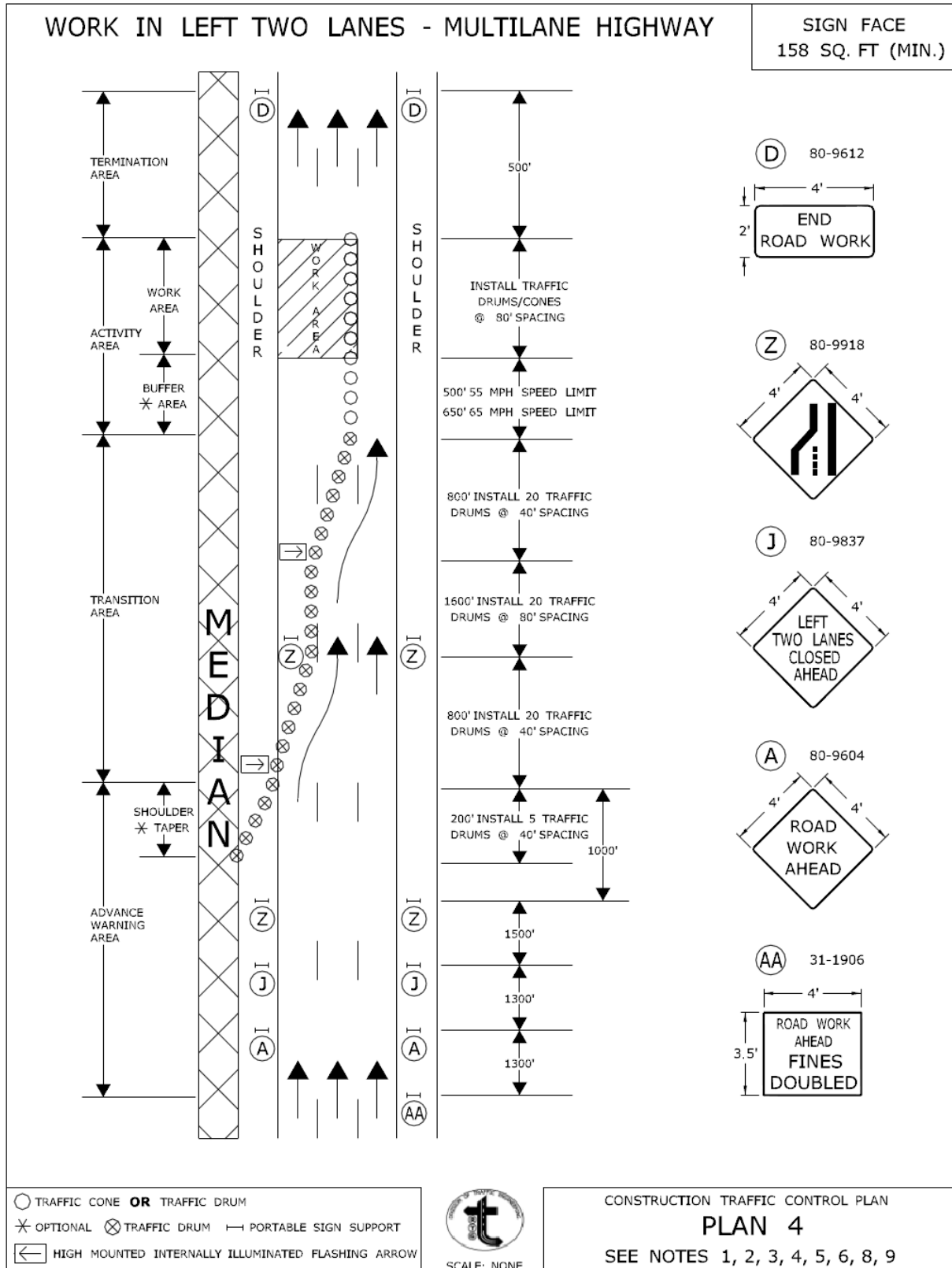
CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

CONSTRUCTION TRAFFIC CONTROL PLAN  
**PLAN 2**  
SEE NOTES 1, 2, 3, 4, 5, 6, 8, 9

APPROVED *Charles S. Harlow*  
PRINCIPAL ENGINEER

Charles S. Harlow  
2012.06.05 15:51:23-04'00"





CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

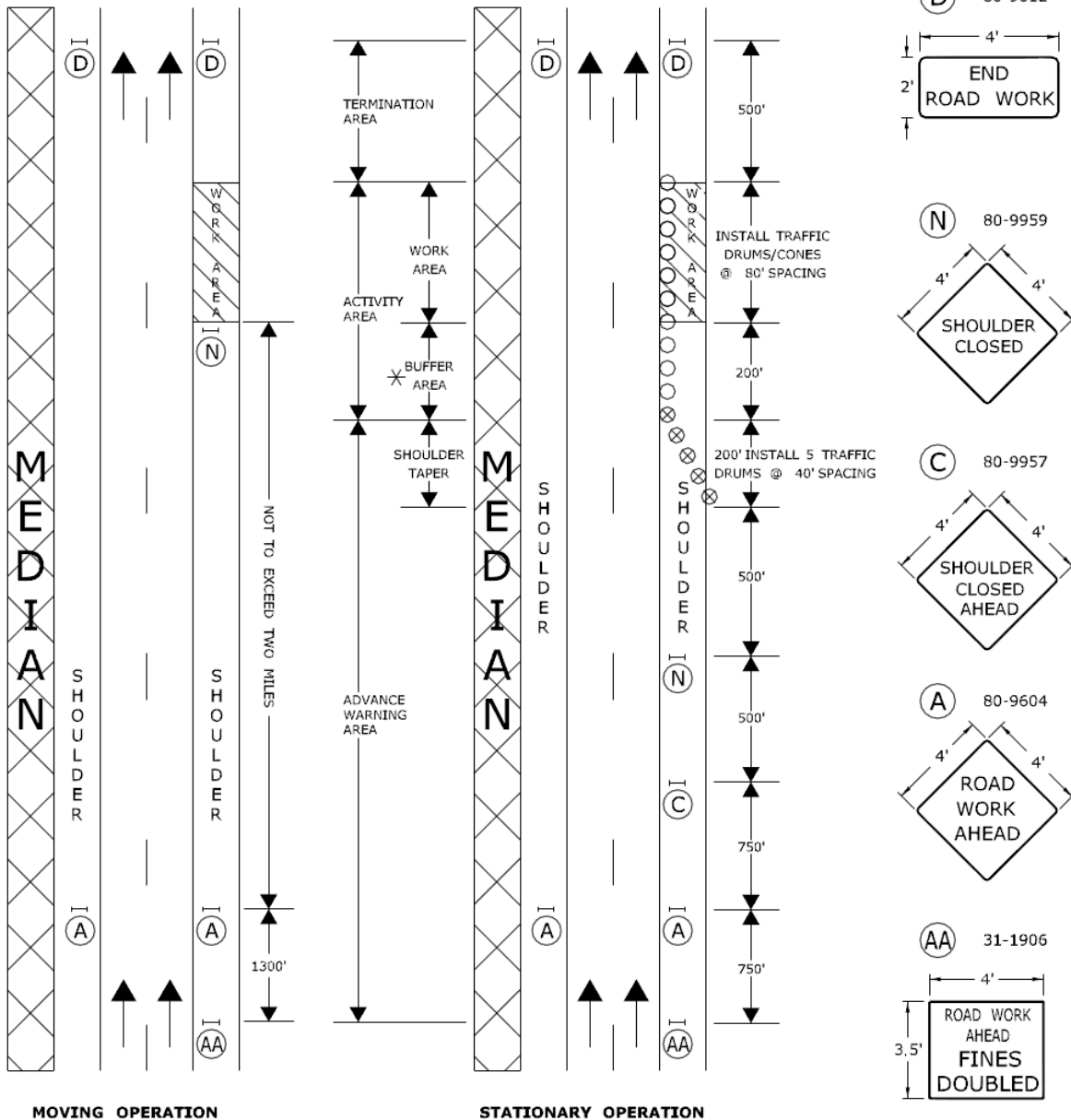
CONSTRUCTION TRAFFIC CONTROL PLAN  
**PLAN 4**  
SEE NOTES 1, 2, 3, 4, 5, 6, 8, 9

APPROVED *Charles S. Harlow*  
PRINCIPAL ENGINEER

Charles S. Harlow  
2012.06.05 15:52:10-0400

# WORK IN SHOULDER AREA - MULTILANE HIGHWAY

SIGN FACE  
94 SQ. FT (MIN.)



- TRAFFIC CONE **OR** TRAFFIC DRUM
- \* OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

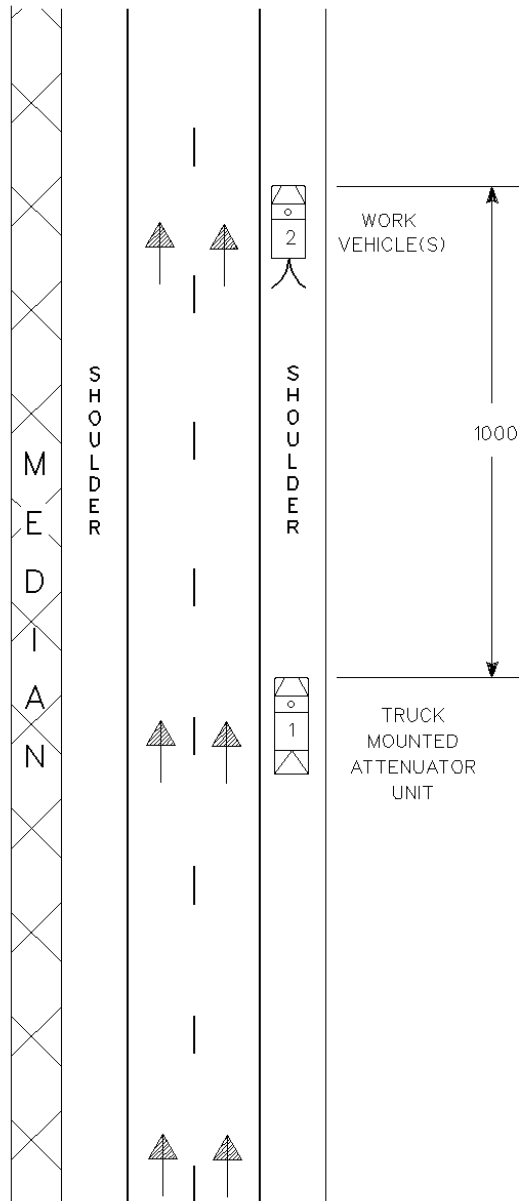


CONSTRUCTION TRAFFIC CONTROL PLAN  
**PLAN 6**  
SEE NOTES 1, 2, 4, 8

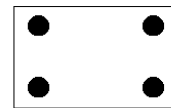
CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* 2012.06.05 15:52:38-04'00"  
PRINCIPAL ENGINEER

### MOVING OPERATION ON RIGHT SHOULDER MULTILANE HIGHWAY & SECONDARY ROADWAYS



SIGN MOUNTED ON TRUCK 1



DEPARTMENT APPROVED  
ARROW BOARD  
( FLASHING YELLOW MODE )

REV'D 1-02



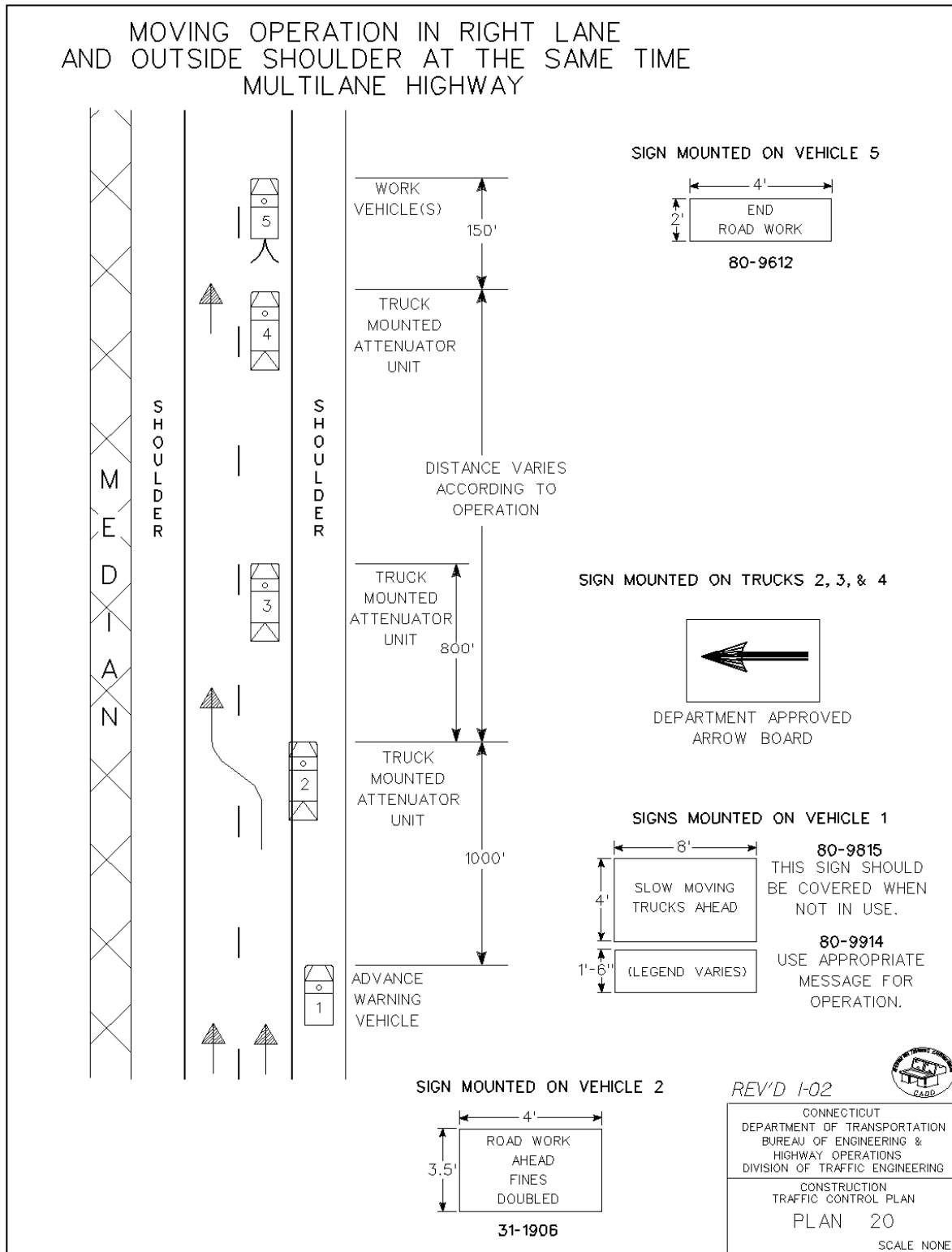
CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING &  
HIGHWAY OPERATIONS  
DIVISION OF TRAFFIC ENGINEERING

CONSTRUCTION  
TRAFFIC CONTROL PLAN  
PLAN 19  
SCALE NONE

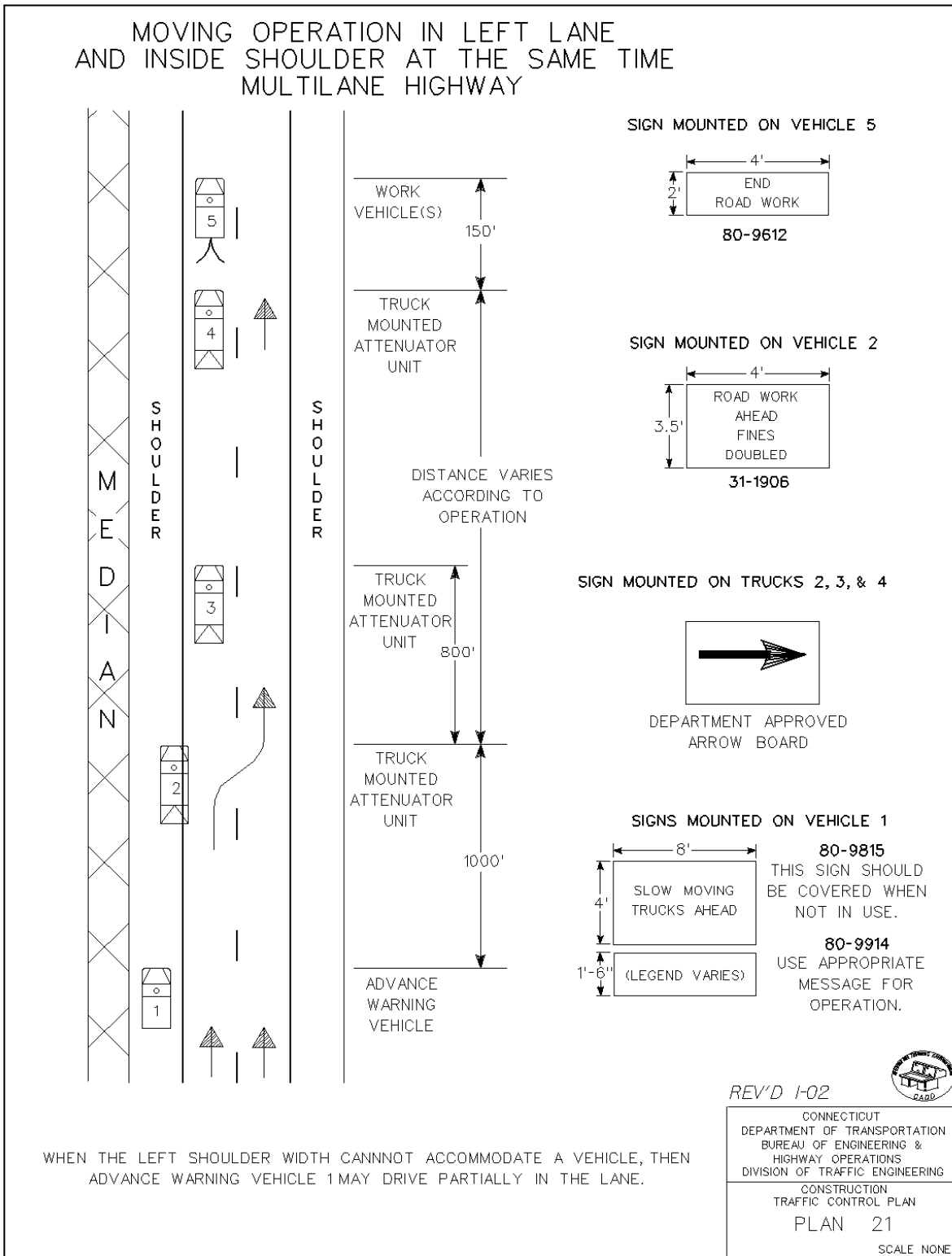
APPROVED J. McCall DATE 1-30-02  
PRINCIPAL ENGINEER



## MOVING OPERATION IN RIGHT LANE AND OUTSIDE SHOULDER AT THE SAME TIME MULTILANE HIGHWAY



APPROVED John D. Micall PRINCIPAL ENGINEER DATE I-30-02



APPROVED John D. McCall DATE 1-30-02  
 PRINCIPAL ENGINEER

**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 (Site No. X)”. 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 (Site No. X).”

Pay Item

Maintenance and Protection of Traffic (Site No. X)

Pay Unit

l.s.

**ITEM #0974001A - REMOVAL OF EXISTING MASONRY**

Work under this item shall conform to the requirements of Section 9.74 supplemented and amended as follows:

**9.74.03 –Construction Methods:** Add the following:

The concrete abutments, wingwalls, stem and backwalls, along with pier keeper blocks shall be removed to the limits as shown on the plans in a sequence and manner which follows the overall stage construction plans for the project. Where stage construction requires concrete to be removed adjacent to abutment sections that will continue to support live load, the Contractor shall cut the concrete at the demolition limit to minimize disturbance to the section to remain in place. The method and equipment proposed by the Contractor shall be submitted to the Engineer for review.

Under no circumstances shall the Contractor be allowed to use excavator mounted pneumatic demolition equipment to remove the existing abutment and wingwall concrete where vibration may damage sections remaining in service. Maximum 30 pound hammers shall be used for general removal, and 15 pound hammers shall be used immediately adjacent to the cut lines at the demolition limit.

The Contractor shall take necessary precautions to prevent any damage to the portions of the structure to remain. Any damage shall be repaired by the Contractor, as directed by the Engineer, at no cost to the State.

All debris shall be disposed of by the Contractor in accordance with all applicable State and Federal regulations.

**9.74.05- Basis of Payment:** Add the following:

No additional payment will be made for all saw cutting required for the staged removal of existing concrete at abutments, wingwalls and piers, including any saw cutting necessary to extend and modify the substructures. The cost of this work shall be included in the unit price per cubic yard for “Removal of Existing Masonry.”

Pay Item  
Removal of Existing Masonry

Pay Unit  
c.y.

**ITEM #1003912A - REMOVE CONCRETE LIGHT STANDARD BASE**

**DESCRIPTION:** Under this item the Contractor shall remove an existing concrete light standard base where shown on the plans or as directed. The removed concrete base shall remain the property of the Contractor.

**CONSTRUCTION METHODS:** The Contractor shall remove a concrete light standard base where indicated on the plans or as directed by the Engineer. The removed base shall be properly disposed of by the Contractor. The resulting excavation shall be backfilled, top soiled, graded and seeded to match surroundings in conformance with Section M.13, unless otherwise noted on the plans.

**METHOD OF MEASUREMENT:** This work will be measured for payment by the number of concrete light standard bases removed and disposed of, complete and accepted.

**BASIS OF PAYMENT:** This work will be paid for at the contract unit price each for "Remove Concrete Light Standard Base", which price shall include all materials, equipment and work incidental thereto including removal of base, excavation, backfill, topsoil, grading, seeding, fertilizing, hauling and disposing of concrete base.

<u>Pay Item</u>	<u>Pay Unit</u>
Remove Concrete Light Standard Base	ea.

## **ITEM #1003916A - REMOVE AND RELOCATE LIGHT STANDARD**

**DESCRIPTION:** Under this item the Contractor shall remove, temporarily store as required, and install an existing light standard where shown on the plans, or as directed by the Engineer. The installation shall consist of erecting the light standard with bracket, ballast, luminaire and lamp onto a new foundation/anchorage, and making all necessary electrical connections for proper operation.

**MATERIALS:** The Contractor shall be responsible for damage to all equipment and materials incurred during removal and hauling to the specified area. All repairs or replacements due to damage or loss by the Contractor shall be made at the Contractor's expense.

**CONSTRUCTION METHOD:** The Contractor shall remove a light standard, bracket, luminaire and ballast where indicated on the plans, or as directed by the Engineer. The Contractor shall effectively disconnect the luminaire from the lighting circuit and detach the pole from the grounding system. The Contractor shall remove the four anchor nuts with associated hardware and remove the light standard from the foundation/anchorage. The light standard, bracket arm, luminaire and mounting hardware shall be properly stored as a unit away from traffic and sources of possible damage.

Upon installation of the new foundation/anchorage (paid for under separate bid item), the removed light standard shall be bolted securely to the anchor bolts. The completely assembled light standard shall be erected plumb with the aid of aluminum shims, if necessary. The bracket shall be securely attached to the light standard and the assembly shall be erected with the bracket placed perpendicular to the center line of the roadway.

The light standard shall be connected to the ground rod and grounding system and the luminaire shall be reconnected to the lighting circuit as indicated on the plans.

The Contractor shall make all necessary arrangements with the District Electrical Maintenance Supervisor, for locking and unlocking of the circuits on which any work is to be done, through the Engineer.

All work shall be in strict conformance with the National Electric Code.

**METHOD OF MEASUREMENT:** This work will be measured for payment by the number of light standards removed and relocated, complete and accepted.

**BASIS OF PAYMENT:** This work will be paid for at the contract unit price each for "Remove and Relocate Light Standard" as specified, which price shall include removal, storage, delivery, and installation of the light standard, connections, and all work, materials, tools and equipment incidental thereto.

Pay Item

Remove and Relocate Light Standard

Pay Unit

ea.

**ITEM #1014901A - REMOVE CABLE**

**DESCRIPTION:** This item shall consist of removing highway lighting circuit conductors from existing conduit complete, as shown on the plans or as ordered and in accordance with these specifications. The removed cable shall remain the property of the Contractor.

**CONSTRUCTION METHODS:** The Contractor shall remove all single conductors from conduit at the locations indicated on the plans.

The removed cable shall be neatly coiled, tied and disposed of by the Contractor.

**METHOD OF MEASUREMENT:** This work will be measured for payment by the actual number of linear feet of conduit from which the cable is removed.

**BASIS OF PAYMENT:** This work will be paid for at the contract unit price per linear foot for “Remove Cable” which price shall include the removal of single conductors, the proper disposal of the removed conductors and all equipment, labor and work incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Remove Cable	l.f.



## **ITEM #1015034A - GROUNDING AND BONDING**

**Description:** The work of this Section consists of furnishing and installing grounding and bonding systems for the bridges being replaced as shown on the plans and as specified herein. Work also includes the removal of the existing grounding and bonding systems on the existing bridges, as well as the furnishing, installation, and removal of temporary grounding and bonding systems during the different bridge demolition and construction stages.

Work includes providing all materials, labor, tools, equipment, supervision and all appurtenances as required for a complete grounding and bonding installation. The grounding and bonding systems shall meet the requirements of the National Electrical Code, National Electric Safety Code and the technical and safety recommendations of ANSI and IEEE.

Parts of the work will require railroad track and catenary/traction power outages which are limited to specified days and work hours that are defined elsewhere in the plans and specifications.

Parts of the work will require the use of on-track high rail equipment. The approval, restrictions, and requirements for the use of on-track high rail equipment are defined elsewhere in the plans and specifications.

The Contractor shall provide new and temporary grounding and bonding for all construction stages of the project work, including but not limited to:

Temporary Protective Fence (Bridge) panel posts shall be bonded to each other and to the existing and new bridge bonding system as shown on the plans.

The new bridge bonding system shall be bonded temporarily and permanently to the existing bridge bonding system and railroad static wires as shown on the plans.

New Metal Bridge Rail (Solid Panel) (8' High) posts shall be bonded to each other and to the new bridge bonding system as shown on the plans.

New bonding loops on each new bridge parapet shall be connected to the existing railroad static wires as shown on the plans.

New aluminum plates attached to the bottoms of the new bridge deck units shall be bonded to each other and temporarily to the existing bridge bonding system as shown on the plans.

New aluminum plates attached to the bottoms of the new bridge deck units shall be bonded to each other and to the new parapet mounted bonding loop as shown on the plans.

All required grounding and bonding shall be in place at the end of each work shift.

**Applicable Standards:** Pertinent provisions of the following listed standards (latest edition) shall apply to the work of this Section, except as they may be modified herein, and are hereby made a part of this Specification to the extent required.

<u>Organi- zation</u>	<u>Number</u>	<u>Title</u>
NFPA	70	National Electrical Code (NEC)
IEEE	81	Recommended Guide for Measuring Ground Resistance and Potential Gradients in the Earth
	C2	National Electrical Safety Code (NEC)
ASTM	B231	Concentric-lay-Stranded Aluminum Conductors
	A123	Standard Specifications for Zinc (Hot-Dipped Galvanized) Coatings
AA	I-90	Aluminum Standards and Data

**Submittals:** Test Reports: Reports of all field tests including method of measurement shall be submitted to the Engineer as required by these Specifications and referenced standards.

Certified copies of the test results on cables and other materials, supplied under this section, as per relevant standards.

The Contractor shall submit product data for all components in this Section, which shall include shop/working drawings, material/procurement specifications and other related information for each component.

The Contractor shall submit shop drawings, technical data, product data, and certificates for all materials furnished under this section including manufacturer's descriptive literature, installation recommendations, catalog data, and other information required to demonstrate compliance with the Contract Documents, including but not limited to:

- A. Conductors for Bond Wires
  - 1. Conductor for Bonding Loop
  - 2. Conductor for Bonding Wires
  - 3. Conductor for Flexible Bond Wire Jumper
- B. Aluminum Plates
  - 1. Shop drawing showing sizes, dimensions, and bolt holes
- C. Connectors, Terminal Lugs, Bolts, Washers, Lock Washers, and Nuts

- D. Unistrut type channels and associated hardware
  - 1. Channel type, size, and finish
  - 2. Attachment bolts, washers, and bolts
  - 3. Channel nut with spring
  - 4. Cast-In-Place inserts
  
- E. Inserts
  - 1. For cast-in-place locations
  - 2. For drilled-in-place locations

The Contractor shall furnish certification from the manufacturer verifying that the wires have been designed, manufactured, inspected and tested in accordance with applicable portions of the referenced standards, these Specifications, and the plans.

**Materials:** All components shall conform to or be interchangeable with the Railroad's standard components.

Conductors for grounding and bonding shall be Class B, covered 4/0 AWG 1350 Aluminum 19 strand type H19.

Terminal Lugs shall be aluminum compression type with either one or two hole for bolted connections. Flexible Bond Wire Jumpers shall be Class B, covered 4/0 AWG 1350 Aluminum 19 strand type H19 as shown on the drawings.

Aluminum plates shall be electrical grade aluminum alloy (6101-T61) and sized as shown on the drawings.

Connection of aluminum plates shall be by ½" diameter, hex-head bolts, nuts, and washers. Bolts, nuts, and washers shall be of stainless steel.

Mounting channels on the bottoms of the bridge beams for attachment of the bonding system aluminum plates shall be Unistrut P1000T channels, or an approved equal. Mounting channels shall have a hot-dipped galvanized finish.

All materials shall be protected against damage during handling and shipping. Each reel or bundle shall have a strong, weatherproof tag securely fastened showing the physical and mechanical properties as well as type designation, ASTM designation and the name and mark of the manufacturer, and the total length and weight of the cable or bundle.

**Construction Methods:** The installation of the bridge bonding system will occur in the vicinity of electrical energized facilities. De-energizing of the Railroad's electric lines will be required to perform the work.

All hardware shall be installed as shown on the plans and as recommended by the manufacturer. Bolts and nuts shall be properly tightened in accordance with the manufacturer's

recommendations. All bolts shall be of sufficient length for a full thread beyond the nut, but shall not protrude beyond the nut and/or locknut more than 1/2". Bolt ends shall not be cut off.

Hardware shall be installed using tools and methods specified by the manufacturer and approved by the Engineer.

Hardware shall be inspected for cleanliness and damage. Any item that does not fit or is defective shall be rejected. Replacement shall be at the Contractor's expense.

Current-carrying connectors shall be as shown on the plans and shall be installed in accordance with the manufacturer's recommendations. Connectors for bimetallic connections shall be tin-plated.

Bolts in bolt-type connectors shall be lubricated as recommended by the manufacturer, and torqued, using a calibrated torque wrench.

Wire surfaces, which are in contact with conducting surfaces of the connector, shall be thoroughly wire brushed and shall be coated with an inhibitor. When connectors are not factory-supplied with a corrosion inhibitor, the inhibitor shall be applied to the connector in the field. Corrosion inhibitors shall be stable over a wide temperature range, adhere to cold metal surfaces, be water-repellent, be weather resistant, and be inert to copper, aluminum, zinc, tin, cadmium, steel, and neoprene rubber.

All conductors shall be handled in accordance with good overhead line practices and the manufacturer's recommendations.

Wire splices are not allowed without prior approval of the Engineer. No splice will be permitted within five feet of a support clamp.

Any damage to wires and conductors shall be reported, in writing, to the Engineer. Remedial action must be approved by the Engineer and will be performed as directed at the Contractor's expense.

During conductor installation, proper vertical and horizontal electrical clearances must be maintained from existing wires and structures.

Electrical resistance tests shall be made during and after installation to verify continuity of the grounding and bonding system.

**Method of Measurement:** The work under this Section will be measured on a lump sum basis which will include all materials, labor, equipment, testing, and coordination with the Railroad required for a complete and functional installation.

There shall be no separate or additional payment for the work associated with the furnishing, installation, and/or removals of temporary grounding or bonding materials.

**Basis of Payment:** This work will be paid for at the contract lump sum price for the following pay item which shall include all railroad coordination, testing, transportation, materials, equipment, tools, and labor incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Grounding and Bonding	l.s.

**ITEM #1019027A - PRE-ASSEMBLED AERIAL CABLE**

**DESCRIPTION:** This work shall consist of furnishing and installing pre-assembled aerial cable, with insulators and brackets, on proposed poles at the location indicated on the plans to maintain illumination circuits.

**MATERIALS:** Pre-assembled aerial cable shall be 7 strand aluminum containing a No. 6 AWG bare messenger with three No. 6 AWG cross-linked polyethylene insulated conductors rated at 600 volts.

**CONSTRUCTION METHOD:** The pre-assembled aerial cable shall be attached to poles with insulators, including all connections as indicated on the plans or as directed by the Engineer. When necessary, the pre-assembled aerial cable shall be relocated to maintain different illumination circuits as dictated by the construction stages. Pre-assembled aerial cable used for temporary lighting shall be removed once the permanent lighting is installed and operational. Removed aerial cable shall remain the property of the Contractor.

Pre-assembled aerial cable shall be used to maintain ramp lighting circuits and mainline circuits where the need for large diameter cable is not necessary to maintain proper voltage drop levels.

**METHOD OF MEASUREMENT:** This work will be measured for payment by the actual number of linear feet of pre-assembled aerial cable installed and accepted, including attachments.

**BASIS OF PAYMENT:** This work will be paid for at the contract unit price per linear foot for "Pre-Assembled Aerial Cable" of the size and voltage specified, complete in place, which price shall include, insulators, entrance cap and attachment, bracket, all materials, tools, connections, equipment, labor, and work incidental thereto. The unit cost for this item is a one time only cost. The cost of removing and relocating the aerial cable to maintain different illumination circuits shall be included in the unit cost.

Pay Item  
Pre-Assembled Aerial Cable

Pay Unit  
l.f.

## **ITEM #1020030A - TEMPORARY ILLUMINATION UNIT**

**DESCRIPTION:** Under this item the Contractor shall furnish and install a breakaway fiberglass light pole, anchors, bracket, luminaire with ballast, and necessary hardware for temporary lighting during construction, as indicated on the plans or as directed by the Engineer. At the end of the project the temporary illumination unit shall become the property of the Contractor.

**MATERIALS:** The pole shaft shall be fiberglass reinforced composite (FRC). The pole shaft shall be constructed by the filament winding process from thermosetting polyester resin and contain a minimum of 65 percent of "E" type fiberglass by weight. The filament windings shall be continuously applied with uniform tension and shall be placed on the pole helically at low angles to provide axial strength. Additional windings shall be placed on the pole in a circular manner to provide compressive strength. The resin is to be uniformly pigmented to match the final grey color of the finished FRC pole. The pole is to contain solid coloration throughout the entire wall thickness and is to contain ultraviolet (UV) inhibitors. The pole is to be round, tapered, hollow, and reinforced in the support arm and hardware attachment areas. The pole is to be non-conductive and chemically inert. The pole shall meet the current AASHTO LTS-2 *Street Lighting Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, and shall be approved by FHWA for use on Federal Aid projects. A 2 ½" x 5" handhole shall be provided at the base of the pole shaft at approximately 18" above the finished grade line.

The pole exterior surface is to be grey with a natural (textured) finish. The surface of the pole will be uniform for the entire length of the pole. The laminate shall contain colored pigment, the color of the final coating, and be of uniform color throughout the entire wall thickness of the pole. A coating shall be applied to the pole to maintain surface integrity against the damaging effects of sunlight and extremes in weather. The coating is to be highly weather resistant pigmented polyurethane. The coating thickness shall have minimum dry film thickness of 1-1/2 mils.

The surface shall be tested for a minimum of 5000 hours of accelerated testing in accordance with ASTM G154 (UV-A lamp 340 NM wave length, 130 degree F, cycle lamp 4 hours on 4 hours off) with the following results:

Fiber exposure:	none
Crazing:	none
Checking:	none
Chalking:	none
Color:	may dull slightly

The minimum pole weight shall be 130 lbs. The weight of each pole shall not deviate from the specified weight by more than +/- 10 lbs.

For direct buried break-away poles the butt end shall be enlarged so as to provide resistance to rotation and pull out.

Where indicated on the plans, the pole shaft shall be equipped with an anchor base with of heavy duty A356-T6 aluminum which shall be permanently bonded to the outside of the fiberglass shaft.

Each pole is to be permanently marked in characters 3/16" minimum high on a brass or stainless steel plate with the manufacturer's identification symbol, month and year of manufacture. Each pole shall be individually packaged for protection during shipping and storage. The pole shall be warranted to be free of defects in materials and workmanship for a period of three years from the date of purchase.

The top of the pole is to be pre-drilled for two 5/8" thru bolts on 9-1/2" centers starting 4 inches below the top of the pole. A 1-1/2" wire exit hole shall be centered 1/2 the distance between the two holes.

A cast aluminum removable cap shall be securely mounted to the top of the pole. The cap shall be corrosion resistant and must remain in place when subjected to the maximum wind loading for which the pole is designed.

The luminaire bracket arm shall be 10' in length (single member) of an upsweep design fabricated from tubular aluminum. The luminaire end shall have a 2-3/8" outside diameter.

Anchors shall conform to the pertinent requirements of Article M.16.04-2b, c, d, and e.

The luminaire shall conform to the pertinent requirements of Article M.15.05, and shall be high pressure sodium. The luminaire wattage shall be 250 watt or as called for on the plans. The socket shall be adjustable to provide I.E.S. light distribution type M-S-II. The ballast shall be under guarantee of the manufacturer for a period of one year commencing when the unit is installed and accepted

**CONSTRUCTION METHODS:** The fiberglass pole shall be set in the earth to the required depth and proper compaction of backfill provided around the pole and then attached to the anchors with guys as necessary. The bracket shall be attached to the pole and shall provide a luminaire mounting height of 40' over the roadway or the mounting height as called for on the illumination plans (See Contractor "Notes" section). The bracket and luminaire assembly shall be installed perpendicular to the center line of the roadway. When necessary, the temporary light pole and luminaire shall be relocated to maintain different illumination circuits as dictated by the construction stages.

Where indicated on the plans an anchor base type pole shall be supplied and securely bolted to the anchor bolts of the foundation and leveled with the aid of aluminum shims if necessary.



Upon completion of the project the temporary illumination unit shall be removed and shall remain the property of the Contractor.

Upon removal of the pole, the resulting excavation shall be properly backfilled to match the surrounding area.

**METHOD OF MEASUREMENT:** This work will be measured for payment by the number of temporary illumination units installed and accepted.

**BASIS OF PAYMENT:** This work will be paid for at the contract unit price each for "TEMPORARY ILLUMINATION UNIT" complete in place, which price shall include all materials, fiberglass poles, breakaway base, anchor base (when required), anchors, guys, brackets, luminaires, lamps, ballasts, hardware, connections, hauling, and all equipment, tools, labor and all work incidental thereto including excavating, augering, removal of bituminous overlay, backfilling, removal, hauling, relocation, and disposal. The unit cost for this item is a one-time only cost. The cost of removing and relocating the temporary illumination unit to maintain different illumination circuits shall be included in the unit cost.

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Illumination Unit	ea.

## **ITEM #1131002A - REMOTE CONTROL CHANGEABLE MESSAGE SIGN**

**Description:** Work under this item shall include furnishing and maintaining a trailer-mounted, “Changeable Message Sign”, “Remote Control Changeable Message Sign”, “Changeable Message Sign with Radar”, or “Remote Control Changeable Message Sign with Radar” whichever is applicable, at the locations indicated on the plans or as directed by the Engineer.

**Materials:** The full matrix, internally illuminated variable message sign shall consist of a LED, fiber optic, lamp matrix, or hybrid magnetically operated matrix – LED message board; and a computer operated interface, all mounted on a towable, heavy duty trailer.

The sign shall have a minimum horizontal dimension of 115 inches and rotate a complete 360 degrees atop the lift mechanism.

In the raised position, the bottom of the sign shall be at least 7 feet above the roadway. The messages displayed shall be visible from a distance of 1/2 mile and be clearly legible from a distance of 900 feet during both the day and night.

The lighting system shall be controlled both manually and by a photocell for automatic sign dimming during nighttime use.

The sign shall be capable of storing a minimum of 100 preprogrammed messages and be able to display any one of those messages upon call from the trailer mounted terminal and/or through the cellular telephone hookup for the remote controlled sign.

The sign shall be a full matrix sign that is able to display messages composed of any combination of alphanumeric text, punctuation symbols, and graphic images (notwithstanding NTCIP limitations). The display shall be capable of producing arrow functions. Full- matrix displays shall allow the use of graphics, traffic safety symbols and various character heights.

Standard messages shall be displayed in a three-line message format with 8 characters per line. The letter height shall not be less than 18 inches.

The sign shall utilize yellow green for the display with a black background. Each matrix shall have a minimum size of 6 x 9 pixels. Each pixel shall utilize a minimum of four high output yellow green LEDs or equivalent light source. The LEDs or light source shall have a minimum 1.4 candela luminance intensity, 22 degrees viewing angle, and wavelength of 590 (+/- 3) nanometers.

For hybrid magnetically operated matrix – LED matrix, each pixel shall have one single shutter faced with yellow green retro-reflective sheeting with a minimum of four high output yellow green LEDs or equivalent light source. The hybrid magnetically operated matrix – LED matrix sign shall be capable of operating in three display modes; shutter only, LED only, and both LED

and shutter. These modes shall be automatically controlled by a photocell for day and night conditions and also capable of being manually controlled through the software.

The sign shall be controlled by an on-board computer. The sign shall automatically change to a preselected default message upon failure. That default message shall remain on display until the problem is corrected.

The sign shall include all necessary controls, including, but not limited to, personal computer, keyboard or alphanumeric hand-held keyboard, and software. The sign shall interface with PCs, cellular phones, and radar speed detection devices as required.

Controls shall be furnished for raising and lowering the message board, aligning the message board and, for solar powered units, a read-out of the battery bank charge.

Power shall be provided by a self-contained solar maintained power source or a diesel engine driven generator. Hardware for connection to a 110-volt power source shall also be provided.

Solar powered signs shall display programmed messages with the solar panel disconnected, in full night conditions, for a minimum of 30 consecutive days.

Remote Control Changeable Message Signs shall include one (1) industrial-grade cellular telephone and be equipped with a modem to control the sign and a security system to prevent unauthorized access. The security system shall allow access only through use of a code or password unique to that sign. If the proper code or password is not entered within 60 seconds of initial telephone contact, the call will be terminated. Remote control for the Remote Control Changeable Message Sign shall be by cellular telephone and touch tone modem decoder.

The radar equipped signs shall include a high-speed electronic control module (ECM-X), Radar SI transceiver, signal processing board and radar logging software.

The radar software will operate the sign in four modes:

- 1) The sign will display words "YOUR SPEED" followed by the speed (2 digits). The display will repeat the message as long as vehicles are detected. The sign will blank when no vehicles are present.
- 2) The sign will display a series of up to six messages (programmed by the user) when a preset speed (programmed by the user) is exceeded. The sign will blank when no vehicles are present.
- 3) Will perform like mode #2 with the addition of displaying the actual speed with it.
- 4) The sign will work as a standard Changeable Message Sign or Remote Control Changeable Message Sign with no radar.

**Construction Methods:** The Contractor shall furnish, place, operate, maintain and relocate the sign as required. When the sign is no longer required, it shall be removed and become the property of the Contractor. The cellular telephone required for the Remote Control Changeable Message Sign shall be provided to the Engineer for his use, and subsequently returned to the Contractor.

When the sign is not in use, it shall either be turned off with a blank display or turned from view.

Any signs that are missing, damaged, defaced or improperly functioning so that they are not effective, as determined by the Engineer and in accordance with the ATSSA guidelines contained in "Quality Standards for Work Zone Traffic Control Devices," shall be replaced by the Contractor at no cost to the State.

**Method of Measurement:** This work will be measured for payment for each "Changeable Message Sign", "Remote Control Changeable Message Sign", "Changeable Message Sign with Radar", or "Remote Control Changeable Message Sign with Radar", whichever applies, furnished and installed, for the number of calendar days that the sign is in place and in operation, measured to the nearest day. When a sign is in operation for less than a day, such a period of time shall be considered to be a full day regardless of actual time in operation.

**Basis of Payment:** This work will be paid for at the Contract unit price per day for each "Changeable Message Sign", "Remote Control Changeable Message Sign", "Changeable Message Sign with Radar", or "Remote Control Changeable Message Sign with Radar" which price shall include placing, maintaining, relocating and removing the sign and its appurtenances and all material, labor, tools and equipment incidental thereto. Additionally, for the "Remote Control Changeable Message Sign", or "Remote Control Changeable Message Sign with Radar", the cellular telephone service and telephone charges shall be included.

<u>Pay Item</u>	<u>Pay Unit</u>
Remote Control Changeable Message Sign	Day

**ITEM #1216020A - 6" BLACK AGGREGATE COVER-UP RESIN  
PAVEMENT MARKINGS**

**ITEM #1216024A - BLACK AGGREGATE COVER-UP RESIN  
PAVEMENT MARKINGS, SYMBOLS AND LEGENDS**

**12.16.01—Description:** This item shall consist of furnishing and installing black aggregate cover-up resin pavement markings of the width specified to cover existing markings in accordance with this section and in conformance with the plans or as directed by the Engineer.

The black aggregate cover-up resin pavement markings shall be a highly durable, skid resistant, non-reflective material designed to cover existing pavement markings.

The black aggregate cover-up resin pavement marking material, when applied according to the recommendations of the manufacturer, shall provide a neat, durable masking that will not flow or distort. The black aggregate cover-up resin pavement marking material shall be weather resistant and, through normal traffic wear, shall show no wearing which would significantly impair the intended usage.

**12.16.02—Materials:** Materials for this work shall conform to the requirements of Article M.07.25.

**M.07.25—Black Cover-up Resin Pavement Markings:**

**Identification:** Each container shall have a label affixed to it with the following information thereon: name and address of manufacturer, shipping point, grade production batch number, date of manufacture, grade name and/or identification number, type of material, number of liters, contract number, use intended, directions for application, and formula. Improperly labeled samples and deliveries shall be rejected.

**Certification:** For each batch of black cover-up resin, a Certified Test Reports conforming to Article 1.06.07 shall be submitted from an independent testing laboratory and approved by the Engineer, prior to installation on the project.

**Detailed Requirements:**

(a) **Cover-up Resin Material:** The material shall be composed of resins and pigments only.

<b>(b) Composition:</b>	<u>Component</u>	<u>Percent by Weight (Mass)</u>
	Carbon Black (ASTM D 476 Type III)	7 ± 2
	Talc	14 ± 2
	Resins	79 ± 4

(c) **Black Aggregate:** The moisture resistant aggregate shall meet the gradation requirements as follows:

<u>Sieve Size</u>	<u>Percent Retained</u>
#20	23 - 38
#50	58 - 74
#270	1 - 6
Pan	0 - 0.5

The moisture resistant aggregate shall have a urethane coating. The aggregate shall be angular with no dry dispensement pigment allowed.

(d) **Adhesion:** The black resin pavement marking material shall be formulated so as to adhere to the pavement and existing pavement markings under climatic and traffic conditions normally encountered in the construction work zone.

(e) **Abrasion Resistance:** When the abrasion resistance of the material is tested according to ASTM D 4060 with a CS-17 wheel under a load of 1000 grams for 1000 cycles, the wear index shall be no greater than 82.

(f) **Hardness:** The Type D durometer hardness of the material shall not be less than 75 nor more than 90 when tested according to ASTM D 2240 after the material has cured for 72 hours at 73.5° F ± 3.5° F.

(g) **Compressive Strength:** The compressive strength of the material, when tested according to ASTM D 695, shall not be less than 12,000 psi after 72 hours cured at 73.5° F ± 3.5° F.

**12.16.03—Construction Methods:** The black aggregate cover-up resin pavement markings shall be applied strictly in accordance with the manufacturer's recommendations and installed as shown on the plans and to the control points as established by the Engineer.

The areas to be covered shall be dry and sufficiently cleaned of sand and debris so as to provide an acceptable bond. All surfaces which are power washed shall be allowed to dry sufficiently prior to the application of the black aggregate cover-up resin pavement markings. The areas that have been pre-marked shall be broom cleaned immediately prior to the application of the black aggregate cover-up resin pavement markings.

Operations shall be conducted only when the road surface temperatures are 32° F or greater. Operations shall be discontinued during periods of rain, and shall not continue until the Engineer determines that the pavement surface is dry enough to achieve adhesion. The cover-up resin pavement markings shall be applied uniformly to a prepared surface in a manner that ensures a wet film thickness (without black aggregate) of 20 mils +/- 1 mils.

Black aggregate shall be applied at a rate of 10 pounds per gallon of black aggregate pavement marking material. The black aggregate shall be applied using a double drop bead system, with each drop distributing 5 pounds per gallon of black aggregate pavement marking material.

The black aggregate cover-up resin pavement markings shall extend approximately 1 inch beyond the edges of the existing markings which are to be covered.

After application, the pavement markings shall be protected from crossing vehicles for a time at least equivalent to the drying time of the material, as specified by the manufacturer.

**Initial, In-Service Retro-Reflectivity and Serviceability for Cover-Up Long-Lines:** In order to be acceptable, the applied cover-up markings shall meet the following maximum retro-reflectivity and minimum serviceability readings, as measured by the Engineer using a LTL 2000 Retrometer with 30-meter geometry:

1. Initial Retro-reflectivity: shall measure up to a maximum of 20 milli-candelas per square meter per lux, or as otherwise approved by the Engineer, when tested within 14 days of installation.
2. In-service retro-reflectivity: shall measure up to a maximum of 30 milli-candelas per square meter per lux, or as otherwise approved by the Engineer when tested at anytime within one (1) year of installation.

The Contractor shall replace, at its own expense, such amount of cover-up resin pavement markings that fail the initial or in-service retro-reflectivity when, in the opinion of the Engineer, it is no longer effective for the intended use or do not meet the requirements, as specified herein.

**Serviceability:** shall retain a minimum of 95% linear feet. Determination of percentages of serviceability values will be made anytime within one (1) year by the Contractor's representative and by the Engineer. The decision of the Engineer shall be final. The term "percentage of serviceability" shall be defined as the percentage of the total linear feet for cover-up resin pavement markings measured on the project for payment.

The Contractor shall replace, at its own expense, such amount of markings, if any, required to meet the above stated percentage. The Engineer will indicate the areas and lines to be replaced to meet the above stated percentages.

Replacement under either situation shall include all materials, equipment, labor and work incidental thereto.

**Removal of Cover-up Resin Pavement Markings:** The cover-up resin pavement markings shall be removed by the Contractor by an appropriate mechanical means that ensures complete removal with minimal pavement scarring, to the satisfaction of the Engineer. Painting over existing pavement markings with black paint or spraying with asphalt shall not be accepted as a substitute for removal or obliteration of pavement markings.

**12.16.04—Method of Measurement:** Black aggregate cover-up resin pavement markings shall be measured for payment by the actual number of linear feet of black aggregate cover-up resin pavement markings acceptably installed on and removed from the pavement when it is no longer applicable or when its removal is directed by the Engineer.

**12.16.05—Basis of Payment:** This work shall be paid for at the contract unit price per linear foot for "Black Aggregate Cover-up Resin Pavement Markings" of the width specified, acceptably installed on and removed from the pavement. This price shall be for all the work required by this section including the cleaning and preparing of the pavement surface, installation and removal, and all materials, equipment, tools, and labor incidental thereto.

Any black aggregate cover-up resin pavement marking material which is not effective, in the opinion of the Engineer, shall be replaced by the Contractor at no cost to the State.

<u>Pay Item</u>	<u>Pay Unit</u>
6" Black Aggregate Cover-Up Resin Pavement Markings	l.f.
Black Aggregate Cover-Up Resin Pavement Markings, Symbols and Legends	s.f.



**ITEM #1806201A - TYPE D PORTABLE IMPACT ATTENUATION SYSTEM**

Type D portable impact attenuation systems shall be furnished and used in accordance with Section 18.06, supplemented as follows:

**Article 18.06.02 – Materials:** is amended as follows:

Change “Prior to using a new TMA,” to read “Prior to using a TMA,” in the first sentence.

Delete the second paragraph.

**Article 18.06.04 – Method of Measurement:** Change “Type D Portable Impact-Attenuation System” to read “Type D Portable Impact Attenuation System” in the first sentence.

## **PERMITS AND/OR REQUIRED PROVISIONS**

The following Permits and/or Required Provisions follow this page and are hereby made part of this Contract.

- **PERMITS AND/OR PERMIT APPLICATIONS**

No Permits are required for this contract

- **Construction Contracts - Required Contract Provisions (FHWA Funded Contracts)**

## **Construction Contracts - Required Contract Provisions (FHWA Funded Contracts)**

### **Index**

1. Federal Highway Administration (FHWA) Form 1273 (Revised May 1, 2012)
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3. Contractor Work Force Utilization (Federal Executive Order 11246) / Specific Equal Employment Opportunity
4. Requirements of Title 49, CFR , Part 26, Participation by DBEs
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18. Audit and Inspection of Plants, Places of Business and Records
19. Campaign Contribution Restriction
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**Index of Exhibits**

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- 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**

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.”

### **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](http://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

### ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

#### 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.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR  
APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL  
ACCESS ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

**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**

<b>Bridgeport – Stamford – Norwalk – Danbury</b>	<b>10.2%</b>
<b>6.9%</b>	

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	

<b>Hartford – Bristol – New Britain</b>	<b>6.9%</b>
<b>6.9%</b>	

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

<b>New Haven – Waterbury – Meriden</b>	<b>9.0%</b>
<b>6.9%</b>	

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		

<b>New London – Norwich</b>	<b>4.5%</b>
<b>6.9%</b>	

Bozrah	East Lyme	Griswold	Groton
Ledyard	Lisbon	Montville	New London
Norwich	Old Lyme	Old Saybrook	Preston
Sprague	Stonington	Waterford	

**Non SMSA****Female****Minority**

<b>Litchfield – Windham</b>			<b>5.9%</b>
<b>6.9%</b>			
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

December 2015

HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

## Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (*italicized words are defined on the reverse side of this page*).

### CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract or state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor or principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

### DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

### PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

**Civil penalties**—Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

**Criminal penalties**—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

### CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may 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](http://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: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

**Minimum Rates and Classifications  
for Heavy/Highway Construction**

ID#: H 23905

**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: Groton

FAP Number: 0349(002)

State Number: 58-332

Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

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**CLASSIFICATION**

**Hourly Rate**

**Benefits**

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01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. **\*\*See Laborers Group 5 and 7\*\***

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1) Boilermaker	33.79	34% + 8.96
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1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	33.48	30.21
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2) Carpenters, Piledrivermen	32.60	25.34
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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

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	46.95	20.15
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4a) Painters: Brush and Roller	32.02	20.15
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4b) Painters: Spray Only	35.02	20.15
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4c) Painters: Steel Only	34.02	20.15
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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

4d) Painters: Blast and Spray 35.02 20.15

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4e) Painters: Tanks, Tower and Swing 34.02 20.15

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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) 37.50 26.31+3% of gross wage

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6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection 35.47 33.39 + 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) 41.62 30.36

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---LABORERS----

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8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist 29.25 19.50

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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	29.50	19.50
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10) Group 3: Pipelayers	29.75	19.50
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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	29.75	19.50
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12) Group 5: Toxic waste removal (non-mechanical systems)	31.25	19.50
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13) Group 6: Blasters	31.00	19.50
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Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	30.25	19.50
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Group 8: Traffic control signalmen	16.00	19.50
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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

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.---

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13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	32.22	19.50 + a
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13b) Brakemen, Trackmen	31.28	19.50 + a
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---CLEANING, CONCRETE AND CAULKING TUNNEL---

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14) Concrete Workers, Form Movers, and Strippers	31.28	19.50 + a
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15) Form Erectors	31.60	19.50 + a
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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

---ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL  
IN FREE AIR:----

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16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	31.28	19.50 + a
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17) Laborers Topside, Cage Tenders, Bellman	31.17	19.50 + a
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18) Miners	32.22	19.50 + a
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---TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED  
AIR: ----

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18a) Blaster	38.53	19.50 + a
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19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	38.34	19.50 + a
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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	36.41	19.50 + a
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21) Mucking Machine Operator	39.11	19.50 + a
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---TRUCK DRIVERS---(\*see note below)

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Two axle trucks	29.13	22.32 + a
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Three axle trucks; two axle ready mix	29.23	22.32 + a
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Three axle ready mix	29.28	22.32 + a
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Four axle trucks, heavy duty trailer (up to 40 tons)	29.33	22.32 + a
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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

Four axle ready-mix	29.38	22.32 + a
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Heavy duty trailer (40 tons and over)	29.58	22.32 + a
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Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.38	22.32 + a
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---POWER EQUIPMENT OPERATORS---		
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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)	39.30	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)	38.98	24.05 + a
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Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	38.24	24.05 + a
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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	37.85	24.05 + a
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Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	37.26	24.05 + a
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Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	37.26	24.05 + a
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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	36.95	24.05 + a
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Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and Under Mandrel).	36.61	24.05 + a
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Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	36.21	24.05 + a
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Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	35.78	24.05 + a
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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc. 33.74 24.05 + a

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Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment. 33.74 24.05 + a

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Group 12: Wellpoint Operator. 33.68 24.05 + a

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Group 13: Compressor Battery Operator. 33.10 24.05 + a

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Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain). 31.96 24.05 + a

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Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator. 31.55 24.05 + a

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Group 16: Maintenance Engineer/Oiler 30.90 24.05 + a

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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	35.21	24.05 + a
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Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	32.79	24.05 + a
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\*\*NOTE: SEE BELOW

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---LINE CONSTRUCTION---(Railroad Construction and Maintenance)---

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20) Lineman, Cable Splicer, Technician	47.14	6.5% + 20.98
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21) Heavy Equipment Operator	42.43	6.5% + 18.84
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22) Equipment Operator, Tractor Trailer Driver, Material Men	40.07	6.5% + 18.27
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Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

23) Driver Groundmen 25.93 6.5% + 8.53

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23a) Truck Driver 35.36 6.5% + 16.88

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---LINE CONSTRUCTION---

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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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28) Material Men, Tractor Trailer Drivers, Equipment Operators

35.04

6.5% + 10.45

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*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](http://www.ct.gov/dol).*

*The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.*

*All subsequent annual adjustments will be posted on our Web Site for contractor access.*

*Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.*

**As of:**

Tuesday, August 08, 2017

Project: Reconstruction Of Route 349 NB And SB Over Amtrak Railroad

*Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage*

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

**~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).**

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

*As of:*

Tuesday, August 08, 2017

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 4<sup>th</sup>, 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.

*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.*

**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. RESILIENT 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.

- **CLEANING LABORER**

The clean up of any construction debris and the general cleaning, including sweeping, wash down, mopping, wiping of the construction facility, washing, polishing, dusting, etc., prior to the issuance of a certificate of occupancy falls under the *Labor classification*.

- **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/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 requires either a blended rate or 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 requires either a blended rate or equal composite workforce. Insulated metal and insulated composite panels are still installed by the Ironworker.

- **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. Past practice using the applicable licensed trades, Plumber, Sheet Metal, Sprinkler Fitter, and Electrician, is not inconsistent with the Insulator classification and would be permitted.

- **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), metal bridge handrail, and decorative security fence 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. (tear-off and/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, wall panel siding, 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. Insulated metal and insulated composite panels are still installed by the Iron Worker. 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.

- **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**

**Definitions:**

1) “Site of the work” (29 Code of Federal Regulations (CFR) 5.2(l)(b) is the physical place or places where the building or work called for in the contract will remain and any other site where a significant portion of the building or work is constructed, provided that such site is established specifically for the performance of the contract or project;

(a) Except as provided in paragraph (l) (3) of this section, job headquarters, tool yards, batch plants, borrow pits, etc. are part of the “site of the work”; provided they are dedicated exclusively, or nearly so, to the performance of the contract or project, and provided they are adjacent to “the site of work” as defined in paragraph (e)(1) of this section;

(b) Not included in the “site of the work” are permanent home offices, branch plant establishments, fabrication plants, tool yards etc, of a contractor or subcontractor whose location and continuance in operation are determined wholly without regard to a particular State or political subdivision contract or uncertain and indefinite periods of time involved of a few seconds or minutes duration and where the failure to count such time is due to consideration justified by industrial realities (29 CFR 785.47)

2) “Engaged to wait” is waiting time that belongs to and is controlled by the employer which is an integral part of the job and is therefore compensable as hours worked. (29 CFR 785.15)

3) “Waiting to be engaged” is waiting time that an employee can use effectively for their own purpose and is not compensable as hours worked. (29 CFR 785.16)

4) “De Minimus” is a rule that recognizes that unsubstantial or insignificant periods of time which cannot as a practical administrative matter be precisely recorded for payroll purposes, may be disregarded. This rule applies only where there are uncertain and indefinite periods of time involved of a short duration and where the failure to count such time is due to consideration justified by worksite realities. For example, with respect to truck drivers on prevailing wage sites, this is typically less than 15 minutes at a time.

**Coverage of Truck Drivers on State or Political subdivision Prevailing Wage Projects**

**Truck drivers are covered for payroll purposes under the following conditions:**

- Truck Drivers for time spent working on the site of the work.
- Truck Drivers for time spent loading and/or unloading materials and supplies on the site of the work, if such time is not de minimus

- Truck drivers transporting materials or supplies between a facility that is deemed part of the site of the work and the actual construction site.
- Truck drivers transporting portions of the building or work between a site established specifically for the performance of the contract or project where a significant portion of such building or work is constructed and the physical places where the building or work outlined in the contract will remain.

*For example: Truck drivers delivering asphalt are covered under prevailing wage while “engaged to wait” on the site and when directly involved in the paving operation, provided the total time is not “de minimus”*

**Truck Drivers are not covered in the following instances:**

- Material delivery truck drivers while off “the site of the work”
- Truck Drivers traveling between a prevailing wage job and a commercial supply facility while they are off the “site of the work”
- Truck drivers whose time spent on the “site of the work” is de minimus, such as under 15 minutes at a time, merely to drop off materials or supplies, including asphalt.

*These guidelines are similar to U.S. Labor Department policies. The application of these guidelines may be subject to review based on factual considerations on a case by case basis.*

**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](http://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](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