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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CONTRACT TIME AND LIQUIDATED DAMAGES

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

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

1. For this contract, an assessment per day for liquidated damages, at a rate of Two Thousand Five Hundred Dollars per day shall be applied to each calendar day the work runs in excess of the One Hundred Seventy Six (176) allowed calendar days for the contract.

2. For this contract, an assessment per hour for liquidated damages shall be applied to each hour, or any portion thereof, in which the Contractor interferes with normal traffic operations during the restricted hours given in Article 1.08.04 of the Special
Provisions. The liquidated damages shall be as shown in the following tables entitled “Liquidated Damages Per Hour” for each hour, or any portion thereof, in which the Contractor interferes with normal traffic operations during the restricted hours.

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

A. Any portion of the travel lanes or shoulders is occupied by any personnel, equipment, materials, or supplies including signs.

B. The transition between the planes of pavement surfaces is at a rate of one inch in less than fifteen feet longitudinally.

3. For this contract, an assessment per day for liquidated damages, at a rate of Two Thousand Dollars ($2,000) for each day or any portion thereof shall be applied if the Contractor fails to achieve Milestone 1, as determined by the Engineer, up to a maximum amount of Ninety Two Thousand Dollars ($92,000).

The contractor shall refer to the “Notice to Contractor - Milestone Liquidated Damages Provisions” special provision for terms and conditions.
# LIQUIDATED DAMAGES PER HOUR

## PROJECT 130-180

### Route I-84 EASTBOUND

<table>
<thead>
<tr>
<th>If Working Period Results in Additional Number of Lanes Closed</th>
<th>AM Additional 1 Lane Closure</th>
<th>PM Additional 1 Lane Closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Hour of Restriction Violation</td>
<td>$ 500</td>
<td>$ 500</td>
</tr>
<tr>
<td>2nd Hour of Restriction Violation</td>
<td>$ 500</td>
<td>$ 500</td>
</tr>
<tr>
<td>3rd Hour or any Subsequent Hour of Restriction Violation</td>
<td>$ 4,000</td>
<td>$ 4,000</td>
</tr>
</tbody>
</table>

### Route I-84 WESTBOUND

<table>
<thead>
<tr>
<th>If Working Period Results in Additional Number of Lanes Closed</th>
<th>AM Additional 1 Lane Closure</th>
<th>PM Additional 1 Lane Closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Hour of Restriction Violation</td>
<td>$ 10,000</td>
<td>$ 10,000</td>
</tr>
<tr>
<td>2nd Hour of Restriction Violation</td>
<td>$ 40,000</td>
<td>$ 40,000</td>
</tr>
<tr>
<td>3rd Hour or any Subsequent Hour of Restriction Violation</td>
<td>$ 50,000</td>
<td>$ 50,000</td>
</tr>
</tbody>
</table>

The above liquidated damages apply to those hours shown on the Limitation of Operations charts designated with a “0”, “S”, “1”, or “2”.

“S” = Shoulders are allowed to be closed = all available travel lanes, including exit only lanes, climbing lanes, and gore areas shall be open to traffic during this time period.

The above liquidated damages shall be applied when the actual number of lanes closed exceeds the number of lanes allowed to be closed, as dictated in the Limitation of Operations Chart.

If all available shoulder widths or gore areas are not available to traffic for each hour designated with a “0” on the Limitation of Operations Charts, then liquidated damages of $500 shall apply for each hour, or part thereof.
NOTICE TO CONTRACTOR - MILESTONE LIQUIDATED DAMAGES PROVISIONS

In order to minimize the hazard, cost and inconvenience to the traveling public, and the detriment to the commercial area, it is necessary to limit the time of construction work which interferes with traffic along I-84 as specified in Article 1.08.04 of the Special Provisions.

The Contractor must complete top of deck work as described below in Milestone 1 by October 15th of the year construction has commenced.

The Contractor is responsible for developing his own phasing plan for the Engineer's approval for the Project work.

Although the Contractor is responsible for developing his own phasing plan, the Contractor shall comply with the construction milestones and required completion date described below. Failure to complete this work within the specified timeframes will result in the assessment of Liquidated Damages, as described below.

Achieving Milestone 1 requires that all of the following tasks, associated with the Top of Deck Work, have been completed and approved in writing by the Engineer by 11:59 p.m. on October 15th of the year construction has commenced.

- Removal of bridge deck overlay.
- Milling of the approach pavement.
- All concrete deck repairs being performed from the top of the deck have been completed.
- Membrane waterproofing has been applied and cured.
- All courses of the bituminous pavement have been placed and compacted over the bridge and at the approaches.
- Asphaltic plug joint systems have been installed within the deck and parapets.
NOTICE TO CONTRACTOR - TOP OF DECK WORK

The Contractor must schedule the commencement of top of deck work along Interstate 84 on Bridge Nos. 01155 and 01156 as one of his first operations and is required to complete all top of deck by October 15, 2018. This work includes but is not limited to: removal of bridge deck overlay, milling of the approach pavement, concrete deck repairs, installation of waterproofing membrane, paving of the bituminous overlay on the bridge deck and approaches, and installation of deck and parapet joints. Multiple crews working concurrently on each bridge may be required in order to complete all work in accordance with the specified contract time, and the Contractor’s bid shall be formulated accordingly.
NOTICE TO CONTRACTOR - PRE-BID QUESTIONS AND ANSWERS

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

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

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

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

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

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

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

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 - SITE NUMBER DESIGNATIONS

For the purposes of this contract, the following site designations shall apply:

**Site No. 1:** Bridge No. 01155 – Interstate 84 Eastbound over Route 6, Route 67, and brook

**Site No. 2:** Bridge No. 01156 – Interstate 84 Westbound over Route 6, Route 67, and brook
# NOTICE TO CONTRACTOR - PROPRIETARY ITEMS

The Contractor is hereby notified that the following items shall be furnished by the specific manufacturer:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Description</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>0603726A</td>
<td>Embedded Galvanic Anodes</td>
<td>Vector Corrosion Technologies, Inc.</td>
</tr>
</tbody>
</table>
NOTICE TO CONTRACTOR - REVISED SECTION 4.06 – BITUMINOUS CONCRETE

This Project incorporates a revised version of Section 4.06 – Bituminous Concrete, with changes relating to oscillatory rollers, and a revision date of 8/29/2017. For this Project two oscillatory rollers with a minimum weight of eight tons will be required for compaction of bituminous concrete pavement on all bridges.
NOTICE TO CONTRACTOR - USE OF STATE POLICE OFFICERS

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

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

The attached project specific utility work schedules were provided to the Connecticut Department of Transportation (Department) by the utility companies regarding their identified work on this project.

The utility scheduling information is provided to assist the Contractor in scheduling its activities. However, the Department does not ensure the accuracy and Section 1.05.06 of the Standard Specifications still is in force.

The utility scheduling information shall be incorporated into the Contractor’s pre-award schedule in accordance with the Department’s Bidding and Award Manual and Section 1.05.08 of the Contract.

After award, the Contractor shall conduct a utility coordination meeting or meetings to obtain contemporaneous scheduling information from the utilities prior to submitting its baseline schedule to the Department in accordance with Section (insert 1.05.08 or Project Coordinator here) of the Contract.

The Contractor shall incorporate the contemporaneous utility scheduling information into its baseline schedule submittal. The baseline schedule shall include Contractor predecessor and successor activities to the utility work in such detail as acceptable to the Engineer.
# Utility Work Schedule

## CTDOT Project Number:
130-180

## Utility Company:
Eversource Energy (Electric)

## Prepared By:
Rob Mercurio

## Total Working Days:
30

## Schedule

The following schedule identifies each major activity of utility work in sequential order to be performed by the utility or its contractor. The location of each activity of work is identified by the baseline stationing on the CTDOT plans. All activities identify the predecessor activity which must be completed before a utility work activity may progress. The duration provided is the number of working days required to complete the utility work activity based on historical information and production rates.

<table>
<thead>
<tr>
<th>Location (Station to Station)</th>
<th>Description of Utility Work Activity</th>
<th>Predecessor Activity</th>
<th>Duration (working days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
<td>Order Material / bid work / schedule work</td>
<td>Formal notification from DOT to Eversource to proceed with plan.</td>
<td>15</td>
</tr>
<tr>
<td>Project</td>
<td>Set pushbrace</td>
<td>Order Material / bid work / schedule work</td>
<td>5</td>
</tr>
<tr>
<td>Project</td>
<td>contractor to repair parking area</td>
<td>set Push brace</td>
<td>5</td>
</tr>
<tr>
<td>Project</td>
<td>remove exiting anchors</td>
<td>set Push brace / Frontier to remove their guy</td>
<td>5</td>
</tr>
</tbody>
</table>
## Utility Work Schedule

**CTDOT Project Number:** 130-180  
**Utility Company:** Eversource Energy (Electric) Temp support  
**Prepared By:** Rob Mercurio  
**Total Working Days:** 30

### Schedule

The following schedule identifies each major activity of utility work in sequential order to be performed by the utility or its contractor. The location of each activity of work is identified by the baseline stationing on the CTDOT plans. All activities identify the predecessor activity which must be completed before a utility work activity may progress. The duration provided is the number of working days required to complete the utility work activity based on historical information and production rates.

<table>
<thead>
<tr>
<th>Location (Station to Station)</th>
<th>Description of Utility Work Activity</th>
<th>Predecessor Activity</th>
<th>Duration (working days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>project</td>
<td>Order Material / bid work / schedule work</td>
<td>Formal notification from DOT to Eversource to proceed with plan.</td>
<td>15</td>
</tr>
<tr>
<td>project</td>
<td>install anchor and guying for Pole 3008</td>
<td>Order Material / bid work / schedule work</td>
<td>5</td>
</tr>
<tr>
<td>project</td>
<td>remove push brace / contractor to repair hole in lot</td>
<td>install anchor and guying for Pole 3008</td>
<td>10</td>
</tr>
<tr>
<td>CTDOT Project Number:</td>
<td>130-180</td>
<td>Town:</td>
<td>Southbury</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------</td>
<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>Project Description:</td>
<td>retaining wall replacement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTDOT Utilities Engineer:</td>
<td>Kimery Narvais</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone:</td>
<td>860-290-4100</td>
<td>Email:</td>
<td><a href="mailto:knervais@cmengineering.com">knervais@cmengineering.com</a></td>
</tr>
<tr>
<td>Utility Company:</td>
<td>Frontier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepared By:</td>
<td>Gary Swanson</td>
<td>Date Prepared:</td>
<td>12/19/2017</td>
</tr>
<tr>
<td>Phone:</td>
<td>203-575-6112</td>
<td>Email:</td>
<td><a href="mailto:gary.k.swanson@ftr.com">gary.k.swanson@ftr.com</a></td>
</tr>
</tbody>
</table>

**Scope of Work**

The following is a description of all utility work planned to be completed in conjunction with the CTDOT project. The narrative describes all work to be carried out by the utility or its contractor, including temporary and permanent work required by the project as well as any additional utility infrastructure work the utility intends on performing within the project limits during the construction of the project.

Eversource pole no# on RT 6 (Main St N) guying is in the way of construction. ES will replace guying with a push brace for the duration of the construction. After completion the push brace will be removed and guying will be replaced.

**Special Considerations and Constraints**

The following describes the limiting factors that must be planned for in the scheduling and performance of the utility work. For example, restrictions on cut-over, outages, limitations on customer service interruptions (e.g. nights, weekends, holidays), seasonal and environmental shutdown periods, long lead material procurements, etc.
# Utility Work Schedule

**CTDOT Project Number:** 130-180  
**Utility Company:** Frontier  
**Prepared By:** Gary Swanson  
**Total Working Days:** 2

## Schedule

The following schedule identifies each major activity of utility work in sequential order to be performed by the utility or its contractor. The location of each activity of work is identified by the baseline stationing on the CTDOT plans. All activities identify the predecessor activity which must be completed before a utility work activity may progress. The duration provided is the number of working days required to complete the utility work activity based on historical information and production rates.

<table>
<thead>
<tr>
<th>Location (Station to Station)</th>
<th>Description of Utility Work Activity</th>
<th>Predecessor Activity</th>
<th>Duration (working days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT 6</td>
<td>Remove down guy</td>
<td>Placing push brace</td>
<td>1</td>
</tr>
<tr>
<td>RT 6</td>
<td>Replace down guy</td>
<td>After construction is complete and anchor is set by ES.</td>
<td>1</td>
</tr>
</tbody>
</table>

---
NOTICE TO CONTRACTOR - TEST PIT

The Contractor is hereby notified that test pitting will be required during construction in order to assess potential utility conflicts during work associated with the retaining wall modification. See Sheet 03.06 of the Contract Plans for more information.
NOTICE TO CONTRACTOR - CAS CERTIFICATION FOR ABRASIVE BLAST CLEANING AND COATING WORK

This Contract requires abrasive blast cleaning and coating work be done with at least one (1) Coating Application Specialist per four (4) craft-workers. Coating Application Specialist (CAS) certification is available through the Society for Protective Coatings (SSPC). The CAS program is based on the requirements of SSPC ACS-1/NACE 13, a standard published jointly in 2008 by SSPC and NACE International (National Association of Corrosion Engineers). ACS-1 defines training and experience requirements that tradespersons must have in order to qualify to be assessed for certification. CAS QP-1 implementation requires that the CAS Level II certified applicator be on the job during abrasive blast cleaning and painting operations.

The firm proposed to perform abrasive field blast cleaning and coating on this Project must meet the requirements outlined in the special provisions under “Contractor - Subcontractor Qualifications.”

When applicable, the shop painting firm proposed to perform abrasive blast cleaning and shop painting on this Project must meet the requirements outlined in the special provisions under “Qualifications of Shop Painting Firm.”
NOTICE TO CONTRACTOR - HAZARDOUS MATERIALS INVESTIGATIONS

Limited hazardous materials site investigations have been conducted at Bridge Nos. 01155 & 01156, I-84 over Route 6/67 in Southbury, Connecticut. The scope of inspections were limited to the representative components projected for impact.

Results of the survey identified lead paint to be present on the structural steel/metal bridge components of Bridge Nos. 01155 & 01156.

Results obtained from TCLP waste stream sampling and analysis for leachable lead from the paint on the structural steel/metal bridge components characterized the paint waste streams at Bridge Nos. 01155 & 01156 as CTDEEP/RCRA hazardous 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.

Dark grey flexible sealant caulking, black brittle caulking below guard rail supports, thick grey expansion joint caulking and black sticky asphalt roadway expansion joints at the two bridges were sampled and found to contain no detectable levels of asbestos.

No bird/pigeon guano accumulations were observed in accessible areas of Bridge Nos. 01155 & 01156.

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. 0020905A – Lead Compliance for Abrasive Blast Cleaning & Miscellaneous Tasks
• Item No. 0603222A – Disposal of Lead Debris from Abrasive Blast Cleaning

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.

SECTION 1.02 - PROPOSAL REQUIREMENTS AND CONDITIONS

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

Replace the third sentence of the last paragraph with:

The Department cannot ensure a response to inquiries received later than ten (10) days prior to the original scheduled opening of the related bid.
SECTION 1.03 - AWARD AND EXECUTION OF CONTRACT

Article 1.03.02 - Award and Execution of Contract:

After the second sentence of the only paragraph add the following:

The successful bidder is hereby notified of the Department’s intent to award this contract within 60 days of the bid opening.

Article 1.03.08 - Notice to Proceed and Commencement of Work:

Change the first paragraph to read as follows:

The Contractor shall commence and proceed with the Contract work on the date specified in a written Notice to Proceed issued by the Engineer to the Contractor. The date specified will be no later than 45 calendar days after the date of the execution of the Contract by the Department, however, the contractor is hereby put on notice that it is the Department’s intent to issue the Notice to Proceed no later than 30 calendar days after the date of the execution of the Contract by the Department.
SECTION 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES

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.”
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 I-84**

On the following State observed Legal Holidays:
New Year's Day
Good Friday, Easter*
Memorial Day
Independence Day
Labor Day
Thanksgiving Day**
Christmas Day

The following restrictions also apply:

On the day before and the day after any of the above Legal Holidays.

On the Friday, Saturday, and Sunday immediately preceding any of the above Holidays celebrated on a Monday.

On the Saturday, Sunday, and Monday immediately following any of the above Holidays celebrated on a Friday.

* From 6:00 a.m. the Thursday before the Holiday to 8:00 p.m. the Monday after the Holiday.

** From 6:00 a.m. the Wednesday before the Holiday to 8:00 p.m. the Monday after the Holiday.

During all other times
The Contractor shall maintain and protect traffic as shown on the accompanying "Limitation of Operations" charts, which dictate the minimum number of lanes that must remain open for each day of the week.

**All Other Roadways**

The contractor shall maintain existing traffic operations on:

Monday through Friday between 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m.
### Limitation of Operations Chart

#### Maximum Number of Lanes Allowed to be Closed

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On Holidays and within Holiday Periods, all Hours shall be ‘0.’

“0” = No lanes are allowed to be closed = all available travel lanes, including exit only lanes, climbing lanes, gore areas, and all available shoulder widths shall be open to traffic during this time period.

“S” = Shoulders are allowed to be closed = all available travel lanes, including exit only lanes, climbing lanes, and gore areas shall be open to traffic during this time period.

“1” = One lane closure is allowed. Adjacent shoulder(s) and/or gore areas can also be closed as necessary.
Additional Lane Closure Restrictions

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

The Contractor will not be allowed to perform any work that will interfere with traffic operations on a roadway when traffic operations are being restricted on that same roadway, unless there is at least a one mile clear area length where the entire roadway is open to traffic or the closures have been coordinated and are acceptable to the Engineer. The one mile clear area length shall be measured from the end of the first work area to the beginning of the signing pattern for the next work area.
SECTION 4.06 - BITUMINOUS CONCRETE
Section 4.06 is being deleted in its entirety and replaced with the following:

4.06.01—Description
4.06.02—Materials
4.06.03—Construction Methods
4.06.04—Method of Measurement
4.06.05—Basis of Payment

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

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

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

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

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

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

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

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

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

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

Lift: An application of a bituminous concrete mixture placed and compacted to a specified thickness in a single paver pass.
Percent Within Limits (PWL): The percentage of the lot falling between the Upper Specification Limit (USL) and the Lower Specification Limit (LSL).

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

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

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

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

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

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

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

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

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

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

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

4.06.03—Construction Methods:

1. Material Documentation: All vendors producing bituminous concrete must have Plants with automated vehicle-weighing scales, storage scales, and material feeds capable of producing a delivery ticket containing the information below.
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 shall operate in the dynamic mode using the oscillatory system on all structures such as bridges and catch basins at the lowest frequency setting. A minimum of two oscillatory rollers weighing a minimum of eight tons shall be used for compaction on all structures.

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>
<thead>
<tr>
<th>TABLE 4.06-1: Minimum Paver Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 4.06-2: Minimum Roller Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

*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>
<thead>
<tr>
<th>TABLE 4.06-3: Thickness Tolerances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixture Designation</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>S1</td>
</tr>
<tr>
<td>S0.25, S0.375, S0.5</td>
</tr>
</tbody>
</table>

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 ½) 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. The Contractor shall operate rollers using an 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 ¼ inch from a Contractor-supplied 10 foot straightedge. For all other lifts, the tolerance shall be ¾ 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 1½ 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 1½ 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 ¼ inch in any location.
**Method I - Notched Wedge Joint:**

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

The 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.”

**FIGURE 4.06-1: Notched Wedge Joint**

**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.

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)

<table>
<thead>
<tr>
<th>Length of Each Structure (Feet)</th>
<th>No. of Mat Cores</th>
<th>No. of Joint Cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 500’</td>
<td>See Table 4.06-5(A or B)</td>
<td>See Table 4.06-5(A or B)</td>
</tr>
<tr>
<td>501’ – 1500’</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1501’ – 2500’</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2501’ and greater</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

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) ≥ 500 Tons

<table>
<thead>
<tr>
<th>Lot Type</th>
<th>No. of Mat Cores</th>
<th>No. of Joint Cores</th>
<th>Target Lot Size (Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Lot / Without Bridge (s)</td>
<td>4</td>
<td>4</td>
<td>2000</td>
</tr>
<tr>
<td>Combo Lot / Lot With Bridge(s)(^{(1)})</td>
<td>4 plus 1 per structure (≤ 300’)</td>
<td>4 plus 1 per structure (≤ 300’)</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>2 per structure (301’ – 500’)</td>
<td>2 per structure (301’ – 500’)</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Lot Type</th>
<th>No. of Mat Cores</th>
<th>No. of Joint Cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Lot / Without Bridge (s)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Combo Lot / Lot With Bridge(s)(^{(1)})</td>
<td>2 plus 1 per structure</td>
<td>2 plus 1 per structure</td>
</tr>
</tbody>
</table>

Note:
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).

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.
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 ¼ inch above the finished pavement.

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

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

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

Density Acceptance: The Engineer will perform all acceptance testing in accordance with AASHTO T 331. The density of each core will be determined using the daily production’s average maximum theoretical specific gravity (Gmm) established during the testing of the parent material at the Plant. When there was no testing of the parent material or any Gmm exceeds the specified tolerances in the Department’s current QA Program for Materials, the Engineer will determine the maximum theoretical density value to be used for density calculations.
12. Density Dispute Resolution Process: The Contractor and Engineer will work in partnership to avoid potential conflicts and to resolve any differences that may arise during quality control or acceptance testing for density. Both parties will review their sampling and testing procedures and results and share their findings. If the Contractor disputes the Engineer’s test results, the Contractor must submit in writing a request to initiate the Dispute Resolution Process within 7 calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results within the timeframe described in sub-article 4.06.03-9 supporting its position. No request for Dispute Resolution will be allowed for a Density Lot in which any core was not taken within the required 5 calendar days of placement. Should the dispute not be resolved through evaluation of existing testing data or procedures, the Engineer may authorize the Contractor to obtain a new set of core samples per disputed lot. The core samples must be extracted no later than 14 calendar days from the date of Engineer’s authorization.

The number and location (mat, joint, or structure) of the cores taken for dispute resolution must reflect the number and location of the original cores. The location of each core shall be randomly located within the respective original sub lot. All such cores shall be extracted and the core hole filled using the procedure outlined in Article 4.06.03. The dispute resolution results shall be added to the original results and averaged for determining the final in-place density value.

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

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

b) Any corrective courses placed as the final wearing surface shall match the specified lift thickness after compaction.

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

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

4.06.04—Method of Measurement:

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

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

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

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

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

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

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

       Where: L = Length (ft)
              (t) = Actual thickness (inches)
       W_{adj} = (Designed width (ft) + tolerance /12) - Measured Width

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

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

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

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

   Tons Adjusted for Weight (T_W) = GVW – DGW= (-) Tons
Where: DGW = Delivered gross weight as shown on the delivery ticket or measured on a certified scale.

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

i. Non-PWL Production Lot (less than 3500 tons):
The adjustment values in Table 4.06-6 and 4.06-7 shall be calculated for each sub lot based on the Air Void (AV) and Asphalt Binder Content (PB) test results for that sub lot. The total adjustment for each day’s production (lot) will be computed using tables and the following formulas:

\[
\text{Tons Adjusted for Superpave Design (T}_{\text{SD}}) = \left[ \frac{(\text{AdjAV}_{\text{t}} + \text{AdjPB}_{\text{t}})}{100} \right] \times \text{Tons}
\]

\[
\text{Percent Adjustment for Air Voids} = \text{AdjAV}_{\text{t}} = \frac{\left[ \text{AdjAV}_{\text{1}} + \text{AdjAV}_{\text{2}} + \text{AdjAV}_{\text{i}} + \ldots + \text{AdjAV}_{\text{n}} \right]}{\text{n}}
\]

\[
\text{Percent Adjustment for Asphalt Binder} = \text{AdjPB}_{\text{t}} = \frac{\left[ \text{AdjPB}_{\text{1}} + \text{AdjPB}_{\text{2}} + \text{AdjPB}_{\text{i}} + \ldots + \text{AdjPB}_{\text{n}} \right]}{\text{n}}
\]

Where:
\(\text{AdjAV}_{\text{t}} = \text{Total percent air void adjustment value for the lot}\)
\(\text{AdjAV}_{\text{i}} = \text{Adjustment value from Table 4.06-7 resulting from each sub lot or the average of the adjustment values resulting from multiple tests within a sub lot, as approved by the Engineer.}\)
\(\text{n} = \text{number of sub lots based on Table M.04.03-2}\)

### TABLE 4.06-6: Adjustment Values for Air Voids

<table>
<thead>
<tr>
<th>Adjustment Value (AdjAVi) (%)</th>
<th>S0.25, S0.375, S0.5, S1 Air Voids (AV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+2.5</td>
<td>3.8 - 4.2</td>
</tr>
<tr>
<td>+3.125*(AV-3)</td>
<td>3.0 - 3.7</td>
</tr>
<tr>
<td>-3.125*(AV-5)</td>
<td>4.3 – 5.0</td>
</tr>
<tr>
<td>20*(AV-3)</td>
<td>2.3 – 2.9</td>
</tr>
<tr>
<td>-20*(AV-5)</td>
<td>5.1 – 5.7</td>
</tr>
<tr>
<td>-20.0</td>
<td>(\leq 2.2) or (\geq 5.8)</td>
</tr>
</tbody>
</table>

### TABLE 4.06-7: Adjustment Values for Binder Content

<table>
<thead>
<tr>
<th>Adjustment Value (AdjAVi) (%)</th>
<th>S0.25, S0.375, S0.5, S1 Pb</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>JMF Pb ± 0.3</td>
</tr>
</tbody>
</table>
### 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%: \( \text{Adj}(\text{AV}_t \text{ or PB}_t \text{ or VMA}_t) = (55 + 0.5 \text{ PWL}) - 100 \)
For PWL at and above 90%: \( \text{Adj}(\text{AV}_t \text{ or PB}_t \text{ or VMA}_t) = (77.5 + 0.25 \text{ PWL}) - 100 \)

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:

\[
\text{Tons Adjusted for Superpave Design (T}_{SD}) = \left[ \frac{(0.5 \text{AdjAV}_t + 0.25 \text{AdjPB}_t + 0.25 \text{AdjVMA}_t)}{100} \right] \times \text{Tons}
\]

### 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

<table>
<thead>
<tr>
<th>Value</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10.0</td>
<td>( \leq \text{JMF Pb} - 0.4 ) or ( \geq \text{JMF Pb} + 0.4 )</td>
</tr>
</tbody>
</table>
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.

\[
\text{Tons Adjusted for Density } (T_D) = \left[ \left( \frac{P_{AM} \times 0.50 + P_{AJ} \times 0.50}{100} \right) \right] \times \text{Density Lot Tons}
\]

Where: 
- \( T_D \) = Total tons adjusted for density for each lot
- \( P_{AM} = \) Mat density percent adjustment from Table 4.06-9
- \( P_{AJ} = \) Joint density percent adjustment from Table 4.06-10

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

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

**TABLE 4.06-10: Adjustment Values for Pavement Joint Density**

<table>
<thead>
<tr>
<th>Average Core Result Percent Joint Density</th>
<th>Percent Adjustment (Bridge and Non-Bridge) (^{(1)})((^{(2)}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>97.1 – 100</td>
<td>-1.667*(ACRPD-98.5)</td>
</tr>
</tbody>
</table>
### GENERAL

<table>
<thead>
<tr>
<th>Percent Range</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>93.5 – 97.0</td>
<td>+2.5</td>
</tr>
<tr>
<td>92.0 – 93.4</td>
<td>+1.667*(ACRPD-92)</td>
</tr>
<tr>
<td>91.0 – 91.9</td>
<td>0</td>
</tr>
<tr>
<td>89.0 – 90.9</td>
<td>-7.5*(91-ACRPD)</td>
</tr>
<tr>
<td>88.0 – 88.9</td>
<td>-15*(90-ACRPD)</td>
</tr>
<tr>
<td>87.0 – 87.9</td>
<td>-30</td>
</tr>
<tr>
<td>86.9 or less</td>
<td>Remove and Replace (curb to curb)</td>
</tr>
</tbody>
</table>

(1) ACRPD = Average Core Result Percent Density  
(2) All Percent Adjustments to be rounded to the second decimal place. For example, 1.667 is to be rounded to 1.67.

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

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

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

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

   a. Container Method- Material furnished in a container will be measured to the nearest \( \frac{1}{2} \) gallon. The volume will be determined by either measuring the volume in the original container by a method approved by the Engineer or using a separate graduated container capable of measuring the volume to the nearest \( \frac{1}{2} \) gallon. The container in which the material is furnished must include the description of material, including lot number or batch number and manufacturer or product source.

   b. Vehicle Method-  
      i. Measured by Weight: The number of gallons furnished will be determined by weighing the material on calibrated scales furnished by the Contractor. To convert weight to gallons, one of the following formulas will be used:
Tack Coat (gallons at 60°F) = \[
\frac{\text{Measured Weight (pounds)}}{\text{Weight per gallon at 60°F}}
\]

Tack Coat (gallons at 60°F) = \[
0.986 \times \frac{\text{Measured Weight (pounds)}}{\text{Weight per gallon at 77°F}}
\]

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

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

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: \[T_T + T_A + T_W + T_{SD}\] x Unit Price = 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
\(T_\ast = \text{Total tons of each adjustment calculated in Article 4.06.04}\)

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".

<table>
<thead>
<tr>
<th>Pay Item*</th>
<th>Pay Unit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMA S*</td>
<td>ton</td>
</tr>
<tr>
<td>PMA S*</td>
<td>ton</td>
</tr>
<tr>
<td>Bituminous Concrete Adjustment Cost</td>
<td>est.</td>
</tr>
<tr>
<td>Material for Tack Coat</td>
<td>gal.</td>
</tr>
<tr>
<td>Material Transfer Vehicle</td>
<td>ton</td>
</tr>
</tbody>
</table>

*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 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](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-lH 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-lH 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:

<table>
<thead>
<tr>
<th>CRCG Grading Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Size</td>
</tr>
<tr>
<td>3/8-inch</td>
</tr>
<tr>
<td>No. 4</td>
</tr>
<tr>
<td>No. 200</td>
</tr>
</tbody>
</table>

   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.

<table>
<thead>
<tr>
<th>Type of silo cylinder</th>
<th>Maximum storage time for all classes (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HMA</td>
</tr>
<tr>
<td>Open Surge</td>
<td>4</td>
</tr>
<tr>
<td>Unheated – Non-insulated</td>
<td>8</td>
</tr>
<tr>
<td>Unheated – Insulated</td>
<td>18</td>
</tr>
<tr>
<td>Heated – No inert gas</td>
<td>TBD by the Engineer</td>
</tr>
</tbody>
</table>

*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](https://ctmail.ct.gov). This equipment shall be maintained in working order at all times and be made available for use by the Engineer.

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

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

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

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

1. **Curb Mix:**

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

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

| Notes: | (a) Compaction Parameter 50gyration $N_{50}$. (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 | 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" | | |
| 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

**Notes:** (1) For all mixtures using a WMA technology, the mix temperature shall meet PG binder and WMA manufacturer’s recommendations.

<table>
<thead>
<tr>
<th>Sieve</th>
<th>S0.25 CONTROL POINTS</th>
<th>S0.375 CONTROL POINTS</th>
<th>S0.5 CONTROL POINTS</th>
<th>S1 CONTROL POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>Min (%)</td>
<td>Max (%)</td>
<td>Min (%)</td>
<td>Max (%)</td>
</tr>
<tr>
<td>2.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3/4</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>1/2</td>
<td>100</td>
<td>-</td>
<td>100</td>
<td>-</td>
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<td>3/8</td>
<td>97</td>
<td>100</td>
<td>90</td>
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</tr>
<tr>
<td>#4</td>
<td>75</td>
<td>90</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>#8</td>
<td>32</td>
<td>67</td>
<td>32</td>
<td>67</td>
</tr>
<tr>
<td>#16</td>
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<td>-</td>
</tr>
<tr>
<td>#200</td>
<td>2.0</td>
<td>10.0</td>
<td>2.0</td>
<td>10.0</td>
</tr>
<tr>
<td>VMA (%)</td>
<td>16.5 ± 1</td>
<td>16.0 ± 1</td>
<td>15.0 ± 1</td>
<td>13.0 ± 1</td>
</tr>
<tr>
<td>VA (%)</td>
<td>4.0 ± 1</td>
<td>4.0 ± 1</td>
<td>4.0 ± 1</td>
<td>4.0 ± 1</td>
</tr>
<tr>
<td>Gse</td>
<td>JMF ± 0.030</td>
<td>JMF ± 0.030</td>
<td>JMF ± 0.030</td>
<td>JMF ± 0.030</td>
</tr>
<tr>
<td>Gmm</td>
<td>JMF ± 0.030</td>
<td>JMF ± 0.030</td>
<td>JMF ± 0.030</td>
<td>JMF ± 0.030</td>
</tr>
<tr>
<td>Dust / binder</td>
<td>0.6 – 1.2</td>
<td>0.6 – 1.2</td>
<td>0.6 – 1.2</td>
<td>0.6 – 1.2</td>
</tr>
<tr>
<td>Mix Temp (1)</td>
<td>265 – 325°F</td>
<td>265 – 325°F</td>
<td>265 – 325°F</td>
<td>265 – 325°F</td>
</tr>
<tr>
<td>TSR</td>
<td>&gt; 80%</td>
<td>&gt; 80%</td>
<td>&gt; 80%</td>
<td>&gt; 80%</td>
</tr>
<tr>
<td>T-283 Stripping</td>
<td>Minimal, as determined by the Engineer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 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.

<table>
<thead>
<tr>
<th>Traffic Level</th>
<th>Design ESALs (80 kN), Millions</th>
<th>Coarse Aggregate Angularity (1) ASTM D 5821, Minimum %</th>
<th>Fine Aggregate Angularity AASHTO T 304, Method A Minimum %</th>
<th>Flat and Elongated Particles (2) ASTM D 4791, Maximum %</th>
<th>Sand Equivalent AASHTO T 176, Minimum %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt; 0.3</td>
<td>55/ -</td>
<td>40</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>0.3 to &lt; 3.0</td>
<td>75/ -</td>
<td>40</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>≥ 3.0</td>
<td>95/90</td>
<td>45</td>
<td>10</td>
<td>45</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Traffic Level</th>
<th>Design ESALs (million)</th>
<th>Number of Gyrations by Superpave Gyratory Compactor</th>
<th>Percent Density of Gmm from HMA/WMA specimen</th>
<th>Voids Filled with Asphalt (VFA) Based on Nominal mix size – inch</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nini Ndes Nmax</td>
<td>Nini Ndes Nmax</td>
<td>Nini Ndes Nmax</td>
<td>0.25  0.375  0.5  1</td>
</tr>
<tr>
<td>1</td>
<td>&lt; 0.3</td>
<td>6 50 75</td>
<td>≤ 91.5 96.0 ≤ 98.0</td>
<td>70 - 80 70 - 80 70 - 80 67 - 80</td>
</tr>
<tr>
<td>2</td>
<td>0.3 to &lt; 3.0</td>
<td>7 75 115</td>
<td>≤ 90.5 96.0 ≤ 98.0</td>
<td>65 - 78 65 - 78 65 - 78 65 - 78</td>
</tr>
<tr>
<td>3</td>
<td>≥ 3.0</td>
<td>8 100 160</td>
<td>≤ 90.0 96.0 ≤ 98.0</td>
<td>65 – 77 73 - 76 65 - 75 65 - 75</td>
</tr>
</tbody>
</table>
TABLE M.04.02–5: Superpave Minimum Binder Content by Mix Type and Level

<table>
<thead>
<tr>
<th>Mix Type</th>
<th>Level</th>
<th>Binder Content Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>S0.25</td>
<td>1</td>
<td>5.70</td>
</tr>
<tr>
<td>S0.25</td>
<td>2</td>
<td>5.60</td>
</tr>
<tr>
<td>S0.25</td>
<td>3</td>
<td>5.50</td>
</tr>
<tr>
<td>S0.375</td>
<td>1</td>
<td>5.70</td>
</tr>
<tr>
<td>S0.375</td>
<td>2</td>
<td>5.60</td>
</tr>
<tr>
<td>S0.375</td>
<td>3</td>
<td>5.50</td>
</tr>
<tr>
<td>S0.5</td>
<td>1</td>
<td>5.10</td>
</tr>
<tr>
<td>S0.5</td>
<td>2</td>
<td>5.00</td>
</tr>
<tr>
<td>S0.5</td>
<td>3</td>
<td>4.90</td>
</tr>
<tr>
<td>S1</td>
<td>1</td>
<td>4.60</td>
</tr>
<tr>
<td>S1</td>
<td>2</td>
<td>4.50</td>
</tr>
<tr>
<td>S1</td>
<td>3</td>
<td>4.40</td>
</tr>
</tbody>
</table>

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

Notes: (1) One set equals two six-inch molds. Molds to be compacted to 50 gyrations
(2) Once per year or when requested by the Engineer

a. Determination of Off-Test Status:
   i. Curb Mix is considered “off test” when the test results indicate that any single value for bitumen content or gradation are not within the tolerances shown in Table M.04.02-1. If the mix is “off test”, the Contractor must take immediate actions to correct the deficiency and a new acceptance sample shall be tested on the same day or the following day of production.

   ii. When multiple silos are located at one site, mixture supplied to one project is considered as coming from one source for the purpose of applying the “off test” status.

   iii. The Engineer may cease supply from the plant when test results from three consecutive samples are not within the JMF tolerances or the test results from two consecutive samples not within the control points indicated in Table M.04.02-1 regardless of production date.
b. JMF revisions
   i. If a test indicates that the bitumen content or gradation are outside the tolerances, the Contractor may make a single JMF revision as allowed by the Engineer prior to any additional testing. Consecutive test results outside the requirements of Table M.04.02-1 JMF tolerances may result in rejection of the mixture.

   ii. Any modification to the JMF shall not exceed 50% of the JMF tolerances indicated in Table M.04.02-1 for any given component of the mixture without approval of the Engineer. When such an adjustment is made to the bitumen, the corresponding production percentage of bitumen shall be revised accordingly.

iii. Superpave Mix Acceptance:

   a. Sampling and Testing Procedures

   Production Lot: The Lot will be defined as one of the following types:
   - Non-PWL Production Lot for total estimated project quantities per mixture less than 3500 tons: All mixture placed during a single continuous paving operation.
   - PWL Production Lot for total estimated project quantities per mixture of 3500 tons or more: Each 3500 tons of mixture produced within 30 calendar days.

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

   Partial Production Lots (For PWL only): A Lot with less than 3500 tons due to:
   - completion of the Course
   - a Job Mix Formula revision due to changes in:
     o cold feed percentages over 5%
     o target combined gradation over 5%
     o target binder over 0.15%
     o any component specific gravity
   - a Lot spanning 30 calendar days

   The acceptance sample(s) location(s) shall be selected using stratified – random sampling in accordance with ASTM D 3665 based on:
   - the total daily estimated tons of production for non-PWL lots, or
   - the total lot size for PWL lots.

   One acceptance sample shall be obtained and tested per Sub Lot. The Engineer may direct that additional acceptance samples be obtained. For non-PWL lots, one acceptance test shall always be performed in the last sub-lot based on actual tons of material produced.
For Non-PWL lots, quantities of the same mixture per plant may be combined daily for multiple State projects to determine the number of sub lots.

The payment adjustment will be calculated as described in 4.06.

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

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

The following test procedures shall be used for acceptance:

**TABLE M.04.03– 3:** Superpave Acceptance Testing Procedures

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

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

If the average ignition oven corrected binder content differs by 0.3% or more from the average of the Plant ticket binder content in five (5) consecutive tests regardless of the production date (moving average), the Contractor shall immediately investigate, determine an assignable cause and correct the issue. When two consecutive moving average differences are 0.3% or more and no assignable cause has been established, the Engineer may require a new ignition oven aggregate correction factor to be performed or to adjust the current factor by the average of the differences between the corrected binder content and production Plant ticket for the last five (5) acceptance results.
The test specimen must be placed in an ignition oven for testing in accordance with AASHTO T 308 within thirty minutes of being obtained from the hauling vehicle and the test shall start immediately after.

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

b. Determination of Off-Test Status:

i. Superpave mixes shall be considered “off test” when any Control Point Sieve, binder content, VA, VMA, or Gmm value is outside of the limits specified in Table M.04.03-4 or the target binder content at the Plant is below the minimum binder content stated in Table M.04.02-5. Note that further testing of samples or portions of samples not initially tested for this purpose cannot be used to change the status.

ii. Any time the bituminous concrete mixture is considered Off-test:

   1. The Contractor shall notify the Engineer when the Plant is "off test" for any mix design that is delivered to the project in any production day. When multiple silos are located at one site, mixture supplied to one project is considered as coming from one source for the purpose of applying the “off test” determination.

   2. The Contractor must take immediate actions to correct the deficiency, minimize “off test” production to the project, and obtain an additional Process Control (PC) test after any corrective action to verify production is in conformance to the specifications. A PC test will not be used for acceptance and is solely for the use of the Contractor in its quality control process.

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

   A mixture shall not be used on Department’s projects when it is “off test” for:
   i. four (4) consecutive tests in any combination of VA, VMA or Gmm, regardless of date of production, or,
   ii. two (2) consecutive tests in the Control Point sieves in one production shift.

   As a result of cessation of supply, the mix status will be changed to PPT.
d. **JMF revisions:**

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

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

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

A JMF revision is required when the Plant target RAP and/or bin percentage deviates by more than 5% and/or the Plant target binder content deviates by more than 0.15% from the active JMF.
### TABLE M.04.03– 4: Superpave Mixture Production Requirements

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

<table>
<thead>
<tr>
<th>Sieve</th>
<th>S0.25</th>
<th>S0.375</th>
<th>S0.5</th>
<th>S1</th>
<th>Tolerances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONTROL POINTS</td>
<td>CONTROL POINTS</td>
<td>CONTROL POINTS</td>
<td>CONTROL POINTS</td>
<td>±Tol</td>
</tr>
<tr>
<td>inches</td>
<td>Min(%)</td>
<td>Max(%)</td>
<td>Min(%)</td>
<td>Max(%)</td>
<td>Min(%)</td>
</tr>
<tr>
<td>1.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3/4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1/2</td>
<td>100</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>3/8</td>
<td>97</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>#4</td>
<td>75</td>
<td>90</td>
<td>-</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>#8</td>
<td>32</td>
<td>67</td>
<td>32</td>
<td>67</td>
<td>28</td>
</tr>
<tr>
<td>#16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>#200</td>
<td>2.0</td>
<td>10.0</td>
<td>2.0</td>
<td>10.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Pb</td>
<td>JMF value</td>
<td>JMF value</td>
<td>JMF value</td>
<td>JMF value</td>
<td>0.3(5)</td>
</tr>
<tr>
<td>VMA (%)</td>
<td>16.5</td>
<td>16.0</td>
<td>15.0</td>
<td>13.0</td>
<td>1.0(6)</td>
</tr>
<tr>
<td>VA (%)</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>1.0(7)</td>
</tr>
<tr>
<td>Gmm</td>
<td>JMF value</td>
<td>JMF value</td>
<td>JMF value</td>
<td>JMF value</td>
<td>0.030</td>
</tr>
<tr>
<td>Mix Temp (4)</td>
<td>265 – 325 F (1)</td>
<td>265 – 325 F (1)</td>
<td>265 – 325 F (1)</td>
<td>265 – 325 F (1)</td>
<td></td>
</tr>
<tr>
<td>Prod. TSR</td>
<td>N/A</td>
<td>N/A</td>
<td>≥80%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>T-283 Stripping</td>
<td>N/A</td>
<td>N/A</td>
<td>Minimal as determined by the Engineer</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
### TABLE M.04.03-5:
Superpave Traffic Levels and Design Volumetric Properties

<table>
<thead>
<tr>
<th>Traffic Level</th>
<th>Design ESALs (million)</th>
<th>Number of Gyrations by Superpave Gyratory Compactor Nini</th>
<th>Ndes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt; 0.3</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>0.3 to &lt; 3.0</td>
<td>7</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>≥3.0</td>
<td>8</td>
<td>100</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>AASHTO Standard Method of Test</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>T 30</td>
<td>Section 7.2 thru 7.4 Samples are not routinely washed for production testing</td>
</tr>
</tbody>
</table>
| T 168                         | 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.  
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.  
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. |
| T 195                         | Section 4.3 only one truck load of mixture is sampled. Samples are taken from opposite sides of the load. |
| T 209                         | Section 7.2 The average of two bowls is used proportionally in order to satisfy minimum mass requirements.  
8.3 Omit Pycnometer method. |
| T 283                         | When foaming technology is used, the material used for the fabrication of the specimens shall be cooled to room temperature, and then reheated to the manufactures recommended compaction temperature prior to fabrication of the specimens. |
### AASHTO Standard Recommended Practices

<table>
<thead>
<tr>
<th>Reference</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 26</td>
<td>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. All laboratories testing binders for the Department are required to be accredited by the AASHTO Materials Reference Laboratory (AMRL). 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. 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. All AASHTO M 320 references shall be replaced with AASHTO M 332. 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.</td>
</tr>
</tbody>
</table>

130-180

130-180

77
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 journeyperson level status is the primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority, women and economically disadvantaged individuals as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Coordinator, will assign training goals for a calendar year based on the contractor’s past two year’s activities and the contractor’s anticipated upcoming year’s activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time, the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from one (1) to six (6) per
contractor per calendar year. Each January, a summary of the trainees required and the OJT Workforce Development Pilot package will be sent to participating contractors. The number of trainees assigned to each contractor in the summary will increase proportionately not to exceed 6, as shown in the following table. This package will also be provided to contractors as they become newly eligible for the OJT Workforce Development Pilot throughout the remainder of the year. Projects awarded after September 30 will be included in the following year’s Program.

The dollar thresholds for training assignments are as follows:

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

**Training Classifications**

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

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

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

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

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

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

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

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

Trainee Interviews

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

Trainee Wages

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

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

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

Achieving or Failing to Meet Training Goals

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

Where a contractor does not or cannot achieve its annual training goal with female or minority trainees, they must produce adequate Good Faith Efforts documentation. Good Faith Efforts are those designed to achieve equal opportunity through positive, aggressive, and continuous result-oriented measures. 23 CFR § 230.409(g) (4). Contractors should request minorities and females from unions when minorities and females are under-represented in the contractor’s workforce.
Whenever a contractor requests ConnDOT approval of someone other than a minority or female, the contractor must submit documented evidence of its Good Faith Efforts to fill that position with a minority or female. When a non-minority male is accepted, a contractor must continue to attempt to meet its remaining annual training goals with females and minorities.

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

**Measurement and Payment**

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

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

Reimbursement for training is made annually or upon the trainee’s 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 journeyperson, 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 15th day of January for each trainee currently enrolled and for hours worked on ConnDOT Federal-Aid funded projects only.
D.B.E. SUBCONTRACTORS AND MATERIAL SUPPLIERS OR MANUFACTURERS

January 2013

I. ABBREVIATIONS AND DEFINITIONS AS USED IN THIS SPECIAL PROVISION

A. CTDOT means the Connecticut Department of Transportation.

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

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

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

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

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

1. That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and

2. Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it; and


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

V. SHORTFALLS

A. Failure to meet DBE goals

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

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

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

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

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

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

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

B. Administrative Remedies for Non-Compliance:

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

1. A reduction in Contract payments to the Contractor as determined by CTDOT, not to exceed the shortfall amount of the DBE goal. The maximum shortfall will be calculated by multiplying the
Contract DBE goal (adjusted by any applicable GFE) by the final Contract value, and subtracting any verified final payments made to DBE firms by the Contractor.

2. A reduction in Contract payments to the Contractor determined by CTDOT, not to exceed the shortfall amount of the pre-award commitment. The maximum shortfall will be calculated by subtracting any verified final payments made by the Contractor to each DBE subcontractor from the amount originally committed to that subcontractor in the pre-award commitment.

3. A reduction in Contract payments to the Contractor determined by CTDOT for any pre-award DBE subcontractor who has not obtained the dollar value of work identified in the DBE pre-award commitment and has not followed the requirements of Section II-C or for any DBE firm submitted for DBE credit that has not performed a CUF.

4. The Contractor being required to submit a written DBE Program Corrective Action Plan to CTDOT for review and approval, which is aimed at ensuring compliance on future projects.

5. The Contractor being required to attend a Non-Responsibility Meeting on the next contract where it is the apparent low bidder.

6. The Contractor being suspended from bidding on contracts for a period not to exceed six (6) months.

VI. CLASSIFICATIONS OTHER THAN SUBCONTRACTORS

A. Material Manufacturers

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

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

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

B. Material Suppliers (Dealers)

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

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

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

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

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

C. Brokering

- Brokering of work for DBE firms who have been listed by the Department as certified brokers is allowed. Credit for those firms shall be applied following the procedures in Section VI-D.
- Brokering of work by DBEs who have been approved to perform subcontract work with their own workforce and equipment is not allowed, and is a Contract violation.
- Firms involved in the brokering of work, whether they are DBEs and/or majority firms who engage in willful falsification, distortion or misrepresentation with respect to any facts related to the project shall be referred to the U.S. DOT, Office of the Inspector General for prosecution under Title 18, U.S. Code, Part I, Chapter 47, Section 1020.

D. Non-Manufacturing or Non-Supplier DBE Credit

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

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

- The fees or commissions charged for providing bonds or insurance specifically required for the performance of the Contract, provided that the fees or commissions are determined by CTDOT to be reasonable and not excessive as compared with fees customarily allowed for similar services.

**E. Trucking**

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

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

**VII. Suspected DBE Fraud**

In appropriate cases, CTDOT will bring to the attention of the USDOT any appearance of false, fraudulent, or dishonest conduct in connection with the DBE program, so that USDOT can take the steps, e.g. referral to the Department of Justice for criminal prosecution, referral to USDOT Inspector General, action under suspension and debarment or Program Fraud and Civil Penalties rules provided in 49 CFR Part 31.
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.

I, ______________________________________, acting in behalf of __________________________________________, (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
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 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 #0020905A - LEAD COMPLIANCE FOR ABRASIVE BLAST CLEANING AND MISCELLANEOUS TASKS

Description: Work under this item shall include the special handling measures and work practices required for abrasive blast cleaning activities and other miscellaneous tasks, principally involved in bridge coating removal/painting and other renovation operations, which impact materials containing or covered by lead paint. Examples of typical miscellaneous exterior tasks includes: work impacting signs, guiderails, minor bridge rehabilitation, catenary structures, canopy structures, spot/localized paint removal, etc. Lead paint includes paint found to contain any detectable amount of lead by Atomic Absorption Spectrophotometry (AAS) or X-Ray Fluorescence (XRF).

All activities shall be performed in accordance with the OSHA Lead in Construction Regulations (29 CFR 1926.62), the USEPA RCRA Hazardous Waste Regulations (40 CFR Parts 260 through 274), the CTDEEP Hazardous Waste Regulations (RCSA 22a-209-1 and 22a-449(c)), and SSPC Guide 6 – Guide for Containing Debris Generated During Paint Removal Operations.

All activities shall be performed by individuals with appropriate levels of OSHA lead awareness and hazard communication training, supervised at all times by the Contractor’s Competent Person, and periodically inspected by personnel working for an industrial hygiene firm (IH firm), retained by the Contractor, under the direct supervision of a Certified Industrial Hygienist (CIH). Periodic inspections shall be conducted at least weekly while work impacting lead is occurring, but shall be as frequent as necessary to maintain Contractor compliance with the OSHA Lead Construction Standards. The Contractor’s Competent Person shall be on-Site at all times that the work impacting lead is being performed and shall be capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and has authorization to take prompt corrective measures to eliminate them.

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

This item does not include the work to remove existing paint. Refer to other Contract items for paint removal special provisions.

Materials:

All materials shall be delivered to the Site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description, with MSDS sheets as applicable.

No damaged or deteriorating materials shall be used. If material becomes contaminated with lead, the material shall be decontaminated or disposed of as lead-containing waste material. The cost to decontaminate and dispose of said material shall be at the Contractor’s expense.
The following material requirements shall be met, where applicable:

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

Polyethylene disposable bags shall be minimum six (6) mils thick.

Tape (or equivalent product) 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.

Cleaning Agents and detergent shall be lead specific, such as TriSodium Phosphate (TSP).

Chemical strippers and chemical neutralizers shall be compatible with the substrate as well as with each other. Such chemical stripper shall contain less than 50% volatile organic compounds (VOCs) by weight in accordance with RCSA 22a-174-40 Table 40-1.

Labels and warning signs shall conform to 29 CFR 1926.62, 40 CFR 260 through 274 and 49 CFR 172 as appropriate.

Air filtration devices and vacuum units shall be equipped with High-Efficiency Particulate Air (HEPA) filters.

**Construction Methods:**

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

A. Prior to the start of any work that will generate hazardous lead waste above conditionally exempt small quantities (greater than 100 kg/month or greater than 1000 kg stored at any time), the Contractor shall obtain from the Engineer, on a contiguous per Site basis, a temporary EPA Hazardous Waste Generators ID number, in accordance with Item #0603222A “Disposal of Lead Debris from Abrasive Blast Cleaning,” unless otherwise directed by the Engineer. Temporary EPA ID numbers are good for six (6) months from the date they are issued and can be extended once, for a maximum of six (6) months and shall not be used for longer than one (1) year. The Contractor shall notify the Engineer when an extension is needed.

B. Fifteen (15) working days prior to beginning work that impacts lead paint, the Contractor shall submit four (4) copies of each of the following to the Engineer:

1. A written Site-specific Lead Compliance Work Plan, prepared and stamped by a Certified Industrial Hygienist (CIH) that covers all workers on the Project (Contractor, Subcontractor and CTDOT representatives). The Lead Compliance Work Plan shall be prepared in accordance with 29 CFR 1926.62(e), and shall include: descriptions of each activity impacting lead; procedures for engineering controls, methods of containment, work practices, and administrative controls to be employed; daily on-Site inspections by the Competent Person; periodic on-Site inspections by IH firm personnel (describe
frequency and inspection criteria); hazard communication/training; medical surveillance; biological monitoring; exposure assessment; air monitoring; personal protective equipment (PPE); respiratory protection; housekeeping; decontamination; procedures for waste containment, storage, handling and disposal; contents of the job completion close-out report; and all other procedures that may be necessary to comply with 29 CFR 1926.62 and 40 CFR 260 – 274 and minimize employee exposure and prevent the spread of lead contamination outside the Regulated Area, as defined herein.

2. Copies of all employee certificates, dated within the previous twelve (12) months, relating to OSHA lead awareness and hazard communication training and training in the use of lead-safe work practices. SSPC training programs, such as SSPC C-5 Deleading of Industrial Structures may be accepted as meeting these requirements if it can be demonstrated that such training addressed all required OSHA topics.

This information shall be updated and resubmitted annually, or as information changes, for the duration of lead removal work in order to verify continued compliance.

3. Name and qualifications of Contractor’s OSHA Competent Person, as defined under 29 CFR 1926.62, who will be on-Site at all times that the work impacting lead paint is being performed.

4. Name and qualifications of IH firm personnel that will be performing the periodic on-Site inspections. Such personnel shall work under the direct supervision of the same CIH who stamped the Lead Compliance Work Plan and have training within the previous twelve (12) months for OSHA lead awareness and the use of lead-safe work practices or equivalent. Such personnel shall also have a minimum of two (2) years’ work experience related to the OSHA Lead in Construction Standard and be capable of recognizing the hazards associated therewith.

5. Documentation from the Contractor, on company letterhead and signed by the Contractor, certifying that all employees listed therein have received the following, and are medically fit to perform the work impacting lead:

   a. medical monitoring within the previous twelve (12) months, as required in 29 CFR 1926.62;
   b. biological monitoring within the previous six (6) months, as required in 29 CFR 1926.62;
   c. respirator fit testing within the previous twelve (12) months, as required in 29 CFR 1910.134 (for employees who wear a tight-fitting face piece respirator)

This information shall be updated and resubmitted every six (6) months, or as information changes, for the duration of lead removal work in order to verify continued compliance.

6. Name(s) of the proposed non-hazardous, non RCRA lead debris waste disposal facility.
7. Name(s) of the proposed scrap metal recycling facility. The Contractor shall submit to the Engineer all documentation necessary to demonstrate the selected facility is able to accept lead-painted metal.

8. Name(s) of the proposed hazardous waste disposal facility (selected from the Department-approved list provided under Item #0603222A), and copies of each facilities’ acceptance criteria and sampling frequency requirements.


10. Negative exposure assessments conducted within the previous twelve (12) months documenting that employee exposure to lead for each task is below the OSHA Action Level of 30 μg/m³. If a negative exposure assessment has not been conducted, the Contractor shall submit its air monitoring program for the work tasks as part of the Lead Compliance Work Plan. Until a negative exposure assessment is developed for each task impacting lead paint, the Contractor shall ensure that all workers and authorized persons entering the Regulated Area wear protective clothing and respirators in accordance with OSHA 29 CFR 1926.62.

No activity shall commence until 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 of acceptable documentation to, and review by, the Engineer.

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

(2) Lead Abatement Provisions

A. General Requirements:

All employees of the Contractor who perform work impacting lead paint shall be properly trained to perform such duties. 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 provide all labor, materials, tools, equipment, services, testing, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications.
Prior to beginning work, the Engineer and Contractor shall perform a visual survey of each work area and review conditions.

As necessary, the Contractor shall:

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

- Coordinate all power and fire alarm isolation with the appropriate representatives.

If adequate electrical supply is not available at the Site, the Contractor shall supply temporary power. Such temporary power shall be sufficient to provide adequate lighting and power the Contractor’s equipment. The Contractor is responsible for proper connection and installation of electrical wiring and shall ensure safe installation of electrical equipment in compliance with applicable electrical codes and OSHA requirements.

If water is not available at the Site for the Contractor’s use, the Contractor shall supply sufficient water for each shift to operate the wash facility/decontamination shower units in addition to the water needed at the work area.

The Engineer may provide a Project Monitor to monitor compliance of the Contractor and protect the interests of the Department. In such cases, no activity impacting lead paint shall be performed until the Project Monitor is on-Site. Where no Project Monitor is provided, Contractor shall proceed at the direction of the Engineer. Environmental sampling, including ambient air sampling, TCLP waste stream sampling, and dust wipe sampling, will be conducted by the State as it deems necessary throughout the Project. Any Project Monitor provided by the Engineer is supplementary to the requirement for the Contractor to have periodic inspections performed at a frequency to ensure/document Contractor compliance with the regulations and the requirements of the Contractor’s Lead Compliance Work Plan. Air monitoring to comply with the Contractor’s obligations under OSHA remains solely the responsibility of the Contractor.

If at any time, procedures for engineering, work practice, administrative controls or other topics are anticipated to deviate from those documented in the submitted and accepted Lead Compliance Work Plan, the Contractor shall submit a modification of its existing plan for review and acceptance by the Engineer prior to implementing the change.

If air samples collected outside of the Regulated Area during activities impacting lead paint indicate airborne lead concentrations greater than original background levels or 30 ug/m³, whichever is larger, or if at any time visible emissions of lead paint extend out from the Regulated Area, an examination of the Regulated Area shall be conducted and the cause of such emissions corrected. Cleanup of surfaces outside the Regulated Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming work.
Work outside the initial designated area(s) will not be paid for by the Engineer. The Contractor will be responsible for all costs incurred from these activities including repair of any damage.

B. Regulated Area:
The Contractor shall establish a Regulated Area through the use of appropriate barrier tape or other means to control unauthorized access into the area where activities impacting lead paint are occurring. Warning signs meeting the requirements of 29 CFR 1926.62 shall be posted at all approaches to Regulated Areas. These signs shall read:

DANGER
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK, OR SMOKE IN THIS AREA

The Contractor shall also implement appropriate engineering controls, such as poly drop cloths, local exhaust ventilation, wet dust suppression methods, etc., as necessary, or where Abrasive Blast Cleaning is to be performed, a full negative pressure enclosure, in accordance with Item #0603XXXA “Class I Containment & Collection of Surface Preparation Debris (Site No. X),” and wet dust suppression methods, etc., as necessary, and as approved by the Engineer, to prevent the spread of lead contamination beyond the Regulated Area in accordance with the Contractor’s approved Lead Compliance Work Plan. Should the previously submitted plan prove to be insufficient to contain the contamination, the Contractor shall submit a modified plan for review by the Engineer.

Any air exhausted from the containment enclosure, abrasive-recycling equipment or vacuum equipment shall be passed through a HEPA filtering system. The Contractor is responsible for the design, effectiveness and maintenance of this filtering system. No discharge of debris dust shall be allowed.

C. Wash Facilities:
The Contractor shall provide handwash facilities in compliance with 29 CFR 1926.51(f) and 29 CFR 1926.62 regardless of airborne lead exposure.

If employee exposure to airborne lead exceeds the OSHA Permissible Exposure Limit of 50 micrograms per cubic meter (μg/m³), shower rooms must be provided. The Shower Room shall be of sufficient capacity to accommodate the number of workers. One (1) shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm running water. Shower water shall be collected and filtered using best available technology and disposed of in accordance with all Federal, State and local laws, regulations and ordinances.

D. Personal Protection:
The Contractor shall initially determine if any employee performing construction tasks impacting lead paint may be exposed to lead at or above the OSHA Action Level of 30 \( \mu \text{g/m}^3 \). Assessments shall be based on initial air monitoring results as well as other relevant information. The Contractor may rely on historical air monitoring data obtained within the past twelve (12) months under workplace conditions closely resembling the process, type of material, control methods, work practices and environmental conditions used and prevailing in the Contractors current operations to satisfy the exposure assessment requirements. Monitoring shall continue as specified in the OSHA standard until a negative exposure assessment is developed.

Until a negative exposure assessment is developed for each task impacting lead paint, the Contractor shall ensure that all workers and authorized persons entering the Regulated Area wear protective clothing and respirators in accordance with OSHA 29 CFR 1926.62. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings. Sufficient quantities shall be provided to last throughout the duration of the Project.

Protective clothing provided by the Contractor and used during chemical removal operations shall be impervious to caustic materials. Gloves provided by the Contractor and used during chemical removal shall be of neoprene composition with glove extenders.


E. Air Monitoring Requirements:

The Contractor shall:

1. 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.

2. Conduct initial exposure monitoring to determine if any employee performing construction tasks impacting lead paint may be exposed to lead at or above the OSHA Action Level of 30 micrograms per cubic meter. Monitoring shall continue as specified in the OSHA standard until a negative exposure assessment is developed.

3. Conduct personnel exposure assessment air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.62 or the approved Lead Compliance Work Plan. 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.

F. Periodic Inspections of Abrasive Blast Cleaning Operations:
Where Abrasive Blast Cleaning Operations are to take place, the Contractor shall retain the services of IH firm personnel, working under the direct supervision of the same CIH who stamped the Lead Compliance Work Plan, to perform periodic inspections of the Site work practices and engineering controls, on a frequency to ensure/document Contractor compliance with the regulations. Periodic inspections shall be performed at least weekly while work impacting lead is occurring, but shall be at the frequency necessary to maintain Contractor compliance with the OSHA Lead in Construction Standard. Any exceptions to 29 CFR 1926.62 or the accepted Lead Compliance Work Plan shall be reported to the Contractor and the Engineer prior to the IH firm personnel leaving the Site and corrected immediately.

All findings of such periodic inspections shall be documented in writing to the Engineer no later than ten (10) days following the Site visit. At a minimum, the inspection report shall document the following:

1. Description of current work activities
2. Description of engineering controls being implemented
3. Description of PPE being utilized
4. Description of visual review of containment system effectiveness
5. Results of all air sampling received since date of last report
6. Narrative interpreting sample results and making recommendations as necessary
7. Description of waste management practices being utilized
8. Descriptions of exceptions noted and corrective action taken

The report shall include a signature from the IH firm employee that performed the Site inspection verifying that the Contractor’s work practices are in compliance with 29 CFR 1926.62 and the previously submitted and accepted Lead Compliance Work Plan. The CIH shall sign verifying their concurrence.

G. Lead Abatement Procedures:

The Contractor’s Competent Person shall be at the Site at all times during work impacting lead.

Work impacting lead paint shall not begin until authorized by the Engineer, following a pre-work visual inspection by the Project Monitor or Engineer to verify existing conditions.

Any activity impacting lead painted surfaces shall be performed in a manner which minimizes the spread of lead dust contamination and generation of airborne lead.

The Contractor shall conduct exposure assessments for all tasks which impact lead paint in accordance with 29 CFR 1926.62(d) and shall implement appropriate personal protective equipment until negative exposure assessments are developed.

All work impacting the lead containing/coated materials shall be conducted within an established Regulated Area with a remote wash facility/decontamination system in accordance with “C. Wash Facilities” and the OSHA Lead in Construction Standard. In
accordance with 29 CFR 1926.62, engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the Regulated Area and limit the generation of airborne lead. For Abrasive Blast Cleaning Operations, such engineering controls shall include the use of a full negative pressure enclosure (NPE) in accordance with SSPC Guide 6 and Item #0603XXXA. All wastes containing lead paint shall be properly contained and secured for storage, transportation and disposal.

The Contractor shall ensure proper entry and exit procedures for workers and authorized persons who enter and leave the Regulated Area. All workers and authorized persons shall leave the Regulated Area and proceed directly to the wash or shower facilities where they will HEPA vacuum gross debris from work suit, remove and dispose of work suit, wash and dry face and hands, and vacuum clothes. Lead chips and dust must not be removed by blowing or shaking of clothing. Wash water shall be collected, filtered, and disposed of in accordance with Federal, State and local water discharge standards. Any permit required for such discharge shall be the responsibility of the Contractor.

Personnel shall be advised that they must not eat, drink, smoke, chew gum or tobacco, nor apply cosmetics while in the Regulated Area.

Data from the limited lead testing performed by the Engineer is documented in the reports listed in the “Notice to Contractor – Hazardous Materials Investigations” or is presented herein. Under no circumstances shall this information be the sole means used by the Contractor for determining the extent of lead painted materials. The Contractor shall be responsible for verification of all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA, USEPA, USDOT and CTDEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

**Bridge Nos. 01155 & 01156, I-84 over Route 6/67, Southbury**

- Detectable amounts of lead were identified on the painted metal surfaces of Bridge Nos. 01155 & 01156.

<table>
<thead>
<tr>
<th></th>
<th>Metal</th>
<th>Green/Silver</th>
<th>8.5-18.7 mg/cm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girders, Cross Beams, Beam Ends, Bearings, Rockers, Diaphragms, Connection plates, etc.</td>
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</tbody>
</table>

- TCLP waste stream sampling/analysis of the paint associated with the structural steel/metal bridge components characterized the paint waste as RCRA/CTDEEP hazardous waste.

<table>
<thead>
<tr>
<th>Paint debris (structural bridge components) Bridge No 01155</th>
<th>350 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paint debris (structural bridge components) Bridge No 01156</td>
<td>370 mg/l</td>
</tr>
</tbody>
</table>

The Contractor shall submit a Lead Compliance Work Plan to CTDOT outlining the exact procedures that will be used to perform the work, contain the spread of lead debris and
protect the employees performing the required renovation work impacting the lead paint. No work shall be started by the Contractor until the Work Plan is approved by the Engineer.

All work impacting the lead paint materials shall be conducted within an established Regulated Area with a remote wash facility/decontamination system in accordance with “C. Wash Facilities” and the OSHA Lead in Construction Standard. In accordance with 29 CFR 1926.62, engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the Regulated Area and limit the generation of airborne lead. All wastes containing lead paint shall be properly contained and secured for storage, transportation and disposal.

Where abrasive blast cleaning techniques are to be utilized on surfaces coated with lead paint they must be conducted in accordance with the OSHA worker protection and USEPA RCRA/CTDEEP waste disposal standards, and shall be conducted in accordance with Item #0603XXXA “Abrasive Blast Cleaning and Field Painting of Structure (Site No. X)” following SSPC-SP10 “Near White Blast Cleaning” procedures and utilizing a full negative pressure enclosure (NPE) in accordance with SSPC Guide 6 and Item #0603XXXA.

At Bridge Nos. 01155 & 01156 the Engineer has previously characterized the projected paint waste stream associated with the structural steel/metal bridge components as RCRA/CTDEEP Hazardous waste. If the paint is to be removed from the substrate surfaces by abrasive blast cleaning and/or miscellaneous tasks, the paint shall be handled and disposed of in accordance with USEPA/CTDEEP Hazardous Waste Regulations and Item #0603222A “Disposal of Lead Debris from Abrasive Blast Cleaning.”

Any scrap metal components generated shall be segregated and recycled as scrap metal at the Contractor’s previously submitted scrap metal recycling facility. The recycling of scrap metal (regardless of lead paint concentration) is exempt from USEPA RCRA and CTDEEP Hazardous Waste Regulation.

Should lead contamination be discovered outside of the Regulated Area, the Contractor shall immediately stop all work in the Regulated Area, eliminate causes of such contamination and take steps to decontaminate non-work areas.

Special Requirements for miscellaneous renovation activities impacting lead (other than abrasive blast cleaning operations):

1. Demolition/Renovation:
   
   a. Demolish/renovate in a manner which minimizes the spread of lead contamination and generation of lead dust.

   b. Implement dust suppression controls, such as misters or local exhaust ventilation, to minimize the generation of airborne lead dust.
c. Segregate work areas from non-work areas through the use of barrier tape or drop cloths.

d. Clean up immediately after renovation/demolition has been completed.

2. Chemical Removal (if allowed by the Engineer):

   a. Apply chemical stripper in quantities and for durations specified by manufacturer.

   b. Where necessary, scrape lead paint from surface down to required level of removal (such as stabilized surface or bare substrate with no trace of residual pigment). Use sanding, hand scraping, and dental picks to supplement chemical methods as necessary.

   c. Apply neutralizer compatible with substrate and chemical agent to substrate following removal in accordance with manufacturer's instructions.

   d. Protect adjacent surfaces from damage from chemical removal.

   e. Maintain a portable eyewash station in the work area.

   f. Require that workers wear respirators that protect them from chemical vapors.

   g. Do not apply caustic agents to aluminum surfaces.

3. Mechanical Paint Removal:

   a. Provide sanders, grinders, rotary wire brushes, or needle gun removers equipped with a HEPA filtered vacuum dust collection system. Cowling on the dust collection system for orbital-type tools must be capable of maintaining a continuous tight seal with the surface being abated. Cowling on the dust collection system for reciprocating-type tools shall promote an effective vacuum flow of loosened dust and debris. Inflexible cowlings may be used on flat surfaces only. Flexible contoured cowlings are required for curved or irregular surfaces.

   b. Provide HEPA vacuums that are high performance designed to provide maximum static lift and maximum vacuum system flow at the actual operating vacuum condition with the shroud in use. The HEPA vacuum shall be equipped with a pivoting vacuum head.

   c. Remove lead paint from surface down to required level of removal (i.e. stabilized surface, bare substrate with no trace of residual pigment, etc.). Use chemical methods, hand scraping, and dental picks to supplement abrasive removal methods as necessary.

   d. Protect adjacent surfaces from damage from abrasive removal techniques.
e. “Sandblasting” or other abrasive blast cleaning type removal techniques shall not be allowed unless in accordance with methods as specified within this Item.

4. Component Removal/Replacement:
   a. Wet down components which are to be removed to reduce the amount of dust generated during the removal process.
   b. Remove components utilizing hand tools, and follow appropriate safety procedures during removal. Remove the components by approved methods which will provide the least disturbance to the substrate material. Do not damage adjacent surfaces.
   c. Clean up immediately after component removals have been completed. Remove any dust located behind the component removed.

H. Prohibited Removal Methods:

The use of heat guns in excess of 700 °Fahrenheit to remove lead paint is prohibited.

The use of sand, steel grit, air, CO₂, baking soda, water jet, or any other blasting media to remove lead or lead paint without the use of a HEPA ventilated contained negative pressure enclosure is prohibited.

Power/pressure washing shall not be used to remove lead paint, unless explicitly specified for use by the Engineer.

Compressed air shall not be utilized to remove lead paint, unless explicitly specified for use by the Engineer.

Power tool assisted grinding, sanding, cutting, or wire brushing of lead paint without the use of cowled HEPA vacuum dust collection systems is prohibited.

Lead paint burning, busting of rivets painted with lead paint, welding of materials painted with lead paint, and torch cutting of materials painted with lead paint is prohibited. Where cutting, welding, busting, or torch cutting of materials is required, lead paint in the affected area must be removed first.

Chemical stripping of coatings from bridge components is prohibited in areas where Abrasive Blast Cleaning is to be performed, and is generally prohibited in all areas unless specifically allowed by the Engineer.

Chemical strippers containing Methylene Chloride are always prohibited.

I. Clean-up and Visual Inspection:
The Contractor shall remove and containerize all lead waste material and visible accumulations of debris, paint chips and associated items.

During clean-up the Contractor shall use rags and sponges wetted with lead-specific detergent and water as well as HEPA filtered vacuum equipment.

The Engineer will conduct a visual inspection of the work area(s) in order to document that all surfaces have been maintained as free as practicable of accumulations of lead in accordance with 29 CFR 1926.62(h). If visible accumulations of waste, debris, lead paint chips or dust are found in the work area, the Contractor shall repeat the cleaning, at the Contractor's expense, until the area is in compliance. The visual inspection will detect incomplete work, damage caused by the abatement activity, and inadequate clean up of the work Site.

During Abrasive Blast Cleaning Operations:

All debris shall be contained and vacuum collected daily or more frequently as directed by the Engineer, due to debris buildup. Such debris, abrasive blast residue, rust and paint chips shall be stored in leakproof storage containers in the secured storage area, or as directed by the Engineer. The storage containers and storage locations shall be reviewed by and be acceptable to the Engineer and shall be located in areas not subject to ponding.

All storage containers (roll offs or drums) shall have a protective liner and removable lid. These containers shall not have any indentations or damage that would allow seepage of the contained material.

If 55 gallon barrels are used, staging is required: 55 gallon barrels shall be stored together in two (2) rows of five (5). The Contractor shall maintain a minimum lane clearance of 36 inches between each (barrel lot of ten (10)).

The Contractor shall maintain a secure storage area, which shall be large enough to handle all debris. The Contractor shall store debris only in the secured storage area. During abrasive blast cleaning operations, all surface preparation debris shall be vacuum collected from the containment enclosure and removed to the abrasive recycling reclaimer unit, and the coating debris shall be conveyed to the secured storage area at the conclusion of the work shift. The Contractor shall account for all coating debris conveyed to the secured storage area and all coating debris transported from the Project for disposal.

The secure storage area shall consist of an eight- (8-) foot high fenced-in area with a padlocked entrance. Storage containers shall not be used on the Project until and unless they have been reviewed and approved by the Engineer. Storage containers and areas shall be located so as not to cause any traffic hazard. Container storage areas shall be in locations that are properly drained, where runoff water shall not be allowed to pool, and shall be out of the 100-year flood plain. The containers shall be placed on pallets or other approved material and not directly on the ground.
Storage containers shall be closed and covered with a waterproof tarpaulin at all times except during placement, sampling and disposal of debris.

J. Post-Work Regulated Area Deregulation:

Following an acceptable visual inspection, any engineering controls implemented may be removed.

A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor or Engineer to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the lead paint removal remain. If this final visual inspection is acceptable, the Contractor will reopen the Regulated Area and remove all associated signs. The Contractor shall restore all work areas and auxiliary areas used 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 State.

K. Waste Disposal/Recycling:

Metallic debris shall be segregated and recycled as scrap metal at an approved metal recycling facility.

Concrete, brick, etc. coated with any amount of lead paint cannot be crushed, recycled or buried on-site to minimize waste disposal unless tested and found to meet the RSR GA/Residential standards.

All hazardous lead debris shall be disposed of in accordance with Item 0603222A “Disposal of Lead Debris from Abrasive Blast Cleaning.”

L. Project Closeout Data:

Provide the Engineer, within thirty (30) days of completion of the work under this item, a compliance package which shall include, but not be limited to, the following:

1. Competent person’s (supervisor) job log;
2. Certification that all requirements of the Lead Compliance Work Plan and OSHA Lead in Construction Standards, including training, medical surveillance, biological monitoring and medical removal protection, have been followed;
3. Copies of each periodic inspection report;
4. Report on regulatory compliance prepared by the CIH based on the periodic inspections performed.
5. OSHA-compliant personnel air sampling data;
6. Completed waste shipment papers for non-hazardous lead debris waste disposal or recycling and scrap metal recycling.
M. Non Compliance:

Failure of the Contractor to implement the requirements of 29 CFR 1926.62, its Lead Compliance Work Plan, or any other requirement of this item will, at the sole discretion of the Engineer, result in the suspension of all Contract work until such deficiencies are corrected.

**Method of Measurement:**

This item will include all noted services, equipment, facilities, testing and other associated work, including up to three (3) CTDOT Project representatives. Services provided to any CTDOT Project representatives in excess of three (3) representatives will be measured for payment in accordance with Article 1.09.04 – “Extra and Cost-Plus Work.”

1. Within thirty (30) calendar days of the award of the Contract, the Contractor shall submit to the Engineer for acceptance a breakdown of its lump sum bid price for this item detailing:
   
a. The development costs associated with preparing the Lead Compliance Work Plan in accordance with these Specifications.

b. The cost per month for the duration of the Project to implement the Lead Compliance Work Plan and provide the services of the CIH and IH firm.

2. If the lump sum bid price breakdown is unacceptable to the Engineer; substantiation showing that the submitted costs are reasonable shall be required.

3. Upon acceptance of the payment schedule by the Engineer, payments for work performed will be made as follows:
   
a. The lump sum development cost will be certified for payment.

b. The Contractor shall demonstrate to the Engineer monthly that the Lead Compliance Work Plan has been kept current and is being implemented and the monthly cost will be certified for payment.

c. Any month where the Lead Compliance Work Plan is found not to be current or is not being implemented, the monthly payment for this item will be deferred to the next monthly payment estimate. If the Lead Compliance Work Plan is not current or being implemented for more than thirty (30) calendar days, there will be no monthly payment.

d. Failure of the Contractor to implement the Lead Compliance Work Plan in accordance with this Specification will result in the withholding of all Contract payments.

**Basis of Payment:**
The lump sum price bid for this item shall include: services, materials, equipment, all permits, notifications, submittals, personal air sampling, personal protection equipment, incidentals, temporary enclosures, fees and labor incidental to activities impacting lead removal, treatment and handling of lead contaminated materials and the transport and disposal of any non-hazardous, non RCRA lead debris waste and scrap metal.

Final payment will not be made until all Project closeout data submittals have been completed and provided to the Engineer. Once the completed package has been received in its entirety and has been accepted by the Engineer, final payment will be made to the Contractor.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
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<tbody>
<tr>
<td>Lead Compliance for Abrasive Blast Cleaning &amp; Miscellaneous Tasks</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>

END OF SECTION
ITEM #0100600A - CONSTRUCTION ACCESS

Description:

The item “Construction Access” shall consist of the design, construction, maintenance, and restoration of a temporary staging area within the I-84 Median and temporary bridge access within RT 67 to facilitate rehabilitation of the bridge as shown on the contract documents. This item shall include all site preparation, temporary fill, access roads, temporary bridge for access, anti-tracking pads and drainage control and any other items that the Contractor requires to provide access. The staging area and limits shown on the plans are schematic. The Contractor is required to design the temporary bridge for access to pier 2 and Abutment 2 for anticipated construction loads. Also included is the removal of all Construction Access facilities upon completion of the work and restoring the site to its original conditions. The item also includes the cost of protecting any existing utilities in the staging area that may be impacted by the construction.

Maintenance of the access roads and staging area shall include daily housekeeping and sweeping of travel surfaces in order to minimize dust.

The information shown on the plans pertaining to construction access and sequence of rehabilitation procedures conveys the assumptions made by the designer and is for information only. The Contractor shall be responsible for selecting the means and methods for construction, subject to the restrictions shown here and elsewhere in the specifications. The Contractor shall also submit information in accordance with Article 1.05-02-3, and as noted below, and shall include design calculations, construction schematics, construction sequences and procedures to the Engineer for review.

Construction Methods:

The Contractor shall, at least 30 calendar days prior to the start of construction of the staging area, submit to the Engineer, for his review and approval, detailed final construction access and methodology working drawings and computations of his proposal, in accordance with the requirements of Article 1.5.02. The working drawings and calculations must be prepared, stamped and signed by a Professional Engineer licensed in the State of Connecticut. These plans shall include, but shall not be limited to:

1) The limits of excavation, temporary fill, site preparation and ground improvements to facilitate access and installation of temporary bridge including the results of any geotechnical investigations, drainage control methods, traffic control plans and site access plans.

2) The sequence and method of rehabilitation of existing structure and all limitations of operations outlined in these specifications.
3) Anticipated loads (dead loads and live loads) that the Contractor expects that the temporary bridge will be subjected to during construction.

No work performed by the Contractor shall impact the watercourse or wetlands along the watercourse.

The design of all staging components and site preparation shall be done in accordance with the latest edition, including interims, of the *AASHTO Guide Design Specifications for Bridge Temporary Works*.

The furnishing of such plans, methods and calculations shall not serve to relieve the Contractor of his responsibility for the safety of the work and the successful completion of the project.

Removal of all temporary works shall be done in such a way as not to disturb or otherwise damage any permanent construction.

The Contractor is responsible to incorporate best management practices such as surfacing the construction staging area with gravel, compacted base rock material or other measures to prevent tracking or deposition of mud, dirt, dust and debris onto the travel lanes of I-84 and RT 67 or areas outside of the staging area.

**Method of Measurement:**

Within sixty (60) calendar days of the award of the Contract, the Contractor shall submit to the Engineer for approval a schedule of values showing the cost breakdown of his lump sum bid price. The submission must include substantiation showing that the costs breakdown submitted are reasonable based on the Contractor's lump sum bid.

**Basis of Payment**

Construction Access will be paid for at the contract lump sum price for “Construction Access” which price shall include the design, construction, maintenance, repair, and removal of temporary staging areas, temporary fill, access roads, temporary bridge for access, restoring the median to original conditions and all materials, tools, equipment, labor and work incidental thereto. This item also includes provision and maintenance of Anti-tracking pad and any work associated with protecting any existing utilities.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
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</thead>
<tbody>
<tr>
<td>Construction Access</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>
ITEM #0202452A - TEST PIT

Description

This item shall consist of a test pit which shall be excavated as directed by the Engineer to determine the location of existing utilities and structures. The area and average depth of a typical test pit shall extend to the expected area and depth of excavation required in order to reconstruct the retaining wall as shown on the plans.

Construction Methods

Test pit shall be excavated in the locations shown on the plans and as directed by the Engineer. Test pits shall be backfilled immediately after examination.

In some cases, hand tools may be required to perform the excavation. The Contractor shall be required to perform hand excavation at the same unit price.

Method of Measurement

The quantity to be paid for under this item will be the number of completed test pits as directed by the Engineer.

Basis of Payment

This work will be paid for at the contract unit price each for “Test Pit’ as directed by the Engineer. Which price shall include all necessary equipment, tools, backfill labor and work incidental thereto.

Pay Item                      Pay Unit
Test Pit                      Each
ITEM #0406275A - FINE MILLING OF BITUMINOUS CONCRETE (0 TO 4 INCHES)

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

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

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

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

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

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

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

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

When milling smaller areas or areas where it is impractical to use the above described equipment, the use of a lesser equipped milling machine may be permitted when approved by the Engineer.
Protection shall be provided around existing catch basin inlets, manholes, utility valve boxes, and any similar structures. Any damage to such structures as a result of the milling operation is the Contractor’s responsibility and shall be repaired at the Contractor’s expense.

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

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

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

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

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

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

No vertical faces, transverse or longitudinal, shall be left exposed to traffic unless the requirements below are met. This shall include roadway structures (catch basins, manholes, utility valve boxes, etc.). If any vertical face is formed in an area exposed to traffic, a temporary paved transition shall be established according to the requirements shown on the plans. If the milling machine is used to form a temporary transition, the length of the temporary transition shall conform to Special Provision Section 4.06 –Bituminous Concrete, “Transitions for Roadway Surface,” the requirements shown on the plans, or as directed by the Engineer. At all
permanent limits of removal, a clean vertical face shall be established by saw cutting prior to paving.  
Roadway structures shall not have a vertical face of greater than one (1) inch exposed to traffic as a result of milling. All structures within the roadway that are exposed to traffic and greater than one (1) inch above the milled surface shall receive a transition meeting the following requirements:

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

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

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

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

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

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

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

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

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

Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a sweeper truck. The sweeper truck shall be equipped with a water tank and be capable of removing the millings and loose debris from the surface. The sweeper truck shall operate at a forward speed that allows for the maximum pickup of millings from the roadway surface. Other sweeping equipment may be provided in lieu of the sweeper truck where acceptable by the Engineer.
Any milled area that will not be exposed to live traffic for a minimum of 48 hours prior to paving shall require a vacuum sweeper truck in addition to, or in lieu of, mechanical sweeping. The vacuum sweeper truck shall have sufficient power and capacity to completely remove all millings from the roadway surface including any fine particles within the texture of the milled surface. Vacuum sweeper truck hose attachments shall be used to clean around pavement structures or areas that cannot be reached effectively by the main vacuum. Compressed air may be used in lieu of vacuum attachments if approved by the Engineer.

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

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

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

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

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Milling of Bituminous Concrete (0 to 4 Inches)</td>
<td>S.Y.</td>
</tr>
</tbody>
</table>
ITEM #0406277A - REMOVAL OF EXISTING WEARING SURFACE

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

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

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

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

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

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

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

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

The existing bituminous concrete wearing surface and membrane waterproofing shall be removed in their entireties to the limits shown on the plans. The removal operations shall not begin until the Contractor is prepared to perform the permanent patching or repair to the underlying concrete within five (5) working days. If this is in conflict with "Prosecution and
Progress,” "Maintenance and Protection of Traffic,” or other Contract requirements, the more stringent specification shall apply.

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

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

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

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

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

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

1. Round structures with a vertical face of greater than 1 inch to 2.5 inches shall be transitioned with a hard rubber tapered protection ring of the appropriate inside diameter designed specifically to protect roadway structures.

2. Round structures with a vertical face greater than 2.5 inches shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.

3. All rectangular structures shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.
*Bituminous concrete tapers at a minimum 24 to 1 (24:1) taper in all directions may be substituted for the protection rings if approved by the Engineer.

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

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

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

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

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

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

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

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

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

No separate payments will be made for cleaning the pavement prior to paving; providing protection and doing handwork removal of bituminous concrete around catch basin inlets, bridge scuppers, manholes, utility valve boxes, median barriers, parapets, joints and any similar structures; repairing surface defects as a result of Contractor negligence; providing protection to underground utilities from the vibration of the milling operation; removal of any temporary milled transition; removal and disposal of millings; furnishing a sweeper truck and sweeping after milling. The costs for these items shall be included in the Contract unit price.
<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of Existing Wearing Surface</td>
<td>S.Y.</td>
</tr>
</tbody>
</table>
ITEM #0406287A - RUMBLE STRIPS - AUTOMATED

ITEM #0406288A - RUMBLE STRIPS - MANUAL

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

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

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

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

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

Manual (Narrow Shoulders):
The equipment shall be able to install the rumble strips in sections where the shoulder width from the edge line to an obstruction is between 3 feet and 4 feet. The cutting head(s) shall have the cutting tips arranged in such a pattern as to provide a relatively smooth cut (approximately 1/16 of an inch between peaks and valleys) in one pass. The equipment shall include suitable provisions for the application of water to prevent dusting.
Finished Cut (Automated or Manual)
The rumble strips shall have finished dimensions of 7” (+/- 1/2”) wide in the direction of travel and shall be a 16” (+/- 1/2”) long measured perpendicular to the direction of travel. The depressions shall have a concave circular shape with a minimum 1/2” depth at center (maximum allowable depth is 5/8” measured to a valley). The rumble strips shall be placed in relation to the roadway according to the patterns shown in the plans or on the Rumble Strip Details. Alignment of the edge of the cut shall be checked and verified by the Engineer.

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

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

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

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

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

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

LOCATION DETAIL (TYP.)
LEFT SHOULDER

LOCATION DETAIL (TYP.)
RIGHT SHOULDER

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.

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

RUMBLE STRIP DETAILS

ENGINEER

SUBMITTED

TRACING/REVISING ENG.

APPROVED

SCALE - NONE

3 OF 4

ITEM #0406287A

ITEM #0406288A
ITEM #0520036A - ASPHALTIC PLUG EXPANSION JOINT SYSTEM

Description: Work under this item shall consist of furnishing and installing an asphaltic plug expansion joint system (APJ) in conformance with ASTM D6297, as shown on the plans, and as specified herein.

Work under this item shall also consist of the removal and disposal of bituminous concrete, membrane waterproofing, existing joint components and sealing elements, cleaning and sealing median barrier joints, parapet joints, and sidewalk joints.

Work under this item excludes the removal of Portland cement concrete headers.

Materials: The APJ component materials shall conform to ASTM D6297 and the following:

Aggregate: The aggregate shall meet the following requirements:

a) Loss on abrasion: The material shall show a loss on abrasion of not more than 25% using AASHTO Method T96.

b) Soundness: The material shall not have a loss of more than 10% at the end of five cycles when tested with a magnesium sulfate solution for soundness using AASHTO Method T 104.

c) Gradation: The aggregate shall meet the requirements of Table A below:

d) Dust: aggregate shall not exceed 0.5% of dust passing the #200 sieve when tested in accordance with AASHTO T-11.

<table>
<thead>
<tr>
<th>Square Mesh Sieves</th>
<th>1” (25.0 mm)</th>
<th>¾” (19.0 mm)</th>
<th>½” (12.5 mm)</th>
<th>⅜” (9.5 mm)</th>
<th>No. 4 (4.75 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% passing</td>
<td>100</td>
<td>90 - 100</td>
<td>20 - 55</td>
<td>0 - 15</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

A sample of the aggregate shall be submitted to the Department with a Certified Test Report in accordance with Article 1.06.07 for each 20 tons of loose material or its equivalent number of bags delivered to the job site. The Certified Test report must include a gradation analysis resulting from a physical test performed on the actual material that accompanies the report.

Anti-Tacking Material: This material shall be a fine graded granular material with 100% passing the 3/16” sieve and no more than 5% passing the #200 when tested in accordance with AASHTO T-27.

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

Bridging Plate: The bridging plates shall be steel conforming to the requirements of ASTM A36 and be a minimum ¼” thick and 8” wide. For joint openings in excess of 3” the minimum plate dimensions shall be ⅜” thick by 12” wide. Individual sections of plate shall
not exceed 4’ in length. Steel locating pins for securing the plates shall be size 16d minimum, hot-dip galvanized, and spaced no more than 12” apart.

Concrete Leveling Material: Shall be a cementitious-based material that conforms to ASTM C928 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repair, for R3 performance requirements in Table 1 and achieve the following:
   a. Final set in 45 Minutes
   b. 2500 psi compressive strength in 24 hours
   c. 5000 psi compressive strength in 7 days

Parapet Sealant: The sealant used in parapet joint openings shall be a single component non-sag silicone sealant that conforms to the requirements of ASTM D5893.

Sidewalk Sealant: The sealant used in sidewalk joint openings shall be a rapid cure, self-leveling, cold applied, two-component silicone sealant. The silicone sealant shall conform to the requirements listed in Table B:

<table>
<thead>
<tr>
<th>Table B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Properties - As Supplied</strong></td>
</tr>
<tr>
<td><strong>Test Method</strong></td>
</tr>
<tr>
<td>Extrusion Rate</td>
</tr>
<tr>
<td>Leveling</td>
</tr>
<tr>
<td>Specific Gravity</td>
</tr>
</tbody>
</table>

| **Properties - Mixed**                                            |
| **Test Method**            | **Requirement** |
| Tack Free Time             | ASTM C679      | 60 min. max.     |
| Joint Elongation – Adhesion to concrete | ASTM D5329  \(^{1,2,3}\) | 600% min |
| Joint Modulus @ 100% elongation | ASTM D5329  \(^{1,2,3}\) | 15 psi max |
| Cure Evaluation            | ASTM D5893     | Pass @ 5 hours   |

1. Specimens cured at 77±3°F and 50±5% relative humidity for 7 days
2. Specimens size: ½” wide by ½” thick by 2” long
3. Tensile Adhesion test only

The date of manufacture shall be provided with each lot. No sealant shall be used beyond its maximum shelf-life date.

The two–part silicone sealants shown in Table C are known to have met the specified requirements:
Table C

<table>
<thead>
<tr>
<th>Product</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dow Corning 902RCS</td>
<td>Dow Corning Corporation 2200 W Salzburg Road Auburn, Michigan 48611</td>
</tr>
<tr>
<td>Wabo SiliconeSeal</td>
<td>BASF/Watson Bowman Acme Corporation 95 Pineview Drive Amherst, New York 14228</td>
</tr>
</tbody>
</table>

Other two-component silicone joint sealants expressly manufactured for use with concrete that conform to the aforementioned ASTM requirements will be considered for use provided they are submitted in advance for approval to the Engineer. Other joint sealants will be considered for use only if a complete product description is submitted, as well as documentation describing at least five installations of the product. These documented installations must demonstrate that the product has performed successfully for at least three years on similar bridge expansion joint applications.

A Materials Certificate and Certified Test Report for the asphaltic binder shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07 certifying that the asphaltic binder satisfies the requirements of the most current version of ASTM D6297.

A Materials Certificate for all other components of the APJ, leveling material, backer rod and sealant used in sealing parapet and sidewalk joint openings, shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07

Construction Methods: The APJ shall be installed at the locations shown on the plans and in stages in accordance with the traffic requirements in the special provisions “Maintenance and Protection of Traffic” and “Prosecution and Progress”.

At least 30 days prior to start of the work, the Contractor shall submit to the Engineer for approval a detailed Quality Control Plan for the installation of the APJ. The submittal shall include:

a) A list of all manufactured materials and their properties to be incorporated in the joint system, including, but not limited to the asphaltic binder, anti-tack material, backer rod, sealant, leveling material, as well as the aggregate’s source.

b) A detailed step by step installation procedure and a list of the specific equipment to be used for the installation. The Quality Control Plan must fully comply with the specifications and address all anticipated field conditions, including periods of inclement weather.

The APJ shall not be installed when bituminous concrete overlay or joint cutout is wet. The APJ shall only be installed when the bridge superstructure surface temperature is within the limits specified in Table D and when the ambient air temperature is within the range of 45°F to 95°F.
The bridge superstructure surface temperature range is determined using the thermal movement range provided on the contract plans for the proposed APJ deck installation location and the selected APJ product.

**Table D**

<table>
<thead>
<tr>
<th>Designed Deck Joint Thermal Movement Range(^2)</th>
<th>Bridge Superstructure Surface Temperature(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0” to 1”</td>
<td>45° F to 95° F</td>
</tr>
<tr>
<td>1-1/8”</td>
<td>45° F to 90° F</td>
</tr>
<tr>
<td>1-1/4”</td>
<td>45° F to 80° F</td>
</tr>
<tr>
<td>1-3/8”</td>
<td>45° F to 70° F</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>45° F to 65° F</td>
</tr>
</tbody>
</table>

1. The superstructure surface temperature shall be determined from the average of three or more surface temperature readings taken at different locations on the interior girder surfaces by the Contractor as directed by the Engineer. Temperature measurements of the superstructure shall be taken by the contractor with a calibrated hand held digital infrared laser-sighted thermometer on the surfaces of an interior steel girder, or interior concrete girder protected from direct sunlight. The infrared thermometer to be supplied by the Contractor for this purpose shall meet certification requirements of EN61326-1, EN61010-1, and EN60825-1 maintained by the European Committee for Electrotechnical Standardization (CENELEC). The thermometer shall have a minimum distance-to-spot ratio of 50:1 and shall have adjustable emissivity control. The thermometer shall have a minimum accuracy value of ±1% of reading or ±2°F, whichever is greater. The thermometer shall be used in strict accordance with the manufacturer’s written directions. An additional infrared thermometer satisfying the same standards to be used in this application shall also be provided to the Engineer for quality assurance purposes.

2. Linear interpolation may be used to determine an allowable surface temperature range for thermal movement ranges in between values shown in the table, as approved by the Engineer.

Prior to installing the APJ, the Contractor shall determine the exact location of the deck joint beneath the bituminous concrete overly.
The APJ shall be installed symmetrically about the deck joint opening to the dimensions shown on the plans or as directed by the Engineer; not to exceed 24 inches measured perpendicular to the deck joint. The proposed saw cut lines shall be marked on the bituminous concrete overlay by the Contractor and approved by the Engineer, prior to saw-cutting. The saw-cuts delineating the edges of the APJ shall extend full depth of the bituminous concrete overlay.

The existing bituminous concrete overlay, waterproofing membrane and/or existing expansion joint material, within the saw cut limits shall be removed and disposed of by the Contractor to create the joint cutout.

Concrete surfaces that will support the bridging plates shall be smooth and form a plane along and across the deck joint. Rough or damaged concrete surfaces shall be repaired with a leveling compound meeting the requirements of this specification. Deteriorated concrete areas within the joint limits shall be repaired as directed by the Engineer: such repairs, when deemed necessary by the Engineer, shall be compensated for under the applicable concrete deck repair items in the Contract. The existing and repaired concrete surfaces shall provide continuous uniform support for the bridging plate and prevent the plate from rocking and deflecting.

Prior to the installation of the backer rod, all horizontal and vertical surfaces of the joint cutout shall be abrasive blast cleaned using an oil-free, compressed air supply. The entire cutout shall then be cleared of all loose blast media, dust, debris and moisture using an oil-free, hot air lance capable of producing an air stream at 3,000ºF with a velocity of 3,000 feet per second.

A single backer rod, with a diameter at least 25% greater than the existing joint opening at the time of installation, shall be installed at an inch below the bridging plate in the existing deck joint opening between the concrete edges.

Asphaltic binder shall be heated to a temperature within the manufacturer’s recommended application temperature range which shall be provided in the Quality Control Plan. During application, the temperature of the binder shall be maintained within this range. In no case shall the temperature of the binder go below 350º F nor exceed the manufacturer’s recommended maximum heating temperature.

Asphaltic binder shall then be poured into the joint opening until it completely fills the gap above the backer rod. A thin layer of binder shall next be applied to the all horizontal and vertical surfaces of the joint cutout.

Bridging plates shall be abrasive blast-cleaned on-site prior to installation and then placed over the deck joint opening in the joint cutout. The plates shall be centered over the joint opening and secured with locating pins along its centerline. The plates shall be placed end to end, without overlap, such that the gap between plates does not exceed ¼”. The plates shall extend to the gutter line and be cut to match the joint’s skew angle, where concrete support exists on both sides of the joint. Within APJ installation limits, where concrete support does not exist at both sides of the joint opening (such as where a bridge deck end abuts a bituminous concrete roadway shoulder), bridging plates shall not be installed. Installed bridging plates shall not rock or deflect.
in any way. After installation of bridging plates, a thin layer of asphaltic binder shall be applied to all exposed surfaces of the plates.

The remainder of the joint cutout shall then be filled with a mixture of hot asphaltic binder and aggregate prepared in accordance with the submitted Quality Control Plan and the following requirements:

- The aggregate shall be heated in a vented, rotating drum mixer by the use of a hot-compressed air lance to a temperature of between 370° F. to 380° F. This drum mixer shall be dedicated solely for the heating and, if necessary, supplemental cleaning of the aggregate. Venting of the gas and loose dust particles shall be accomplished through ¼” drilled holes spaced no more than 3” on center in any direction along the entire outside surface of the drum.
- Once the aggregate has been heated, it shall then be transferred to a secondary drum mixer where it shall be fully coated with asphaltic binder. A minimum of two gallons of binder per 100lbs of stone is required.
- The temperature of the aggregate and binder shall be monitored by the contractor with a calibrated digital infrared thermometer.
- The coated aggregate shall be loosely placed in the joint cutout in lifts not to exceed 2 inches.
- Each lift shall be leveled, compacted and then flooded with hot asphaltic binder to the level of the aggregate to fill all voids in the coated aggregate layer. The surface of each lift shall be flooded until only the tips of the aggregate protrude out of the surface.
- The final lift shall be placed such that no stones shall project above the level of the adjacent overlay surface following compaction of the coated aggregate.
- Following installation of the final lift, sufficient time and material shall be provided to allow all voids in the mixture to fill. This step may be repeated as needed.
- The joint shall then be top-dressed by heating the entire area with a hot-compressed air lance and applying binder. The final joint surface must be smooth with no protruding stones and be absent of voids.
- Once top-dressed, the joint shall have an anti-tack material spread evenly over the entire surface to prevent tracking.

The Contractor shall be responsible for removing all binder material that leaks through the joint and is deposited on any bridge component, including underside of decks, headers, beams, diaphragms, bearings, abutments and piers.

Traffic shall not be permitted over the joint until it has cooled to 130° F when measured with a digital infrared thermometer. Use of water to cool the completed joint is permitted.

**Sidewalk, parapet, and/or curb joint openings**

Before placement of any sealing materials in parapets, curbs, or sidewalks, the joints shall be thoroughly cleaned of all scale, loose concrete, dirt, dust, or other foreign matter by abrasive blast cleaning. Residual dust and moisture shall then be removed by blasting with oil free compressed air using a hot air lance. Projections of concrete into the joint space shall also be
removed. The backer rod shall be installed in the joint as shown on the plans. The joint shall be clean and dry before the joint sealant is applied. Under no circumstances is the binder material to be used as a substitute for the joint sealant.

Whenever abrasive blast cleaning is performed under this specification, the Contractor shall take adequate measures to ensure that the abrasive blast cleaning will not cause damage to adjacent traffic or other facilities.

The joint sealant shall be prepared and placed in accordance with the manufacturer's instructions and with the equipment prescribed by the manufacturer. Extreme care shall be taken to ensure that the sealant is placed in accordance with the manufacturer’s recommended thickness requirements.

The joint sealant shall be tooled, if required, in accordance with the manufacturer's instructions.

Primer, if required, shall be supplied by the sealant manufacturer and applied in accordance with the manufacturer's instructions.

When the sealing operations are completed, the joints shall be effectively sealed against infiltration of water. Any sealant which does not effectively seal against water shall be removed and replaced at the Contractor's expense.

Any installed joint that exhibits evidence of failure, as determined by the Engineer, such as debonding, cracking, rutting, or shoving of the APJ mixture shall be removed and replaced full-width and full–depth to a length determined by the Engineer at no additional cost to the State.

**Method of Measurement:** This work will be measured for payment by the number of cubic feet of “Asphaltic Plug Expansion Joint System” installed and accepted within approved horizontal limits. No additional measurement will be made for furnishing and installing backer rod and joint sealant in the parapets, concrete medians, curbs and/or sidewalks.

**Basis of Payment:** This work will be paid for at the contract unit price per cubic foot for "Asphaltic Plug Expansion Joint System," complete in place, which price shall include the saw-cutting, removal and disposal of bituminous concrete, membrane waterproofing, existing joint components and sealing elements, the furnishing and placement of the leveling compound, cleaning of the joint surfaces, furnishing and installing bridging plates, the furnishing and installing of the asphaltic plug joint mixture, the cost of furnishing and installing joint sealant in the parapets, concrete medians, curbs and sidewalks, and all other materials, equipment including, but not limited to, portable lighting, tools, and labor incidental thereto. No additional payment shall be made for the 12” wide bridging plates that are required for deck joint openings with widths in excess of 3”.

If directed by the Engineer, additional deck repairs will be addressed and paid for under the applicable concrete deck repair items in the Contract.
ITEM #0601073A - CLASS ‘S’ CONCRETE

Description: Work under this item shall consist of removing concrete from bridges, and forming and recasting the area. The work shall also include any 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 a cementitious primer prior to placing concrete.

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

Materials: Materials shall conform to Section M.03 as modified herein below:

M.03.02 Mix Design Requirements is supplemented to include Class "S" Superplasticized concrete.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>WT. APPROX.</th>
<th>WATER PER BAG</th>
<th>CEM. FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class &quot;S&quot;</td>
<td>1:2.16:2.20</td>
<td>MAX. (132)</td>
<td>(9.2 Bags / Cu.M.)</td>
</tr>
</tbody>
</table>

1 - Coarse Aggregate:
(c) Gradation: 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” (10mm) coarse aggregate.

3 - Cement:
Only Type I or II Portland Cement shall be used for Class "S" Concrete and there shall be no supplementary cementitious materials.

5 - Admixtures:
Add 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” (64mm) to 6.5” (165mm) upon the addition of the amount recommended by the respective manufacturer. The HRWR shall conform to ASTM C494 Type F or Type G and shall be approved by the Engineer. The use of this material shall be in strict accordance with the respective manufacturer's written instructions and procedures.

M.03.04 - Curing Materials:
3. Liquid Membrane Forming Compound:
No liquid membrane forming compound shall be used for Class "S" concrete.
Cementitious Primer:
Cementitious primer shall be for the application to the exposed reinforcing steel within a patch to restore an alkaline environment around the bar and to enhance adhesion of the patch material to the bar.

Certification:
A Materials Certificate is required for the cementitious primer in accordance with Article 1.06.07, certifying the conformance of this material to the requirements stated herein.

Portland cement materials shall conform to Section M.03 as modified herein.

Construction Methods:
Composition:
Class "S" concrete shall conform to the requirements as specified in M.03 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.

The Class "S" concrete shall have a minimum 4,000 psi (28 MPa) compressive strength at 28 days.

Consistency:
Class "S" concrete shall have a slump range of 2 inches (51mm) to 4 inches (102mm) prior to the addition of the HRWR and from 6 inches (150mm) to 8 inches (203mm) 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.

Mixing Concrete:
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.

Curing Concrete:
Concrete shall be cured by leaving forms on for seven (7) days.

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

**Work Procedure:**
Prior to the Contractor removing any concrete, the Engineer will perform an inspection to determine the exact limits and locations of all areas to be repaired. The Contractor shall provide scaffolding or other access as required for the Engineer’s inspection. The Contractor shall not perform any repair work without prior approval of the Engineer for locations, limits and types of repairs.

After deteriorated concrete has been removed from the designated areas, the Contractor shall perform repairs in accordance with Class “S” Concrete Repair details on the Typical Concrete Repair Details drawing.

The perimeter of each patch shall be saw cut 1” (25mm) deep. Care shall be taken not to cut existing reinforcing.

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.

Following sandblasting and cleaning of the surfaces, all exposed reinforcing shall be painted with the approved cementitious primer prior to placing concrete. The exposed concrete surface shall be dampened with fresh water (saturated surface dry) immediately prior to placement of the fresh concrete.

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 15 Lb (7 kg) size hammers shall be used for general chipping and removal 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. 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 to insure 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.

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.

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 (saturated surface dry) with fresh water immediately prior to placement of the fresh concrete. 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 (7ºC) and rising at the time of concrete installation.

Prior to forming up vertical surfaces, reinforcing steel 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 concrete 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 found acceptable to the Engineer.

**Method of Measurement:**

“Class ‘S’ Concrete” will be measured for payment by the actual volume in cubic feet of concrete placed, and accepted by the Engineer.

**Basis of Payment:**

“Class ‘S’ Concrete” will be paid for at the contract unit price per cubic foot, complete in place, which price shall include providing scaffolding or other access for the Engineer’s inspection, sawcutting and removing unsound material, sandblasting, cleaning, application of cementitious primer on the reinforcing steel, welded wire fabric, forming, placing, curing, stripping and finishing new concrete, debris shields, and all materials, equipment, tools, labor and clean-up incidental thereto.
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<th>Pay Item</th>
<th>Pay Unit</th>
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<tr>
<td>Class “S” Concrete</td>
<td>c.f.</td>
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ITEM #0601196A - 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 1 inch or less in depth 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:

5 Star Structural Concrete V/O
Manufactured by:  U.S. Grout Corporation
401 Stillson Road
Fairfield, Connecticut  06430

Masterpatch 230 VP
Manufactured by:  Master Builders, Inc.
23700 Chagrin Boulevard
Cleveland, Ohio  44122

Re-crete 20 Minute Set
Manufactured by:  Dayton Superior Corporation
3 Horne Drive
Folcroft, Pennsylvania  19032

The single component zinc primer shall be one of the following:

Kolor-Zinc No. 0100
Manufactured by:  Keeler & Long, Inc.
856 Echo Lake Road
Watertown, Connecticut  06795

Carboline 676
Manufactured by:  Carboline
350 Hanley Industrial Court
St. Louis, Missouri  63144

Zinc Plate 49 Organic Primer
Manufactured by:  Con-Lux Coatings, Inc.
Talmadge Road, Box 847
Edison, New Jersey  08818
Certification: A Materials Certificate and a Certificate of Compliance shall be required for the cementitious mortar in accordance with Article 1.06.07, certifying the conformance of this material to the requirements stated herein.

**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 maximum of ½ inch deep by chiseling and saw cutting. 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 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.

Maximum 30 lb hammers shall be used for general chipping and removal. 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 patch area surface temperature shall 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 towards 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 two hours.
Cured patches shall be sounded by the Engineer to detect the presence of any hollow areas. Such areas shall be removed and replaced by the Contractor at his own expense until a patch acceptable is in place.

**Method of Measurement:**

This work will be measured for payment by the 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 feet for “Variable Depth Patch”, complete in place, which price shall include removal of loose and deteriorated concrete, saw cutting and all materials, equipment, tools, labor and incidental thereto.

<table>
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<th>Pay Item</th>
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<tr>
<td>Variable Depth Patch</td>
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ITEM #0601270A - FULL DEPTH PATCH (HIGH EARLY STRENGTH CONCRETE)

Description: This item shall consist of the saw cutting concrete, removal of all deteriorated concrete for the full depth of the deck slab, furnishing and installing deformed steel bars, and reconstructing the slab with new concrete, where directed by the Engineer and as hereinafter specified.

Work under this item shall also include the providing of a safe access to the structure for the delineation of the repair locations and review of the performed work. The Contractor shall not perform any repair work without prior approval of the Engineer for location, limits and types of repairs.

Materials: The materials shall conform to the following requirements:
1. High Early Strength Concrete – The high early strength concrete shall conform to one of the following:
   A. The Contractor shall design and submit to the Engineer for approval a high early strength concrete mix. This mix shall be air-entrained, and shall be composed of Portland cement, fine and coarse aggregates, approved admixtures and additives, and water. The mix shall contain between 4% and 7% entrained air, and shall attain a 6-hour compressive strength of 2,500 psi. Additionally, the mix shall contain shrinkage compensating additives such that there will be no separation of the patched area from the parent concrete. This shrinkage-compensating additive shall be utilized so as to produce expansion in the high early strength concrete of no more than 3%.
   B. In lieu of the above high early strength concrete mix, the Contractor may propose the use of a proprietary type mix that will meet the same physical requirements as those stated above. A mix design shall be submitted for this material, stating the percentage of each component to be utilized.

2. Regardless of the type of high early strength concrete proposed by the Contractor, substantive data that demonstrates the ability of the material to meet the specification requirements shall be submitted with the proposed mix design at least 2 weeks prior to its use.

3. Deformed Steel Bars: Section 6.02.

Construction Methods: Construction methods shall conform to the following requirements:
1. Inspection of the Structural Slab: Before any existing concrete is removed from the structural slab, the Contractor will provide the Engineer clear access to the bridge deck. During this time, the Engineer will perform an inspection of the structural slab and designate areas where concrete removal will be required. Due to the nature of the operations, the inspection can be performed only after some existing materials, notably overlays and waterproofing systems, have first been removed from the structural slab. It shall be the responsibility of the Contractor to arrange the construction schedule so that the required operations may be performed without causing delay to the work.

No operations will be performed by the Engineer until after the following construction work has been completed:
a) The existing bituminous overlay or concrete wearing course, if present, has been removed.
b) The existing waterproofing system, if present, has been removed.

The removal of these materials will be paid for under other applicable items.

It shall be the responsibility of the Contractor to inform the Engineer, in writing, of the date that a structure will be available for inspection operations. Notification shall be given to the Engineer at least 7 days prior to the date that the area in question will be in a condition acceptable to the Engineer.

The Contractor is hereby informed that the following time period will be necessary to perform the required inspection operations:

One (1) working day with suitable weather conditions per each 6,000 square feet, or portion thereof, of structural slab area.

The Contractor will not be allowed to do any further work to the structural slab, until all necessary inspection operations have been performed, unless given permission by the Engineer. The Contractor shall include any costs related to the allowance for this inspection in the general cost of the work.

2. Removal of Deteriorated Concrete: All deteriorated concrete shall be removed within the limits shown on the plans and where ordered by the Engineer. The lateral limits of each area to be repaired will be delineated by the Engineer and suitably marked. Where several areas to be repaired are very close together, the Engineer may combine these individual patches into a large area. The outlines of each such area shall first be cut to a depth of 1/2 inch with an approved power-saw capable of making straight cuts. In the event that reinforcing steel is encountered within the upper 1/2 inch depth during sawing operations, the depth of saw-cut shall immediately be adjusted to a shallower depth so as not to damage the steel bars. If so directed by the Engineer, saw cutting shall again be carried down to the 1/2 inch depth at other locations of repair provided reinforcing steel is not again encountered. Where over-breakage occurs resulting in a featheredge, the featheredge be squared up to a vertical edge in an approved manner. Where sawing is impractical, the areas shall be outlined by chisel or other approved means.

The removal of concrete shall be by hydro-demolition or pneumatic hammer methods and shall be governed by the requirements set forth in the special provision Item “Partial Depth Patch” and as directed by the Engineer.

The Contractor shall take adequate measures to prevent concrete debris from falling to any area below the structure and onto adjacent roadway lanes. All debris shall be promptly cleaned up and removed from the site. All material removed shall be satisfactorily disposed of by the Contractor.

Where existing reinforcing steel is damaged or has insufficient cover as determined by the Engineer, it shall be cut out and replaced with new reinforcing steel the same size, with a minimum length for lap splices as indicated on the plans or as directed by the Engineer.

3. Surface Preparation: Sound reinforcing steel which is in the proper position in the slab shall be left in place and cleaned of all concrete. The smaller fragments shall be removed with hand tools or by water blast cleaning.

The newly exposed reinforcing steel and concrete faces shall be cleaned of loose or powder-like rust, oil solvent, grease, dirt, dust, bitumen, loose particles, and foreign matter just prior to patching.
Existing concrete surfaces against which the new patch will be placed shall be dampened. All free water shall be removed from the surface. Forms shall conform to the pertinent requirements of Subarticle 6.01.03-1. 
The cleaned concrete surface area to receive patching material shall be wetted for a 1 hour period immediately prior to placement of the concrete patch. Any standing water shall be blown out with compressed air prior to application of binding grout and patch material. After wetting of the deck patch area to receive patching, and removal of the standing water, cement binding grout shall be scrubbed into the concrete patch bonding surface with stiff bristled brushes. All bonding surfaces in the patch area shall receive a coating of bonding grout within a time period not to exceed 5 minutes prior to placement of the concrete patch material.

4. **Mixing, Placing, and Finishing:** Mixing and placing concrete shall be done in accordance with the applicable portions of Article 6.01.03. Mixing and placing shall not be executed unless the ambient temperature is above 40 °F and rising. The concrete mix shall be properly placed to insure complete contact around all reinforcing steel and against existing concrete at patch edges and compacted to a level slightly above the surrounding deck surface. Vibrators of the appropriate size shall be used for all consolidation of the concrete, regardless of the size of the patch area, with no hand tampering or rodding allowed. Concrete may be moved horizontally with the aid of hand tools, but not with the use of vibrators (excess vibration shall be avoided).

Vibrating plates or vibrating screed shall be used on the surface of all patches for strike off and consolidation. After the concrete has been spread evenly and compacted to a level slightly above the adjacent concrete surface, the vibrating plate or screed shall be drawn over the surface at a uniform speed without stopping, in order to finish the surface smooth and even with adjacent concrete. The surface shall be float finished. Finishing operations shall be completed before initial set takes place.

5. **Curing:** Immediately after finishing of the patch area, a sheet of 4 mil polyethylene shall be placed over the repair area, in conjunction with insulating curing material. This material shall be a minimum of 2-inch thick closed cell extruded polystyrene insulation board that conforms with the requirements of ASTM C578. It shall have a minimum certified R-value of 10. The insulating material shall extend a minimum of 12 inches beyond the limits of the patch area, and shall be kept in intimate contact with the surrounding payment surface to prevent lifting of the material. It shall be weighted down with sandbags that weight at least 15 pounds each. The sandbags shall be placed a minimum of 2 feet on center around the patch area.

Cured patches, having a hollow sound when chain dragged or tapped (indicating delamination), shall be replaced by the Contractor at its expense until a patch acceptable to the Engineer is in place.

6. **Tolerances in Finished Patch Surfaces:** The surface profile of the patched area shall not vary more than 1/8 inch in a distance of 10 feet, when a 10 foot long straightedge is placed on the surface at any angle relative to the centerline of the bridge. Humps in the patch that exceed the 1/8 inch tolerance shall be ground down by approved machinery. Sags or depressions in the surface of the patch area that exceed 1/8 inch tolerance as determined by the Engineer shall be repaired by removal of the concrete in the depression to a depth of 1 inch and repaired in the previously described manner.
7. **Testing:** The Contractor shall form, cure and test all concrete test cylinders under supervision of a representative of the Department. The dimensions, type of cylinder mold, number of cylinders, and method of curing shall be as directed by the Engineer.

   The Contractor shall provide a portable compressive testing machine, on Site, for the purpose of testing all compressive strength cylinders. All testing shall be in accordance with the requirements of ASTM C39. **NOTE:** This compressive testing machine must be calibrated in accordance with the provisions of Section 5, ASTM C39.

8. **Time Schedule:** Traffic will not be allowed on any areas where the Contractor has placed and finished concrete until the material has properly cured as specified, and has developed the required strength of 2,500 psi as determined by the compressive strength test, or until the Engineer authorizes its opening to traffic.

   All work shall proceed as required by the “Maintenance and Protection of Traffic” and “Prosecution and Progress” specifications elsewhere within the Contract.

**Method of Measurement:** This work will be measured for payment by the actual volume in cubic yards of replacement concrete, complete and accepted. No deduction will be made for the volume of reinforcing steel. Removal of concrete will not be measured for payment.

**Basis of Payment:** This work will be paid for at the Contract unit price per cubic yard for “Full Depth Patch (High Early Strength Concrete)” complete in place, which price shall include sawcutting and removal of concrete, surface preparation, furnishing and installing deformed steel bars, concrete replacement, all equipment, tools, labor and work incidental thereto.

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<tr>
<td>Full Depth Patch (High Early Strength Concrete)</td>
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ITEM #0601318A - PARTIAL DEPTH PATCH

**Description:** Work under this item shall consist of the removal of spalled, delaminated or otherwise deteriorated concrete from existing bridge decks, approach slabs and headers by pneumatic hammers or hydro-demolition methods, and replacement with fast setting patching material as shown on the plans, as directed by the Engineer and specified herein.

Where ordered by the Engineer, work under this item shall also include inspecting the underside of the deck concrete for popouts caused by the removal of deteriorated concrete.

Work under this item shall also include the furnishing and installation of wire ties for reinforcing bar and vertical supports on inadequately supported or vibrating reinforcing steel within deck patch areas, as ordered by the Engineer.

**Materials:** The materials shall meet the following requirements:

1) **Patching Material:** The patching material shall be a concrete composed of a quick setting cement, fine aggregate, coarse aggregate and water. This concrete shall harden within 40 minutes, and develop minimum compressive strengths of 1,000 psi within 1 hour after set and 3,000 psi within 3 days.

The Contractor shall design and submit a quick setting mix to the Engineer for acceptance. Said mix design shall meet the strength requirements noted above and shall attain a minimum of 2500 psi prior to allowing traffic on patched surfaces. The mix proportions and method of application shall be in accordance with the manufacturer’s recommendations. Sources of supply of all the materials shall be clearly indicated.

Fine aggregate shall meet the requirements of Subarticle M.03.01-2.

The coarse aggregate shall meet the requirements of Subarticle M.03.01-1. The required grading shall be obtained by using 100% of No. 8 size coarse aggregate. Grading of the aggregate shall conform to the gradation for No. 8 stone in Article M.01.01.

Water shall meet the requirements of Subarticle M.03.01-4.

The quick setting cement shall be one of the following materials:

<table>
<thead>
<tr>
<th>Material</th>
<th>Manufacturer</th>
<th>Address</th>
<th>Phone</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perma Patch</td>
<td>Dayton Superior Corporation</td>
<td>7130 Ambassador Dr. Allentown, PA 18106</td>
<td>800-745-3707</td>
<td><a href="http://www.daytonsuperior.com">www.daytonsuperior.com</a></td>
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</tbody>
</table>
Gypsum Based Materials will not be allowed.

**Construction Methods:**

Removal of concrete for partial depth patch will be performed by one of two methods: Hammer Demolition or Hydro-demolition. Prior to beginning any work, the Contractor shall provide submittals outlining intended method, as defined herein.

1) **Inspection of the Deck:** Before any existing concrete is removed, the Contractor shall provide the Engineer clear access to the bridge deck. During this time, the Engineer will perform an inspection of the structural slab and will designate areas where concrete removal shall be required. It shall be the responsibility of the Contractor to arrange the construction schedule so that the required operations may be performed without causing delay to the work.

   No operations will be performed by the Engineer until after the following construction work has been completed:
   a) The existing bituminous overlay or concrete wearing course, if present, has been removed.
   b) The existing waterproofing system, if present, has been removed.

   Note: The removal of this material will be paid for under other applicable items.

   It shall be the responsibility of the Contractor to inform the Engineer, in writing, of the date that a structure will be available for inspection operations. Notification shall be given to the Engineer at least 7 days prior to the date that the area in question will be in a condition acceptable to the Engineer.

   The Contractor is hereby informed that the following time period will be necessary to perform the required inspection operations:

   One working day with suitable weather conditions per each six thousand (6,000) square feet, or portion thereof, of deck area.

   The Contractor will not be allowed to do any further work to the structure, until all necessary inspection operations have been performed, unless given permission by the Engineer.

   The Contractor shall include any costs related to the allowance for this inspection in the general cost of the work.

2) **Hammer Demolition:** The maximum allowable noise level caused by equipment used for the removal of deck concrete shall not exceed 90 decibels on the “A” weighted scale, as measured at the nearest residence or occupied building. The Contractor shall demonstrate, to the satisfaction of the Engineer, that the equipment will meet this requirement before the use of such equipment will be allowed.
The weight of pneumatic hammers when used shall not exceed 30 pounds for concrete removal above the top reinforcing steel nor 15 pounds for concrete removal below the top reinforcing steel.

3) **Hydro-Demolition Water and Equipment:** All hydro-demolition equipment shall be capable of selectively removing spalled, delaminated or otherwise deteriorated concrete and cleaning the existing reinforcing steel of all rust and corrosion products by use of high-velocity water jets acting under continuous automatic control.

The hydro-demolition equipment shall consist of filtering and pumping units operating in conjunction with a remote-controlled robotics device.

All hydro-demolition equipment shall be equipped with an angled and rotating water nozzle to prevent interference of the existing reinforcing steel with the removal of concrete.

The maximum allowable noise level caused by equipment used for the removal of deck concrete shall not exceed ninety (90) decibels on the “A” weighted scale, as measured at the nearest residence or occupied building. The Contractor shall demonstrate, to the satisfaction of the Engineer, that the equipment will meet this requirement before the use of such equipment will be allowed.

The make and model numbers of hydro-demolition equipment shall be submitted for acceptance by the Engineer. No hydro-demolition work shall be initiated until this acceptance is granted.

The Contractor shall provide structurally adequate shields approved by the Engineer for protection of adjacent traffic lanes in the vicinity of the removal and cleanup operations.

Water used for the hydro-demolition shall be potable.

The Contractor is advised that the withdrawal of more than 50,000 gallons of water per day from a single source other than from a municipal water system shall require a diversion permit issued by the Department of Energy and Environmental Protection, Water Resources Unit, in accordance with the Connecticut Water Diversion Policy Act PA 84-402, CGS Sections 22a-365 through 22a-378.

4) **Hydro-Demolition Drainage Runoff Control:** At least 2 weeks prior to the planned initiation of hydro-demolition operations, the Contractor shall submit to the Engineer for acceptance a comprehensive plan for the hydro-demolition operation. This Hydro-Demolition Plan shall include the following:

a) Equipment
b) Containment
c) Filtration
d) Location of trial areas
e) Disposal of hydro-demolition runoff and concrete debris in conformance with these specifications

The Plan shall ensure that all concrete debris and particulate matter will be removed from hydro-demolition runoff water prior to its release to the environment.

The Plan shall include provision for the concurrent vacuuming of all runoff water at the immediate vicinity of the hydro-demolition operation. Runoff water shall be completely contained and vacuumed into a suitably sized water tight mobile tank for transport to a disposal site sedimentation basin acceptable to the Engineer.

Hydro-demolition operations shall proceed only with the simultaneous operation of a runoff water vacuum pickup in the immediate area of the hydro-demolition operation.
Runoff water shall not be allowed to flow across adjacent travel lanes, across bridge joints nor through any existing bridge drainage system.

The size and location of the disposal site sedimentation basin shall be detailed in the Hydro-Demolition Plan. The sedimentation basin shall be properly sized so that uncontrolled overflow does not occur. At the conclusion of hydro-demolition operations, the sedimentation basin and all concrete debris shall be removed and the area restored to its original condition.

The Plan shall additionally conform to all applicable requirements of Section 1.10 Environmental Compliance of the Standard Specifications.

The acceptance by the Engineer of the Hydro-Demolition Plan shall in no way relieve the Contractor of any responsibility for its safe and effective performance.

5) Calibration and Testing of Hydro-Demolition Equipment: A trial area will be designated by the Engineer to demonstrate that the equipment, personnel and methods of operation are capable of producing satisfactory results. The trial area will consist of 2 patches, each of approximately 20 square feet, one area of deteriorated or defective concrete and one area of “sound” concrete as determined by the Engineer.

Area of sound concrete is defined as: An area free from chemical defects, delamination, spalling, cracks, etc.

In the “sound area of concrete,” the equipment shall be programmed to remove concrete to a depth 1 inch ± 1/4 inch below the top reinforcing steel mat.

After completion of the sound concrete test area, the equipment shall be located over the deteriorated or defective concrete and, using the same parameters as for sound concrete removal, shall remove all deteriorated or defective concrete. If a satisfactory result is obtained, these parameters may be used as a basis for production removal.

If, after calibrating the hydro-demolition equipment and beginning removal operations in a particular zone or area, insufficient removal of concrete is observed, in the opinion of the Engineer, the Contractor shall recalibrate the hydro-demolition equipment for that zone or area to the satisfaction of the Engineer.

6) Removal of Deteriorated Concrete: All deteriorated concrete designated for removal under this construction item shall be removed within the limits shown on the plans and where ordered by the Engineer. The lateral limits of each area to be repaired will be delineated by the Engineer and suitably marked. Where several areas to be repaired are very close together, the Engineer may combine these individual patches into a large area. The outlines of each such area shall first be cut to a depth of 1/2 inch with a powersaw capable of making straight cuts prior to pneumatic demolition. In the event that reinforcing steel is encountered within the upper 1/2 inch depth during sawing operations, the depth of saw-cut shall immediately be adjusted to a shallower depth so as not to damage the steel bars. If so directed by the Engineer, saw cutting shall again be carried down to the 1/2 inch depth at other locations of repair provided reinforcing steel is not again encountered. Where over-breakage occurs resulting in a featheredge, the featheredge shall be squared up to a vertical edge in an acceptable manner. Where sawing is impractical, the area shall be outlined by chisel or other acceptable means.

All deteriorated concrete shall be removed by pneumatic hammers or hydro-demolition methods.
The depth of concrete removal shall be at least 1 inch below the top reinforcing steel mat but shall be such as to include all spalled, delaminated, or otherwise deteriorated concrete. The Engineer will be the sole determiner of what constitutes deteriorated concrete, using sounding methods or other evaluation measures.

Within 1 hour following the initiation of a concrete removal operation in any patch area, all loose concrete debris shall be removed, followed by water flushing of the existing concrete bonding surface to completely remove all traces of concrete debris and cement residue so that rebonding to the surface of the remaining sound concrete will be prevented. If it is not convenient to clean and flush the patch area within this time frame, all steel reinforcing and concrete bonding surfaces shall be cleaned subsequently by high pressure water blasting at a nozzle pressure not less than 3,000 psi with a sufficient volume to completely remove all rebonded debris and laitance.

Where the existing reinforcing steel is damaged or corroded, it shall be cut out and replaced with new reinforcing steel of the same size. Any sound reinforcing steel damaged during the concrete removal operations, shall be repaired or replaced by the Contractor at its expense, as directed by the Engineer. New steel shall be attached beneath or beside existing steel with a minimum splice length as indicated on the plans, or as directed by the Engineer. The concrete shall be removed to a minimum depth of 1 inch below the new steel.

7) Surface Preparation: Sound reinforcing steel which is in the proper position in the slab shall be left in place and cleaned of all concrete, the smaller fragments to be removed with hand tools in patch areas where pneumatic hammers were used.

Reinforcing bar wire ties and vertical supports shall be installed on inadequately supported or vibrating reinforcing steel, as directed by the Engineer.

The concrete surface and reinforcing steel to receive patching material shall be either sandblasted or water blasted, followed by air blasting in order to remove all loose particles and dust. All blasting operations shall be performed using techniques acceptable to the Engineer, taking care to protect all pedestrians, traffic, and adjacent property. All compressed air sources shall have properly sized and designed oil separators attached and functional to allow delivered air at the nozzle to be oil-free. The patch area shall be cleaned of all additional loose or powder-like rust, oil, solvent, grease, dirt, dust, bitumen, loose particles, and foreign matter just prior to patching.

If the patch area was not cleaned and flushed with clean water immediately following hydro-demolition, or if run-off from a nearby hydro-demolition operation was allowed to travel through the previously cleaned and flushed patch surface, all affected concrete and steel reinforcing bonding surfaces shall be water blast cleaned at a nozzle pressure not less than 3,000 psi as directed by the Engineer, to assure that all remaining bond inhibiting laitance is completely removed.

The entire concrete surface to be patched shall be dampened. All excess free water shall be removed from the patch area.

8) Mixing, Placing, and Finishing: Unless a winter operations plan has been submitted to the Engineer by the Contractor, mixing and placing concrete shall only take place when the ambient temperature is above 35°F or per manufacturer’s recommendations, whichever is higher. All mixing shall be accomplished by means of a standard drum-type portable mixer. A continuous type mobile mixer may be used if permitted by the Engineer.
Contractor shall calibrate the mobile mixer under supervision of the Engineer. Calibration shall be in accordance with the applicable sections of ASTM method C685. The total mix shall be limited to the quantity that can be mixed and placed in 15 minutes. The concrete mix shall be spread evenly and compacted to a level slightly above the pavement surface. Vibration, spading or rodding shall be used to thoroughly compact concrete and fill the entire patch area. Where practical, internal vibration shall be used in cases where concrete has been removed below the reinforcing steel. Hand tamping shall be used to consolidate concrete in smaller patches, including popouts.

Vibrating plates or vibrating screeds shall be used on the surface of all patches for strike off and consolidation. After the concrete has been spread evenly and compacted to a level slightly above the pavement surface, the vibrating plate or screed shall be drawn over the surface at a uniform speed without stopping, in order to finish the surface smooth and even with adjacent concrete.

The surface shall be float finished. Finishing operations shall be completed before initial set takes place.

Cured patches, having a hollow sound when chain dragged or tapped, (indicating delamination), shall be replaced by the Contractor at its expense until a patch acceptable to the Engineer is in place.

9) Tolerances in Finished Patched Surfaces: The surface profile of the patched area shall not vary more than 1/8 inch in a distance of 10 feet, when a 10 foot long straightedge is placed on the surface at any angle relative to the centerline of the bridge. Humps in the patch that exceed the 1/8 inch tolerance shall be ground down by acceptable machinery. Sags or depressions in the surface of the patch area that exceed the 1/8 inch tolerance shall be repaired by removal of the concrete in the depression over an area determined by the Engineer to a depth of 1 inch and repaired in the previously described manner.

10) Underside of Bridge Deck Treatment: The Engineer will examine the underside of the bridge deck for popouts caused by the removal of deteriorated concrete. The exposed reinforcing steel shall be coated with epoxy resin where ordered by the Engineer. The exposed reinforcing steel, if any, which is to receive the epoxy resin coating material shall be cleaned of all loose or powder-like rust, oil, dust, dirt, loose particles, and other inhibiting matter just prior to coating.

The epoxy resin shall be mixed in accordance with the manufacturer’s instructions. Also in accordance with the manufacturer’s instructions, 2 coats of the mixed material shall be applied in uniform coats of approximately 2 to 3 mils dry film thickness each.

If the popouts extend beyond the bottom layer of reinforcing steel, the popouts shall be repaired as ordered by the Engineer.

11) Test Cylinders: The Contractor shall make and perform compressive strength tests on representative cylinders under the supervision of the Engineer in accordance with ACI requirements. The dimensions, type of cylinder mold and number of cylinders will be specified by the Engineer. Traffic shall not be permitted on patched surfaces until the patch material attains a strength of 2500 psi, as determined by breaks of the test cylinders.

A portable compression testing machine shall be provided by the Contractor and available on site for cylinder testing. All testing and equipment shall conform to ASTM C39.

Note: The compression machine must be calibrated in accordance with the provisions of Section 5, ASTM C39.
12) **Time Schedule:** Work under this item begun on any specific bridge during a construction season shall be completed, at least, to include this item, membrane waterproofing and placing of first course of wearing surface as soon as possible and specifically before the beginning of the construction season’s winter shutdown.

All work shall proceed as required by the “Maintenance and Protection of Traffic” and “Prosecution and Progress” specifications elsewhere within the Contract.

**Method of Measurement:** This work will be measured for payment by the actual volume in cubic feet of patching material used in acceptable concrete deck patches, except where the Engineer determines that the Contractor has unnecessarily removed sound concrete. Where sound concrete has been unnecessarily removed, the replacement concrete will not be measured for payment. Providing safe access for delineation and inspection of the performed repairs will not be measured for payment.

Replacement of deteriorated epoxy rebar and repair of epoxy coated rebar at popouts, if required, will be measured for payment under other Contract items.

**Basis of Payment:** This work will be paid for at the Contract unit price per cubic foot of deck concrete repaired under "Partial Depth Patch," complete and accepted in place, which price shall include removal of deteriorated concrete, surface preparation of patch areas, concrete replacement, the furnishing and installation of reinforcing bar wire ties and vertical supports for inadequately supported existing reinforcing steel, inspection access, all materials, equipment, including the portable compression testing machine required for the testing of the repair material, tools, labor and work incidental thereto.

Replacement of deteriorated rebar, if required, will be paid for under the item “Deformed Steel Bars.”

Epoxy resin coating of exposed epoxy rebar at the underside of the deck, if required, will be paid for under the item “Clean and Coat Exposed Reinforcing Steel.”

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial Depth Patch</td>
<td>c.f.</td>
</tr>
</tbody>
</table>
ITEM #0602910A - DRILLING HOLES AND GROUTING DOWELS

Description:

This item shall consist of drilling, coring or a combination of coring and drilling holes in the existing structure and anchoring dowel bars into the holes at the locations shown on the plans, and as directed by the Engineer.

Materials:

The chemical anchor material shall meet the requirements of Subarticle M.03.07 and shall be one of the following products, or a product on the ConnDOT Qualified Products List and approved by the Engineer for the specified use.

- Keligrout 101-P
  Kelken Construction systems
  P.O. Box 284
  Parlin, NJ 08859

- Sure Anchor I (J-51)
  Dayton Superior Chemical Corporation
  4226 Kansas Avenue
  Kansas City, KS 66106

- Ultra bond 1
  Adhesive Technology Corp.
  450 East Copans Road
  Pompano Beach, FL 33064

Dowels shall have a minimum pullout strength of 31,000 lbs in the concrete ($f'c = 2.7$ ksi).

The Contractor shall furnish Certified Test Reports and Materials Certificates for the chemical anchor material in accordance with Article 1.06.07.

Construction Methods:

Holes shall be as shown on the plans and in accordance with the chemical anchor manufacturer's specifications. The Contractor is fully responsible for the type of drilling equipment used. Drilling methods shall not cause spalling, cracking, loosening, or other damage to existing concrete. Any damage to the existing structure shall be repaired by the Contractor, to the satisfaction of the Engineer, at his own expense.
Each finished hole shall be prepared in accordance with the chemical anchor manufacturer's specifications. No chemical anchor material or dowels shall be placed in drilled holes until they are inspected by the Engineer.

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 to the nozzle. The holes shall be free of oil, solvent, grease, dirt, dust, bitumin, rust, loose particles and foreign matter.

The chemical anchor material shall be mixed and placed strictly in accordance with the recommendations of the manufacturer. The chemical anchor material shall completely fill the space around the reinforcing bar within the limits shown on the plans. Particular care shall be taken to conform to the manufacturer’s specified time limit within which the chemical anchor material must be placed after mixing. The Contractor shall provide an approved means of keeping the bar centered in the tops and bottoms of the holes until the chemical anchor material has thoroughly hardened.

Debris resulting from drilling holes and chemically anchoring dowel bars shall be promptly swept up and removed from the site. All removed material shall be satisfactorily disposed of by the Contractor.

Work shall not start without prior approval of the Engineer. Approval of the Contractor's plans shall not be considered as relieving the Contractor of any responsibility.

**Method of Measurement:**

This work will be measured for payment by the actual number of dowel bars chemically anchored into the drilled holes each, completed and accepted.

**Basis of Payment:**

This work will be paid for at the contract unit price each for “Drilling Holes and Grouting Dowels”, which price shall include, drilling or coring and preparing holes and chemically anchoring reinforcing bars. It shall also include all material, and all equipment, tools and labor incidental thereto, except dowels, which will be paid in accordance with the item "Deformed Steel Bars or Deformed Steel Bars (Epoxy Coated)” as applicable.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
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<tbody>
<tr>
<td>Drilling Holes and Grouting Dowels</td>
<td>EA</td>
</tr>
</tbody>
</table>
ITEM #0602980A - CLEAN AND COAT EXPOSED REINFORCING STEEL

Description: Work under this item shall consist of the removal of loose or delaminated concrete from the underside of existing bridge decks or stay-in-place forms by mechanical methods and the cleaning and coating of exposed reinforcing steel with epoxy resin, as directed by the Engineer.

Materials:
1. **Epoxy Resin**: The epoxy resin shall be a 2 component, moisture tolerant system with a minimum solids content of 65%, which meets the following requirements:
   
   a) **Physical Requirements of (Mixed) Epoxy Resin System**: A mixture of both components in the proportions recommended by the manufacturer shall have the following properties and meet the following test requirements:
      
      - Viscosity – approximately 2000 centipoises
      - Pot life – approximately 30 minutes
      - Modulus of Elasticity – 190 ksi (ASTM D638)
      - Resistance to Abrasion – 0.03 gm loss after 1000 cycles (Taber Abrader)
      - Resistance to Cracking – No splitting or loss of bond of a 2.5 mil thickness with 1/8 in mandrel (ASTM D522)
   
   b) **Packaging and Marking**: The 2 components of the epoxy resin system furnished under these specifications shall be supplied in separate containers, which are non-reactive with the materials contained therein. The size of the container shall be such that the recommended proportions of the final mixture can be obtained by combining 1 container of 1 component with 1 or more whole containers of the other component.
      
      Containers shall be identified as base polymer and reacting system, and shall show the mixing directions and usable temperature range as defined by these specifications. Each container shall be marked with the name of the manufacturer, the lot or batch number, the date of packaging, pigmentation if any, and the quantity contained therein in pounds and gallons.
      
      Printed instructions from the manufacturer for mixing and applying the material shall be included.
      
      Potential hazards shall be so stated on the package in accordance with the Federal Hazardous Products Labeling Act.

2. **Sampling**: A representative sample of each component sufficient for the test specified shall be taken by a Department representative either from a well-blended bulk lot prior to packaging or by withdrawing 3 fluid ounce samples from no less than 5% by random selection of the containers comprising the lot or shipment. Unless the samples of the same component taken from containers show evidence of variability, they may be blended into a
single composite sample to represent that component. The entire lot of both components may be rejected if samples submitted for testing fail to meet any requirements of this specification.

3. **Control of Materials:** A Materials Certificate will be required in accordance with Article 1.06.07, certifying the conformance of the epoxy resin to the requirements set forth in this specification.

**Construction Methods:**

1. **Inspection of the Deck Underside:** Before any existing concrete is removed from the underside of the deck, the Contractor will provide the Engineer clear access to the underside of the deck. During this time, the Engineer will perform an inspection of the deck and designate areas where concrete removal is required. The inspection will utilize visual assessment as well as sounding for delamination (hammer tapping).

   The Contractor must inform the Engineer, in writing, of the date that the bridge deck will be available for inspection operations and the method which will be used for access. Notification shall be given to the Engineer at least 7 days prior to the date so that the Engineer can plan accordingly and verify that the proposed method of access is acceptable.

   The Contractor will not perform any work to the deck, until all necessary inspection operations have been performed, unless given permission in writing by the Engineer. The Contractor shall include the time required for inspection in its overall construction schedule and shall include all costs associated with providing access for the Engineer in the bid unit price.

2. **Removal of Deteriorated Concrete:** All deteriorated concrete designated for removal under this item, shall be removed within the limits shown on the plans and where ordered by the Engineer. The lateral limits of each area of concrete to be removed will be delineated by the Engineer and suitably marked. The Engineer will be sole determiner of what constitutes deteriorated concrete, using sounding methods or other evaluation measures at his discretion. Hand tools shall be used first to remove loose and hollow sounding concrete. If the concrete cannot be removed with hand tools, the Engineer may authorize the use of pneumatic hammers. The weight of pneumatic hammers, when used shall not exceed 15 pounds. The Contractor shall provide structurally adequate shields approved by the Engineer for protection of waterways, railways, roadways, sidewalks, parking lots or any other areas accessible to the public, which are in the vicinity of the removal operations.

3. **Cleaning Exposed Reinforcing Steel:** All exposed reinforcing steel on the underside of the deck shall be cleaned and coated, regardless of whether the Contractor exposed it or it was already exposed at the beginning of the Project. The exposed reinforcing steel shall be cleaned of all concrete fragments, loose or powder-like rust, oil, dust, dirt, loose particles, and other bond inhibiting matter. Cleaning methods shall utilize wire brushing at a minimum, but may require more aggressive methods as recommended by the coating
manufacturer or as directed by the Engineer. Cleaning shall be done just prior to coating and shall finish with the cleaned surfaces being wiped down to remove the remaining dust.

4. **Coating Exposed Reinforcing Steel:** The epoxy resin shall be mixed and applied in accordance with the Manufacturer’s instructions. Only the reinforcing steel shall be coated. The surrounding concrete shall not be coated. Care shall be taken to coat all exposed portions of each bar’s perimeter and all exposed surfaces where bars overlap or are in contact with each other.

**Method of Measurement:** This work will be measured for payment by the actual number of linear feet of reinforcing steel cleaned and coated with epoxy resin material and approved by the Engineer. The length of coated reinforcing steel shall be measured along the exposed face of the bar. Where bars are adjacent to each other, the length of each bar shall be measured. No deduction in length shall be made where bars overlap.

**Basis of Payment:** This work will be paid for at the Contract unit price per linear foot for "Clean and Coat Exposed Reinforcing Steel," complete and accepted, which price shall include all materials, equipment, tools and labor incidental thereto.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
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<tr>
<td>Clean and Coat Exposed Reinforcing Steel</td>
<td>l.f.</td>
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</table>
ITEM #0603081A - STRUCTURAL STEEL REPAIRS (SITE NO. 1)

ITEM #0603082A - STRUCTURAL STEEL REPAIRS (SITE NO. 2)

Description: Under this item new structural steel shapes and plates shall be furnished and installed in deteriorated steel locations as shown on the plans. In addition to furnishing and installing the new structural steel, the work shall include providing access to these locations for the Engineers inspection and all necessary work to complete the structural steel repair work.

Work under this item shall also include grinding smooth any nicks or gouges on the bottom flange of girders as shown on the plans or as directed by the Engineer.

Work under this item will require coordination with other scheduled work on this Project.

Materials: Materials shall conform to the requirements of Sections M.06.

Construction Methods: The work required shall be performed in accordance with the applicable requirements of Section 6.03.03 of the Standard Specifications and as specified herein.

Before fabrication of new metalwork and after the steel is blast cleaned and prepared for painting, the Contractor shall outline with chalk the area of the reinforcement plate making sure the reinforcement plate is of sufficient size so as to tie into sound metal. To the extent possible, have at least 2 rows of fasteners secured to sound metal all around the deteriorated area. The minimum size of the steel reinforcing members shall be as shown on the plans. Once determined, the repair areas shall be coated with field touch up paint in accordance with the specification for the items “Abrasive Blast Cleaning and Field Painting of Beam Ends” or “Localized Paint Removal and Field Painting of Existing Steel” as applicable.

Upon the Engineers approval and prior to fabrication, field measurements shall be performed and field sketches made to obtain all necessary dimensions. Shop drawings shall be submitted for review in accordance with Section 1.05.02. Field measurements shall be submitted along with the shop drawings for review.

Any paint damaged as a result of steel repairs shall be cleaned and coated with field touch up paint in accordance with specification for the items “Abrasive Blast Cleaning and Field Painting of Beam Ends” or “Localized Paint Removal and Field Painting of Existing Steel” as applicable.

Method of Measurement: The weight of the structural steel to be measured for payment under this item shall be computed on the basis of the net finished dimensions of the plates based on measurements taken by the Engineer, deducting for copes and cuts and bolt holes. The weight of weld metal and temporary erection bolts, boxes, crates, and other containers used for shipping, and materials used for supporting members during transportation and erection, shall not be measured for payment.
The weight of steel shims, filler plates and permanent nuts, bolts and washers shall be measured for payment.

Grinding any nicks or gouges on the bottom flange of girders shall not be measured for payment.

**Basis of Payment:** This work will be paid for at the contract unit price per pound for “Structural Steel Repairs (Site No. X)”, competed and accepted, which price shall include the cost of all materials, fabrication, furnishing, transporting, storing, erecting and installing the plates, equipment, tools, labor, and incidental expenses required to satisfactory complete the work in accordance with the Contract Documents. This work shall also include temporary support, providing access to the Engineer for the purpose of inspection and all necessary efforts to complete the work.

Cleaning and painting of the areas beneath the newly installed reinforcement plates shall be paid for under items “Abrasive Blast Cleaning and Field Painting of Beam Ends (Site No. X)” or “Localized Paint Removal and Field Painting of Existing Steel” as applicable.

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<th>Pay Item</th>
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<tbody>
<tr>
<td>Structural Steel Repairs (Site No. X)</td>
<td>cwt.</td>
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</table>
ITEM #0603222A - DISPOSAL OF LEAD DEBRIS FROM ABRASIVE BLAST CLEANING

Description:

Work under this item shall include the handling, loading, packing, storage, transportation and final off-site disposal of hazardous lead debris which has been generated in conjunction with work conducted under Item 0020905A – Lead Compliance For Abrasive Blast Cleaning and Miscellaneous Tasks.

The Engineer previously analyzed a representative sample of the lead debris prior to generation and found leachable lead above RCRA-hazardous levels. A summation of the analytical results is included here:

<table>
<thead>
<tr>
<th>Site No.</th>
<th>TCLP Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge No. 01155 - Paint associated with the structural steel bridge components</td>
<td>350 mg/l</td>
</tr>
<tr>
<td>Bridge No. 01156 - Paint associated with the structural steel bridge components</td>
<td>370 mg/l</td>
</tr>
</tbody>
</table>

The Contractor shall comply with the latest requirements of the USEPA RCRA Hazardous Waste Regulations 40 CFR 260-274 and the DEEP Hazardous Waste Management Standards 22a-449(c).

Hazardous lead debris shall be transported from the Project by a licensed hazardous waste transporter approved by the Department and disposed of at an EPA-permitted and Department-approved hazardous waste landfill within 90 days from the date of generation.

The Contractor must use one or more of the following Department-approved disposal facilities for the disposal of hazardous waste:

<table>
<thead>
<tr>
<th>Clean Earth of North Jersey, Inc., (CENJ)</th>
<th>Clean Harbors Environmental Services, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 Jacobus Avenue, South Kearny, NJ 07105</td>
<td>2247 South Highway 71, Kimball, NE 69145</td>
</tr>
<tr>
<td>Phone: (973) 344-4004; Fax: (973) 344-8652</td>
<td>Phone: (308) 235-8212; Fax: (308) 235-4307</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clean Harbors of Braintree, Inc.</th>
<th>Cycle Chem (General Chemical Corp.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hill Avenue, Braintree, MA 02184</td>
<td>217 South First Street, Elizabeth, NJ 07206</td>
</tr>
<tr>
<td>Phone: (781) 380-7134; Fax: (781) 380-7193</td>
<td>Phone: (908) 355-5800; Fax: (908) 355-0562</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EnviroSafe Corporation Northeast (former Jones Environmental Services (NE), Inc.)</th>
<th>Environmental Quality Detroit, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>263 Howard Street, Lowell, MA 01852</td>
<td>1923 Frederick Street, Detroit, MI 48211</td>
</tr>
<tr>
<td>Phone: (978) 453-7772; Fax: (978) 453-7775</td>
<td>Phone: (800) 495-6059; Fax: (313) 923-3375</td>
</tr>
</tbody>
</table>
Construction Methods:

A. Submittals

The Contractor shall submit in writing, (1) a letter listing the names of the hazardous waste disposal facilities (from the above list) that the Contractor will use to receive hazardous material from this Project, and (2) a copy of each facility’s acceptance criteria and sampling frequency requirements.

No facility may be substituted for the one(s) designated in the Contractor’s submittal without the Engineer’s prior approval. If the material cannot be accepted by any of the Contractor’s designated facilities, the Department will supply the Contractor with the name(s) of other acceptable facilities.

B. EPA ID Number:

Prior to the generation of any hazardous waste on a contiguous per site basis, the Contractor shall notify the Engineer of its selected hazardous waste transporter and disposal facility. The Contractor must submit to the Engineer (1) the transporter’s current US DOT Certificate of Registration and (2) the transporter’s current Hazardous Waste Transporter Permits for the State of Connecticut, the hazardous waste destination state and any other applicable states. The Engineer will then obtain on a contiguous per site basis a temporary EPA Generators ID number for the site that he will forward to the Contractor. Temporary EPA ID numbers are good for six months from the date they are issued and can be extended once, for a maximum of six months and can’t be used for longer than one year. The Contractor will be responsible for notifying the Engineer when an extension is needed. Any changes in transporter or facility shall be immediately forwarded to the Engineer for review.

C. General:

Handling, storage, transportation and disposal of hazardous waste materials generated as a result of execution of this project shall comply with all Federal, State and Local regulations including the USEPA RCRA Hazardous Waste Regulations (40 CFR Parts 260-271), the CTDEEP Hazardous Waste Regulations (22a-209 and 22a-449(c)), and the USDOT Hazardous Materials Regulations (49 CFR Part 171-180).
All debris shall be contained and collected daily or more frequently as directed by the Engineer, due to debris buildup. Debris shall be removed by HEPA vacuum collection. Such debris, abrasive blast residue, rust and paint chips shall be stored in leak-proof storage containers in the secured storage site, or as directed by the Engineer. The storage containers and storage locations shall be reviewed by the Engineer and shall be located in areas not subject to ponding.

All storage containers (roll offs or drums) shall have a protective liner and removable lid. These containers shall not have any indentations or damage that would allow seepage of the contained material.

If 55 gallon barrels are used, staging is required: 55 gallon barrels shall be stored together in two rows of five. The Contractor shall maintain a minimum lane clearance of 36 inches between each (barrel lot of ten).

The Contractor shall maintain a secure storage site, which shall be large enough to handle all debris. The Contractor shall store debris only in the secured storage site. All lead debris shall be conveyed to the secured storage site at the conclusion of the work shift. The Contractor shall account for all debris conveyed to the secured storage site and all debris transported from the project for disposal.

The secure storage site shall consist of an 8-ft. high fenced-in area with a padlocked entrance. Storage containers shall not be used on the project until and unless they have been reviewed and approved by the Engineer. Storage containers and sites shall be located so as not to cause any traffic hazard. Container storage sites shall be in areas that are properly drained and runoff water shall not be allowed to pool and shall be out of the 100-year flood plain. The containers shall be placed on pallets or other approved material and not directly on the ground.

Storage containers shall be closed and covered with a waterproof tarpaulin at all times except during placement, sampling and disposal of debris.

The Engineer previously analyzed a representative sample of the lead debris prior to generation and found leachable lead above RCRA-hazardous levels. A copy of the analytical results can be supplied to the Contractor at the time of waste disposal upon request.

Materials other than direct paint related debris which are incidental to the paint removal work activities (tarps, poly, plywood, PPE, gloves, decontamination materials, etc) which may be contaminated with lead, shall be stored separately from the direct paint debris, and shall be sampled by the Engineer for waste disposal characterization testing. Such materials characterized as hazardous shall be handled/disposed of as described herein, while materials characterized as non-hazardous shall be disposed of as non-hazardous, non-RCRA lead waste under Item 0020905A.

Project construction waste materials unrelated to the paint removal operations shall NOT be combined/stored with paint debris waste and/or incidental paint removal materials as they are not
lead contaminated and shall NOT be disposed of as hazardous waste. The Engineer’s on-site Inspectors shall conduct inspections to verify materials remain segregated.

Hazardous waste materials are to be properly packed and labeled for transport by the Contractor in accordance with EPA, CTDEEP and USDOT regulations. The disposal of debris characterized as hazardous waste shall be completed within 90 calendar days of the date on which it began to be accumulated in the lined containers. Storage of containers shall be in accordance with current DEEP/EPA procedures.

The Contractor shall label containers with a 6-inch square, yellow, weatherproof, Hazardous Waste sticker in accordance with USDOT regulations.

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

The Contractor shall process the hazardous waste such that the material conforms with the requirements of the selected treatment/disposal facility, including but not limited to specified size and dimension. Refusal on the part of the treatment/disposal facility to accept said material solely on the basis of non-conformance of the material to the facility’s physical requirements is the responsibility of the Contractor and no claim for extra work shall be accepted for reprocessing of said materials to meet these requirements.

All DOT shipping documents, including the Uniform Hazardous Waste Manifests utilized to accompany the transportation of the hazardous waste material shall be prepared by the Contractor and reviewed/signed by an authorized agent representing ConnDOT, as Generator, for each load of hazardous material that is packed to leave the site. The Contractor shall not sign manifests on behalf of the State as Generator. The Contractor shall forward the appropriate original copies of all manifests to the Engineer the same day the material leaves the Project site.

Materials not related to lead paint removal and/or characterized as non-hazardous waste shall NOT be shipped for hazardous waste disposal in accordance with USEPA RCRA hazardous waste minimization requirements.

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

D. Material Transportation
Materials determined to be hazardous shall be transported in compliance with the applicable federal/state regulations. Transport vehicles shall have a protective liner and removable lid, shall not have any indentations or damage and must be free from leaks, and discharge openings must be securely closed during transportation.

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

- All vehicles departing the site are to be properly logged to show the vehicle identification, driver’s name, time of departure, destination, and approximate volume, and contents of materials carried. Vehicles shall display the proper USDOT placards for the type and quantity of waste;

- No materials shall leave the site unless a disposal facility willing to accept all of the material being transported has agreed to accept the type and quantity of waste;

- Documentation must be maintained indicating that all applicable laws have been satisfied and that the materials have been successfully transported and received at the disposal facility; and,

- The Contractor shall segregate the waste streams (i.e. concrete, wood, etc.) as directed by the receiving disposal facility.

Any spillage of debris during disposal operations during loading, transport and unloading shall be cleaned up in accordance with EPA 40 CFR 265 Subparts C & D, at the Contractors expense.

The Contractor is liable for any fines, costs or remediation costs incurred as a result of their failure to be in compliance with this Item and all Federal, State and Local laws.

D. Equipment Decontamination:

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

The Contractor shall furnish labor, materials, tools and equipment for decontamination of all equipment and supplies that are used to handle Hazardous Materials. Decontamination shall be conducted at an area designated by the Engineer and shall be required prior to equipment and supplies leaving the Project, between stages of the work.
The Contractor shall use dry decontamination procedures. Residuals from dry decontamination activities shall be collected and managed as Hazardous Materials. If the results from dry methods are unsatisfactory to the Engineer, the Contractor shall modify decontamination procedures as required.

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

E. Project Closeout Documents:

The Contractor shall provide the Engineer, within 30 days of completion of the work, a compliance package; which shall include, but not be limited to, the following:

1. Copies of completed Hazardous Waste Manifests (signed by authorized disposal facility representative)
2. Completed Waste Shipment Records/Bills of Lading (signed by authorized disposal facility representative)
3. Completed Weigh Bills (indicating each loads net weight).

Method of Measurement:

The work of “DISPOSAL OF LEAD DEBRIS FROM ABRASIVE BLAST CLEANING” shall be measured for payment as the actual net weight in tons delivered to the treatment/disposal facility. Such determinations shall be made by measuring each hauling vehicle on the permanent scales at the treatment/disposal facility. Total weight shall be the summation of weigh bills issued by the facility specific to this project and waste stream.

The disposal of any lead painted debris, originally anticipated to be hazardous, but determined by characterization sampling not to contain hazardous concentrations of lead will not be measured for payment under this Item. Disposal of these materials will be handled in accordance with the provisions of Item 0020905A.

The collection and treatment/disposal of materials and liquids generated during equipment decontamination activities and cleaning/disposal of personal protective equipment (PPE) shall be considered incidental to work under this Item and will not be measured for separate payment. Materials incidental to the construction, which become contaminated due to the lead debris removal, such as but not limited to, gloves, coveralls, tarps and filters shall be disposed of in accordance with this specification. These incidental materials shall be kept separate from the debris. These materials will not be measured for payment, but will be included in the general cost of the work.

Basis of Payment:

This work shall be paid for at the contract unit price per ton, which shall include the processing, loading, storage (including containers) and transportation of said materials from the temporary
storage area to the final to the treatment/disposal facility; the treatment/disposal or recycling of said materials; the preparation of all related paperwork including manifests; fees; and all equipment, materials, tools, labor and work incidental to loading, transporting, treating/recycling and disposal of materials.

No separate payment shall be made under this Item for the on-site processing, transportation and treatment/disposal of materials not found to be hazardous based upon characterization sampling results.

No separate payment shall be made for the disposal of wastes generated in conjunction with equipment decontamination or the disposal of personal protective equipment (PPE). The cost of such disposal shall be considered incidental to the work under this Item.

Final payment will not be approved until completed copies of all Manifest(s) and Bills of Lading signed by an authorized disposal facility representative and all associated weight bills indicating each loads net weight have been provided to the Engineer. Once completed and facility-signed copies of all Manifest(s), Bills of Lading and associated weigh bills have been received in their entirety, the Engineer will review and approve the release of final payment to the Contractor.

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<td>Disposal of Lead Debris from Abrasive Blast Cleaning</td>
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ITEM #0603479A - ABRASIVE BLAST CLEANING AND FIELD PAINTING OF BEAM ENDS (SITE NO. 1)

ITEM #0603480A - ABRASIVE BLAST CLEANING AND FIELD PAINTING OF BEAM ENDS (SITE NO. 2)

Description: Work under this item shall consist of surface preparation and field painting of steel components with a 2-coat system as shown on the plans, as directed by the Engineer and in accordance with these specifications.

Components to be painted include, but are not limited to, the following: ends of beams and girders, diaphragms and cross frames, steel fixed bearings, steel components of expansion bearings, scuppers, drainage pipes and troughs, state-owned utility conduits, structural steel utility supports, all new structural steel installed for repair purposes, and all other metal components that are an integral part of the bridge system.

Privately-owned utilities, bridge rails, stay-in-place forms, fences, elastomeric bearing pads and bronze components shall be protected from damage by surface preparation and painting operations and are not to be painted. Any damage resulting from surface preparations, containment and/or overspray from paint operations shall be repaired by the Contractor at no cost to the State.

The amount of steel to be painted under this special provision varies by bridge Site, and is to be determined by the Contractor based on the information contained in the plans. Bidders shall examine the structures in this Contract and shall make their own determinations as to the work involved and conditions to be encountered.

Lead paint is presumed to be present at all bridge Sites and in all locations.

Submittals: A minimum of 20 calendar days before starting any surface preparation and coating application work, the painting contractor shall submit the following to the Engineer for acceptance:

1. A copy of the firm’s written Quality Control Program used to control the quality of surface preparation and coating application including, but not limited to, ambient conditions, surface cleanliness and profile, coating mixing, dry film thickness, and final film continuity.

2. A copy of the firm’s written surface preparation and application procedures detailing the Materials and Construction Methods for both accessible and inaccessible areas. All areas are deemed accessible, except those areas specifically designated as inaccessible. The Engineer will be the sole judge in determining the exact locations of said inaccessible areas. Inaccessible areas may include: Between back to back angles, edges of top flanges of steel members in contact with concrete, and areas of visible non-removable impacted rust. Such locations designated as inaccessible shall be coated with special materials, such as penetrating sealer or equivalent, as recommended by the Manufacturer of the selected paint system (see Materials section below for paint systems). This written program must contain a
description of all the equipment that will be used for removal of laminar and stratified rust, for surface preparation, including the remediation of soluble salts, and for paint mixing and application, including stripe coating. Coating repair procedures shall be included for both accessible and inaccessible areas.

3. A detailed description of the Contractor’s enforcement procedures and the authority of personnel.

4. If the application of heat is proposed for coating application purposes, provide information on the heat containment and procedures that will be used, with data sheets for the equipment. Note: If heat is used for coating operations, the heat and containment must be maintained to provide the required temperatures for the duration of the cure period.

5. Containment plans (paint removal/collection of debris, surface preparation, coating applications, coating applications with heat, etc.).

6. Proof of SSPC-QP 1 qualifications, CAS-certification(s) and QP 2 qualifications, as applicable.

7. Coating product information, including coating manufacturer, product name, application instructions, technical data, MSDS and color chips.

8. Abrasive product information, including abrasive manufacturer, product name, technical data, and MSDS.

The Contractor shall not begin any paint removal work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply approval of any particular method or sequence for conducting the work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the work in strict accordance with the requirements of Federal, State, or local regulations, this specification, or to adequately protect the health and safety of all workers involved in the Project and any members of the public who may be affected by the Project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Materials: The materials for the coating system for this work shall conform to the requirements of Section M.07.02 amended as follows:

The coating system shall be one of the following 2-coat systems:

1K Zinc Primer
Fast Clad Urethane, manufactured by: Sherwin Williams
425 Benton Street
Stratford, CT 06615
(203) 377-1711
(800) 474-3794

Carbomastic 15
Carbothane 134 HS, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645
Epoxy Mastic Aluminum II  
Acrolon 218 HS, manufactured by: Sherwin Williams  
425 Benton Street  
Stratford, CT 06615  
(203) 377-1711  
(800) 474-3794

Carbomastic 90  
Carbothane 134 HS, manufactured by: Carboline  
2150 Schuetz Road  
St. Louis, MO 63146  
(800) 848-4645

All materials for the complete coating system shall be furnished by the same coating material manufacturer with no subcontracted manufacturing allowed. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written recommendations. All components of the coating system and the mixed paint shall comply with the Emission Standards for Volatile Organic Compounds (VOC) stated in the Connecticut Department of Energy and Environmental Protection's Administration Regulation for the Abatement of Air Pollution, Section 22a-174-20(s).

Note: If any of the above and/or following stipulated Contract specifications differ from those of the Manufacturer’s recommended procedures or ranges, the more restrictive of the requirements shall be adhered to unless directed by the Engineer in writing.

The abrasive media for blast cleaning shall be recyclable steel grit.

Construction Methods:

Contractor - Subcontractor Qualifications: Contractors and subcontractors doing this work are required to be certified by the SSPC Painting Contractor Certification Program (PCCP) to QP 1 entitled “Standard Procedure for Evaluating Qualifications of Painting Contractors (“Field Application to Complex Structures”). When the work involves the disturbance of lead-containing paint, the Contractor and subcontractor are also required to be certified to SSPC-QP 2 “Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint.”

Contractors and subcontractors are required to have at least one (1) Coating Application Specialist (CAS) (SSPC ACS/NACE No. 13)-certified (Level II-Interim Status-Minimal) craft-worker. CAS-certified (Level II-Interim Status-Minimal) craft-worker(s) are required for all crews/craft-workers up to four (4) crew members. For each crew larger than four (4), an additional CAS-certified (Level II-Interim Status-Minimal) craft-worker shall be present on each painting/blasting crew during blast cleaning and spray application (Atmospheric and Immersion Service) operations. A crew-member is a person who is on the job performing hand-held nozzle
blast cleaning and/or spray application of protective coatings on a steel structure. The certification(s) must be kept current for the duration of the Project work. If a Contractor’s, subcontractor’s or any craft-worker’s certification expires, the firm will not be allowed to do any work on this item until the certification is reissued.

Requests for extension of time for any delay to the completion of the Project due to an inactive certification will not be considered and liquidated damages will apply. In addition, if any recoat times are exceeded, the affected areas shall be abrasive blast cleaned to SSPC-SP 6 and coatings reapplied in accordance with these specifications at no additional cost to the State. At the option of the Engineer, if such a delay will adversely impact the successful and timely completion of the Project, the Department may require the Contractor to engage another SSPC certified contractor to do the painting work at the prime contractor’s expense.

Quality Control Inspections: The Contractor shall perform first line, in process Quality Control (QC) inspections. The Contractor shall implement a Quality Control Program accepted by the Engineer, including written daily reports, that ensures that the work accomplished complies with these specifications. Copies of these reports shall be provided daily to the Engineer. Contractor QC inspections shall include, but not be limited to the following:

- Suitability of protective coverings and containments
- Ambient conditions
- Surface preparation (solvent cleaning, hand/power tool or abrasive blast cleaning, etc.)
- Coating application (mixing, thinning, and wet/dry film thickness)
- Recoil times and cleanliness between coats
- Coating continuity (freedom from runs, sags, overspray, dryspray, pinholes, shadow-through, skips, misses, etc.)
- Final film acceptance

The personnel managing and performing the quality control program shall be NACE Certified Coating Inspector(s) (successfully completed Sessions I, II, III and Peer Review) or must be SSPC certified BCI level 2. The personnel performing the quality control tests shall be trained in the use of the quality control instruments. Documentation of training shall be provided. These personnel shall not perform surface preparation and painting.

Test Equipment and Materials: The Contractor shall furnish the following new test equipment and materials for use by the QC Inspector: Two PTC Surface Temperature Thermometers

1. Psychron 566 Psychrometer (Battery Operated) with two sets of batteries or a Bacharach Sling Psychrometer
2. U.S. Weather Bureau Psychrometric Tables
3. Hypodermic Needle Pressure Gage for nozzle pressure tests.
4. SSPC Visual Standards VIS 1, VIS 3, and/or VIS 4, as applicable.
5. Testex Spring Micrometer
6. Testex Press-O-Film Replica Tape, one roll (100 pieces) each of coarse and extra-coarse per bridge span, or as specified by the Engineer.
7. Wet film thickness gage
8. PosiTest, Mikrotest or Elcometer Dry Film Thickness Gauge (FM)
9. SSPC Type 2 Dry Film Thickness Gauge per PA2
10. NIST (NBS) Calibration Standards Range: 0 – 39 mils

Quality Assurance Inspections: The Engineer may conduct Quality Assurance (QA) observations of any or all phases of the work. The presence or activity of Engineer inspections in no way relieves the Contractor of the responsibility to provide all necessary daily Quality Control inspections of its own and to comply with all requirements of this Specification.

The Contractor shall facilitate the Engineer’s inspections as required, including allowing ample time for the inspections and providing suitable lighting (50 foot candles minimum at the surface as defined later in this specification). The Contractor shall furnish, erect and move scaffolding or other mechanical equipment to permit inspection and close observation of all surfaces to be cleaned and painted. This equipment shall be provided during all phases of the work. The Contractor shall notify the Engineer in advance of plans to remove staging used in cleaning and painting operations in order to allow for inspection. The QA inspection will be performed with the QA inspector’s equipment when verifying the Contractor’s test results in the field.

Safety: All Contractor activities associated with the coating work described and specified herein shall be conducted according to all applicable Federal (OSHA), State of Connecticut safety regulations and SSPC-PA Guide 3 entitled “A Guide to Safety in Paint Application.”

Ambient Conditions: Surface preparation and coating application work shall only be done inside a containment enclosure as specified elsewhere in these specifications. Surface preparation or coating work shall be performed inside the containment enclosure meeting the following:

- The relative humidity is at or below 90 percent.
- The substrate is not damp or covered by frost or ice.
- The surface temperature and air temperature are between 50°F and 100°F.
- The surface temperatures of the steel and air are more than 5°F above the dewpoint temperature, as determined by a surface temperature thermometer and electric or sling psychrometer.

If the requirements of the coating manufacturer differ from the ranges provided above, comply with the most restrictive requirements unless directed otherwise by the Engineer in writing.

Protective Coverings: The Contractor shall protect property, pedestrians, vehicular, and other traffic upon, underneath, or near the bridge, and all portions of the bridge superstructure and substructure against abrasive blast cleaning damage or disfigurement from splatters, splashes, or spray of paint or paint materials. See the specification for “Class 1 - Containment and Collection of Surface Preparation Debris (Site No. X).” All coating overspray, drips and spills shall be contained. Maintain the integrity and security of all protective coverings and containment materials throughout the entire Project.

Any paint chips, paint removal media (e.g., abrasives), coating or solvent that has escaped the Contractor’s containment enclosure shall be cleaned up immediately. For bridges over water, the
Contractor shall have on Site a sufficient quantity of spill containment boom and pads to contain a spill. The length of containment boom on Site shall be at least equal to twice the length of the active work site over the water.

**Observed Steel Defects:** If significant deficiencies, such as cracks or section losses, are found during cleaning or coating operations, the Contractor shall immediately notify the Engineer as to their extent. Significant deficiencies include the following:

a) Cracks in any part of the superstructure

b) Section loss more than 1/8” or section loss equal to or greater than 5 percent of flange thickness in the maximum moment areas (i.e. section loss in the middle one half of a single span structure).

c) Section loss more than ¼” or section loss equal to or greater than 25 percent of the flange thickness in other than the maximum moment areas (i.e. section loss up to quarter points of the middle one half of a single span structure).

d) Section loss more than 1/8” or section loss equal to or greater than 33 percent of web thickness in the maximum shear areas (i.e. section loss within five feet of the bearing center line).

**Heating Devices:** The Contractor may use heating devices to obtain and maintain a condition within the containment enclosure that is suitable for surface preparation and painting application, up to and including the minimum time to recoat, or minimum time to dry for service or topcoat. Heating devices shall be limited to gas or oil-fired indirect air heaters in which the combustion products are discharged separately from the forced airstream to an area outside the containment enclosure. The heating devices must be configured so as not to form condensation on cold surfaces or cause rust-back and must be automatically controlled. Information describing the proposed heating devices and the proposed heating procedures shall be provided a minimum of 20 days in advance for Engineer acceptance.

**Lighting Requirements:** A minimum illumination level of 20 foot-candles shall be provided throughout the inside of the containment enclosure during surface preparation and coating application work. A minimum illumination level of 50 foot-candles shall be provided at the location of the specific work task and for inspection. All lighting fixtures and related connectors located inside the containment enclosure must be explosion proof and UL listed.

**Material Storage:** The Contractor shall provide a suitable facility for the storage of paint that complies with all Federal and State laws and regulations.

This facility shall provide protection from the elements and ensure that the paint is stored at temperatures within the more stringent of (1) the manufacturer's written recommended temperatures, or (2) between 40° F and 100° F. If paint application takes place in conditions that require heating of the containment, then the temperature of the stored paint shall be maintained at a similar temperature. Storage of paint shall be in reasonable proximity to the painting locations. The Engineer shall be provided access to the stored paint for inspection and to witness removal of the materials. The Contractor's facility for the storage of paint shall be subject to the approval of the Engineer.
Equipment: All equipment used in surface preparation and removal of debris, such as hoses, hoppers, recycling and vacuum machines that the Contractor brings to the Site, shall be clean and free of any prior debris.

Spray equipment, brushes and rollers used in application of coatings shall be sized sufficiently and be in proper working order to accomplish the work according to the manufacturer's written recommendations.

Compressed Air: All compressed air sources shall have oil and moisture separators, attached and functional, and properly designed and sized. The compressed air sources shall deliver air to the blast nozzle, for blowing down the surfaces, or for conventional spray application that is free of oil and moisture and of sufficient pressure to accomplish the associated work efficiently and effectively. The tanks on the air compressor and moisture separator shall be drained at the end of each workday. The compressed air source shall produce a minimum pressure of 90 psi at the nozzle during abrasive blast cleaning.

The Contractor shall verify that the compressed air is free of moisture and oil contamination in accordance with the requirements of ASTM D4285. The tests shall be conducted at least every four hours for each compressor system in operation. Sufficient freedom from oil and moisture is confirmed if soiling or discoloration is not visible on the paper. If air contamination is evidenced, the Contractor shall change filters, clean traps, add moisture separations or filters, or make other adjustments as necessary to achieve clean, dry, air.

Test Sections: Prior to surface preparation, the Contractor shall prepare a test section(s) on each structure to be painted in a location(s) that the Engineer considers to be representative of the existing surface condition and steel type for the structure as a whole. The test section(s) shall be prepared using the same equipment, materials and procedures as the production operations. The Contractor shall prepare the test section(s) to the specified level according to the appropriate SSPC written specifications and visual standards. The written requirements of the specification prevail in the event of a conflict with the SSPC visual standards. Only after a test section area has been approved shall the Contractor proceed with surface preparation operations. The test section(s) shall cover approximately 10 square feet each. Additional compensation will not be allowed the Contractor for preparation of test sections.

For the production cleaning operations, the specifications and written definitions, the test section(s), and the SSPC visual standards shall be used in that order for determining compliance with the Contract requirements.

Surface Preparation:

1 – Laminar and Stratified Rust: All laminar and stratified rust or corrosion products that have formed on any area of the existing steel surfaces and accessible rust formed along edges of connected plates or shapes of structural steel shall be removed. The tools used to remove these corrosion products shall be identified in the submittals and accepted by the Engineer. If the
surface preparation or removal of rust results in nicks or gouges, the work will be suspended. The Contractor shall demonstrate that the necessary adjustments have been made to prevent a reoccurrence of the damage prior to resuming work.

2 – Commercial Blast Cleaning (SSPC-SP 6): Steel surfaces, including all new steel plates installed for structural repairs, shall be cleaned by the specified methods described in the SSPC Steel Structures Painting Manual, Volume 2 - Systems and Specifications, latest edition. The structural steel shall be abrasive blast cleaned according to SSPC-SP 6 “Commercial Blast Cleaning.” Before and after blast cleaning, all dissolvable foreign matter, such as oil, grease, and dust shall be removed by wiping or scrubbing the surface with rags or brushes wetted with solvent in accordance with the provisions SSPC-SP 1 “Solvent Cleaning.” Clean solvent and clean rags or brushes shall be used for the final wiping.

All foreign materials such as dirt, dust, rust scale, sand, bird droppings, and all materials loosened by abrasive blasting operations shall be completely removed by vacuuming before any painting operations are begun.

Following completion of the initial abrasive blast cleaning operations, the Contractor shall proceed with installation of new structural steel plates where required by the plans and as directed by the Engineer. The plates shall be delivered already coated with a zinc primer coat. After the plates have been welded in place and accepted, the new plates shall be coated with the same paint system used for the existing steel.

The cleaned surface shall be accepted by the Engineer before any painting. If the surface is determined to meet the requirements of SSPC-SP 6, painting operations can commence. The base coat shall be applied to the steel before the end of the day that preparation was performed and before the formation of any flash rusting or rerusting of the steel. Flash rusting or rerusting of the surface is unacceptable and requires additional blast cleaning prior to painting.

Failure of the Contractor to prepare and clean the surfaces to be painted according to these specifications shall be cause for rejection by the Engineer. All surfaces that are rejected shall be recleaned to the satisfaction of the Engineer according to these specifications, at no additional cost to the State.

3 – Steel Grit Abrasive Mix: The recyclable steel grit abrasive mix shall be maintained and monitored such that the final surface profile is within the range specified elsewhere in these specifications.

Before each reuse, the recyclable steel grit abrasive shall be cleaned of millscale, rust, paint, and other contaminants by an abrasive reclaimer.

On a weekly basis during blast cleaning operations, the Contractor shall verify that the recycled steel grit abrasives meet the requirements of SSPC-AB 2. If the abrasive fails the testing, all abrasive blast cleaning operations shall be suspended. The abrasive reclaimer shall be repaired and another abrasive sample will be required for testing after grit recovery and reclassification.
For test results within the acceptable limits, abrasive blast cleaning may resume. Test results outside of the acceptable limits will require additional equipment repairs or replacement at no cost to the State. If additional repairs were performed, another sample will be required for testing after grit recovery and reclassification. If the test results continue to remain outside of the acceptable limits, the Contractor shall replace the abrasive reclaimer at no cost to the State.

4 - Surface Profile: The specified height of the steel surface profile shall be according to the manufacturer’s written instructions and shall be uniform. Verification of the profile height will be done with Testex Replica Tape. A surface profile correction factor will be measured according to SSPC-PA 2, Section 2.2.4 with the dry film thickness gauge.

Painting Operation:

1 - General: All coatings shall be supplied in sealed containers bearing the manufacturer’s name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used. Storage, opening, mixing, thinning and application of coating materials shall be accomplished in strict accordance with the written requirements and procedures published by the respective coating material manufacturer and supplier. In the event of a conflict, the Contractor shall notify the Engineer in writing, and unless directed otherwise in writing, the requirements of this specification shall prevail. The Contractor shall always have at the Project Site the current copies of all material safety data sheets (MSDS), technical data, recommendations and procedures published by the coating manufacturer for the coating materials.

2 - Paint Mixing and Thinning: Thinning shall be performed only to the extent allowed by the manufacturer’s written instructions, and only with the manufacturer’s approved thinner. In no case shall thinning be permitted that would cause the coating to exceed the local VOC restrictions. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not allowed.

The ingredients in the containers of paint shall be thoroughly mixed by mechanical power mixers in the original containers, or as directed by the manufacturer, before use or mixing with other containers of paint. The paint shall be mixed in a manner that will break up all lumps, completely disperse pigment and result in a uniform composition. Paint shall be carefully examined after mixing for uniformity and to verify that no unmixed pigment remains on the bottom of the container. Excessive skinning or partial hardening due to improper or prolonged storage will be cause for rejection of the paint, even though it may have been previously inspected and accepted.

Multiple component coatings shall be discarded after the expiration of the pot life. Single component paint shall not remain in spray pots, painter’s buckets or similar containers overnight. It shall be stored in a covered container and remixed before use.

The Engineer reserves the right to sample field paint (individual components and/or the mixed material) and have it analyzed. If the paint does not meet the product requirements due to
excessive thinning or because of other field problems, the coating shall be removed from that section of the structure and replaced as directed by the Engineer.

3 – Methods of Application: All applicators of the specified coating material shall show proficiency on a test panel, or a portion of the structure as selected by the Engineer, to the satisfaction of the Engineer before commencing full-scale application.

The preferred method for coating application shall be by airless spray equipment. For striping and for application in areas where complex shapes or tight clearances will not allow spray application, the Contractor shall apply the coating material by appropriately designed and constructed rollers and brushes.

4 – Recoat Times: The recoat time of each coat of paint shall not deviate from the written recommendation of the manufacturer or the times specified in these specifications, complying with the most restrictive requirements unless directed otherwise by the Engineer in writing. If any individual time is exceeded, the affected areas shall be abrasive blast cleaned to SSPC-SP 6 and coatings reapplied in accordance with these specifications at no additional cost to the State.

5 – Film Continuity: All applied coatings shall exhibit no running, streaking, sagging, wrinkling, holidays, pinholes, top coat color or gloss variation, or other film defects. Failure of the Contractor to apply coatings that are free of film defects shall be cause for rejection by the Engineer. All coatings rejected shall be repaired to the satisfaction of the Engineer, at no additional cost to the State. Before doing any coating repair work, the Contractor shall submit to the Engineer for approval the procedures that will be used to repair the coating.

6 - Technical Advisor: It is mandatory that the Contractor obtain the services of a qualified technical advisor employed by the coating manufacturer. This advisor shall be familiar with the technical properties of the coating products and proper application methods. The technical advisor shall assist the Engineer and the Contractor in establishing correct application methods for the complete coating system. He/she shall be present at the work Site before the opening of the material containers and shall remain at the Site until the Engineer is satisfied that the Contractor's personnel have mastered the proper handling, mixing and application of the material. The Engineer may call the technical advisor back to the Site if there are concerns that the Contractor is not handling, mixing or applying the material correctly.

7 - Containment Plan: For each individual Site, the Contractor shall submit a plan of containment to the Engineer for acceptance. The plan shall be submitted twenty days before commencing painting operation. The minimum containment enclosure for the intermediate and top coat shall conform to the requirements of SSPC Guide 6, Class 1A and the following. Components of the containment system must be made from flame retardant materials. Tarpaulin material shall be clean and impermeable to air and water. Joints shall be fully sealed except for entryways. Entryways shall use multiple flap overlapping door tarps to minimize dust escape through the entryway. All mists or dust shall be filtered with collection equipment. For truss bridges a ceiling shall also be included.
8 - Application:

2-COAT SYSTEM:

A - Primer Coat Application: All prepared surfaces shall be cleaned by vacuuming to remove dust, remaining debris, and other surface contaminants before coating. Such surfaces shall then be sprayed, brushed or rolled within the specified abrasive blast cleaning containment enclosure before the end of the day or before any visible rust-back occurs. If rust-back occurs, affected surfaces shall be re-cleaned to the satisfaction of the Engineer according to these specifications, at no additional cost to the state. All surfaces shall receive 1 coat of the primer coat. Temperature ranges (both steel and air) shall be the more restrictive of that specified in the Manufacturer’s written application instructions or between 50º F. to 100º F., unless directed otherwise by the Engineer in writing. The dry film thickness shall be according to the Manufacturer's written instructions. The primer coat shall be of a contrasting color to the topcoat color. The dry film thickness will be checked for compliance per the guidelines of SSPC-PA 2.

All plate and shape edges, plate seams, back to back angle seams, pitted steel, and other sharp discontinuities shall be hand-striped with a brush in the longitudinal direction with the primer coat. Bolted connections shall also have all bolt heads and nuts hand-striped in a circular brush motion with the primer coat material. Stripe coats shall be applied before or after the full primer coat application. The primer coat material used for hand-striping shall be tinted to distinguish it from material used for the full primer coat application.

B - Top Coat Application: After the primer coat has cured per the Manufacturer's written recommendations (not to exceed 10 days), all previously coated surfaces shall receive the top coat. The cured and dry primer coat shall be clean and free of all surface and embedded contamination and dry-spray. If it is not clean and free of all contamination, and dry-spray, the surfaces shall be cleaned by using clean rags or brushes to water wipe, solvent wipe, or detergent wash and rinse. Power washing is not allowed. Temperature ranges (both steel and air) shall be the more restrictive of that specified in the Manufacturer’s written application instructions or between 50º F. to 100º F., unless directed otherwise by the Engineer in writing. The dry film thickness shall be according to the Manufacturer's written instructions.

9 – Painting of New Steel: All new steel shall be painted with the same coating system selected for use at the beam ends, unless permitted otherwise in writing. After the new steel has been fabricated, the steel shall be painted with the primer coat after preparation of the steel surfaces in accordance with the relevant requirements of this special provision including abrasive blast cleaning. All paint that is damaged by field welding operations or by any other operation shall be removed, the area cleaned to the satisfaction of the Engineer, and the affected areas repainted with the primer coat. The new steel shall then be painted with the rest of the paint system.

Method of Measurement: This item, being paid for on a lump sum basis for each bridge Site, will not be measured for payment.
Basis of Payment: This work will be paid for at the Contract lump sum price for “Abrasive Blast Cleaning and Field Painting of Beam Ends (Site No. X),” which price shall include all materials, equipment, abrasive blast cleaning and surface preparation, painting, coating of inaccessible areas, overspray containment enclosure, heating devices, tools, labor, and services of the technical advisor. No direct payment will be made for the cost of storage or hauling the paint and other materials to and from the bridge Site, but the cost thereof shall be included in the lump sum price as noted above.

The containment and collection of surface preparation debris shall be paid for under the item “Class 1 - Containment and Collection of Surface Preparation Debris (Site No. X).”

Disposal of spent abrasive contaminated by lead shall be paid for under the item, “Disposal of Lead Debris from Abrasive Blast Cleaning.”

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<td>Abrasive Blast Cleaning and Field Painting</td>
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ITEM #0603563A - CLASS 1 CONTAINMENT AND COLLECTION OF SURFACE PREPARATION DEBRIS (SITE NO. 1)

Description: Work under this item shall consist of furnishing and erecting SSPC Guide 6 Class 1 containment enclosures with negative air pressure as required to contain and collect debris resulting from the removal of coatings in the preparation of steel surfaces for painting. Also included are the vacuum collection and the storage of debris in suitable containers.

The containment and collection of debris shall be done in strict conformance with current Federal Environmental Protection Agency (EPA) and Connecticut Department of Energy and Environmental Protection (DEEP) regulations.

Materials: Materials and equipment shall be of satisfactory quality to perform the work and shall not be used on the Project until and unless they have been reviewed and approved by the Engineer.

Rigid walls for the containment enclosure shall be comprised of plywood panels or corrugated panels of steel, aluminum or reinforced fiberglass. Flexible containment walls constructed of fire retardant tarpaulin material shall be impermeable to air and water.

Fifty Five (55) gallon barrels with resealable lids, or lined storage containers sized for the job shall be leakproof; shall conform to the Code of Federal Regulations Title 49, Chapter 1, Paragraph 173.510A (1), (5), and Paragraph 178.118; and shall not be used on the Project until and unless they have been reviewed and approved by the Engineer.

In meeting the requirements of these specifications, the Contractor shall supply portable battery-operated manometers with a pressure range of -1.00 to 10.00 in increments of 0.01 inches of water and a velocity range of 50 to 9990 feet per minute; and one or more portable lightmeters with a scale of 0.0-50.0 foot candles.

Construction Methods: The Contractor shall proceed with one of the following containment methods:
A. Containment enclosure with a suspended platform, or
B. Containment enclosure without a suspended platform.

A. Containment enclosures with a suspended platform:
At least two (2) months prior to any abrasive blast cleaning activities, the Contractor shall submit to the Department ten (10) complete copies of detailed working drawings and calculations prepared and stamped by a Professional Engineer (Mechanical and Civil) licensed in Connecticut, which drawings shall detail as described below, the proposed methods for such activities. The Contractor shall not commence with containment enclosure erection and abrasive blast cleaning until and
unless the working drawings have been reviewed and approved by the Engineer, and shall proceed with such work only within approved containment enclosures.

The working drawings shall include the following:
1. A construction plan and drawings detailing proposed coating removal operations, abrasive debris classification and separation, removal and transport of waste to a secure storage site.
2. A plan and drawings detailing the proposed containment enclosure, including details of the following:
   A. Rigid, solid floor or platform.
   B. Containment walls with rigid and flexible materials.
   C. Rigid supports and bracing for the floor and wall panels, rigid or flexible supports and bracing for flexible walls.
   D. Calculations including localized overstress conditions, member stresses, H.S. load rating and maximum dead and live load imposed on the bridge by the containment enclosure, grit blasting/recycling equipment and HVAC equipment.
   E. Maximum allowable load for the floor/platform.
   F. Wind load and wind stresses imposed on the bridge by the containment enclosure shall be calculated and submitted.
   G. Airflow and air re-circulation within the enclosure including a minimum negative pressure of 0.03 in. of water column (W.C.) relative to external ambient air and calculations. Airflow shall meet the SSPC Guide 6 requirements of 100 ft/min cross draft and 50 ft/min downdraft and the OSHA Ventilation Standards. The maximum cross sectional area for airflow within the enclosure shall be 400 square feet.
   H. Connections to the bridge, i.e., clamps, rollers. (Note: Welding and bolting is not allowed.) Each connection to the bridge shall have a tension load cell attached. A multi-channel digital load indicator shall be connected to all the bridge connection load cells and located in an area accessible to the Engineer. The load indicator shall be capable of storing peak load readings.
   I. Auxiliary stationary source lighting.
   J. Dust collection and filtration equipment, including the equipment data sheets and airflow capacity.
   K. Air intake points including filters, louvers, baffles, etc.
   L. Entrance/Exit compartment completely sealed with airlocks.
   M. Location of equipment and impact on traffic.
   N. Elevation view of the containment enclosure with indications of any encroachments on the surroundings. The bridge vertical clearance shall be maintained throughout the project.

NOTE: The structure loading for containment design shall be in accordance with AASHTO using HS-20 loads. The allowable overstress for all conditions shall not exceed 20%.

B. Containment enclosures without a suspended platform:
At least two (2) months prior to any abrasive blast cleaning activities, the Contractor shall submit to the Department ten (10) complete copies of detailed working drawings and calculations prepared and stamped by a Professional Engineer (Mechanical and Civil) licensed in Connecticut, which
drawings shall detail, as described below, the proposed methods for such activities. The Contractor
shall not commence with containment enclosure erection and abrasive blast cleaning until and
unless the working drawings have been reviewed and approved by the Engineer, and shall proceed
with such work only within approved containment enclosures.

The working drawings shall include the following:
1. A construction plan and drawings detailing proposed coating removal operations, abrasive debris
classification and separation, removal and transport of waste to a secure storage site.
2. A plan and drawings detailing the proposed containment enclosure, including details of the
following:
   A. Containment walls with rigid and flexible materials.
   B. Rigid supports and bracing for the floor and wall panels, rigid or flexible supports and
      bracing for flexible walls.
   C. Airflow and air re-circulation within the enclosure including a minimum negative
      pressure of 0.03 in of water column (W.C.) relative to external ambient air and
      calculations. Airflow shall meet the SSPC Guide 6 requirements of 100 ft/min cross draft
      and 50 ft/min downdraft and the OSHA Ventilation Standards. The maximum cross
      sectional area for airflow within the enclosure shall be 400 square feet.
   D. Connections to the bridge, i.e., clamps, rollers. (Note: Welding and bolting is not
      allowed.)
   E. Auxiliary stationary source lighting.
   F. Dust collection and filtration equipment, including the equipment data sheets and airflow
      capacity.
   G. Air intake points including filters, louvers, baffles, etc.
   H. Entrance/Exit compartment completely sealed with airlocks.
   I. Location of equipment and impact on traffic.
   J. Elevation view of the containment enclosure with indications of any encroachments on
      the surroundings. The bridge vertical clearance shall be maintained throughout the
      project.

In addition, if the bridge vertical clearance is greater than 30 feet, the wind load and wind stresses
imposed on the bridge by the containment enclosure shall be calculated and submitted.

Reference information on enclosures can be obtained from the following sources:
   • SSPC Guide 6
   • Steel Structures Painting Manual, Volume 1
   • NCHRP Report 265

The containment enclosure shall be sealed across the bridge deck underside between the girders
with a rigid material. The floor shall be covered with a waterproof tarpaulin attached and sealed to
the enclosure wall and floor around the entire enclosure perimeter. All edges of tarpaulins shall
have a 2-foot flap that clamps over the connected edges around the entire perimeter. These flaps
shall be completely fastened 12 in on center for both edges and sealed completely with the tarpaulin
manufacturer's recommended tape and caulk.
All equipment placement and work shall be in strict conformance with the Contract special provisions "Prosecution and Progress" and "Maintenance and Protection of Traffic." The Contractor shall perform all work in accordance with the requirements of any permits for this Project.

During abrasive blast cleaning, if the containment enclosure is allowing debris to escape, the Contractor shall immediately stop such work until the enclosure is repaired. Any debris released from the enclosure shall be cleaned up by the Contractor immediately.

The containment enclosure shall be disassembled if the wind velocity is greater than 40 miles per hour, if it is forecast to be higher or when directed by the Engineer. However, if the wind velocity is below 40 MPH, but high enough to cause the containment enclosure to billow and emit dust, the Contractor shall immediately cease abrasive blast cleaning and, after cleaning up all the debris, disassemble the enclosure.

All debris resulting from surface preparation shall be contained and vacuum collected daily or more frequently as directed by the Engineer, due to debris buildup. Such debris, abrasive blast residue and paint chips removed by hand or power tool cleaning, shall be stored in leakproof storage containers in the secured storage site, or as directed by the Engineer. Debris storage shall be in accordance with Connecticut Hazardous Waste Management Regulations.

If 55 gallon barrels are used, staging is required: 55 gallon barrels shall be stored together in 2 rows of 5. The Contractor shall maintain a minimum lane clearance of 36 inches between each lot (10 barrels per lot).

The Contractor shall maintain a secure storage site, which shall be large enough to handle all coating debris that is collected and stored on the Project Site at any time. The Contractor shall store coating debris only in the secured storage site. During abrasive blast cleaning operations, all surface preparation debris shall be vacuum collected from the containment enclosure and removed to the abrasive recycling reclaimer unit, and the coating debris shall be conveyed to the secured storage site at the conclusion of the work shift. The Contractor shall account for all coating debris conveyed to the secured storage site and all coating debris transported from the Project to the hazardous waste treatment/disposal facility. The Contractor is responsible for the proper handling of the surface preparation debris and coating debris. All spillage shall be cleaned up immediately.

The secure storage site shall consist of an 8-ft high fenced-in area with a padlocked entrance. Storage containers shall not be used on the Project until and unless they have been reviewed and approved by the Engineer. Storage containers and sites shall be located so as not to cause any traffic hazard. Container storage sites shall be in areas that are properly drained and runoff water shall not be allowed to pond. The containers shall be placed on pallets or other approved material and not directly on the ground.

Storage containers shall be closed and covered with a waterproof tarpaulin at all times except during placement, sampling, and disposal of the debris.
The Contractor shall furnish the inspector with two (2) new portable battery-operated manometers and light meters, per containment enclosure. Negative pressure verification with the portable manometers shall be done by the Engineer before and during abrasive blast cleaning and during vacuum collection of all surface preparation debris. The supplied instruments will become the property of the State upon Project completion.

Light at the steel surface within the enclosure shall be maintained by the Contractor at a minimum of 50 foot-candles as measured by a light meter. Such lighting shall be maintained throughout the surface preparation, painting, and inspection activities.

Equipment noise in excess of 90 decibels as measured at the closest residential, commercial or recreational areas, shall be lowered by the Contractor to a maximum of 90 decibels by the use of mufflers or other equipment approved by the Engineer prior to its use for this purpose.

Any air exhausted from the containment enclosure, abrasive-recycling equipment or vacuum equipment shall be passed through a filtering system. The Contractor is responsible for the design, effectiveness and maintenance of this filtering system. No discharge of debris dust shall be allowed.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of their failure to be in compliance with this special provision and all Federal, State, and local laws.

**Method of Measurement:** Work under this item will not be measured for payment, but will be paid for at the Contract lump sum price for each site. A site shall consist of an entire bridge structure, unless otherwise noted on the plans.

**Basis of Payment:** This work will be paid for at the Contract lump sum price for "Class 1 Containment and Collection of Surface Preparation Debris (Site No. X)," at the site designated. The price shall include all materials, equipment, tools, labor and work incidental thereto.

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ITEM #0603726A - EMBEDDED GALVANIC ANODES

Description: Work under this item shall consist of furnishing and installing alkali-activated, galvanic anodes within concrete repairs or within new concrete at locations noted within the plans and as directed by the Engineer.

Materials:
The galvanic anodes shall be Galvashield XP4, available through the following supplier or an approved equal:

Vector Corrosion Technologies, Inc.
3822 Turman Loop, Suite 102
Wesley Chapel, FL 33544
(813) 830-7566
info@vector-corrosion.com

Anodes shall consist of a minimum 5.6 oz (160 grams) of zinc in compliance with ASTM B418 Type II (Z13000) and ASTM B6 Special High Grade (Z13001) with iron content of 15 ppm or less cast around a pair of heat treated, uncoated steel tie wires and encased in a highly alkaline cementitious shell with a pH of 14 or greater. The anode shall contain no added sulfate nor shall it contain chloride, bromide or other constituents that are corrosive to reinforcing steel. Anode units shall be supplied with integral unspliced wires with loop ties for directly tying to the reinforcing steel. Each anode unit shall have a volume no less than 12.5 in$^3$. Repair mortars, concrete and bonding agents shall be Portland cement-based materials

Construction Methods:
A technical representative of Vector Corrosion Technologies shall be notified of the scheduled installation of the anodes a minimum of 2 weeks in advance and be present to provide direction and assistance for the initial installations of anodes in concrete patches and succeeding anode installations until the Contractor becomes proficient in the work and to the satisfaction of the Engineer.

Tools, equipment, and techniques used to prepare the patch locations for installation of the anodes shall be approved by the Engineer and the manufacturer's technical representative prior to the start of construction. Reinforcing steel shall be clean and securely fastened together with tie wire to provide good electrical conductivity.

The work for this item shall be performed in accordance with the manufacturer’s product specification and installed per the project details and as recommended by the technical representative of Vector Corrosion Technologies. The Contractor shall supply a multimeter and shall test the connections between anodes and reinforcing steel or electrical continuity as directed.
by the technical representative. The Contractor shall place additional tie wires or re-tie connections as directed to provide continuity.

Care shall be taken when handling anodes to prevent damage to the anodes and to the wire connections.

When Embedded Galvanic Anodes are installed in high resistivity concrete like Early High Strength Concrete, they shall be installed on a mortar bed as directed by the technical representative.

**Method of Measurement:** This work will be measured for payment by the actual number each of “Embedded Galvanic Anodes” installed and accepted.

**Basis of Payment:** This item will be paid for at the contract unit price each for “Embedded Galvanic Anodes”, complete in place, which price shall include all applicable technical representation and/or material application training, and all materials (including mortar bed), equipment, tools, and labor incidental thereto.

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ITEM #0603729A - LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL

Description: Work under this item shall consist of paint removal and field painting of the existing steel at designated areas. The work shall include containments, paint removal, collection of paint and associated debris, surface preparation and field painting. Designated areas include: areas specifically designated on the plans and those areas where construction activities require the removal of the existing coatings to accomplish other Contract work (such as, but not limited to, arc gouging or welding). The paint removal is required because of the possible presence of hazardous paint containing lead or other hazardous metals. The paint removal is required to comply with OSHA and DEEP regulations.

Privately-owned utilities, bridge rails, stay-in-place forms, fences, elastomeric bearing pads and bronze components shall be protected from damage by surface preparation and painting operations and are not to be painted.

Submittals: A minimum of 20 calendar days before starting any paint removal, surface preparation and coating application work, the painting Contractor shall submit the following to the Engineer for acceptance:

1. A copy of the firm’s written Quality Control Program used to control the quality of surface preparation and coating application including, but not limited to, ambient conditions, surface cleanliness and profile, coating mixing, dry film thickness and final film continuity.
2. A copy of the firm’s written surface preparation and application procedures. This written program must contain a description of the equipment that will be used for surface preparation, including the remediation of soluble salts, and for paint mixing and application. Coating repair procedures shall be included.
3. A detailed description of the Contractor’s enforcement procedures and the authority of personnel.
4. Containment plans (paint removal/collection of debris, surface preparation, coating applications, coating applications with heat, etc.).
5. If the application of heat is proposed for coating application purposes, provide information on the heat containment and procedures that will be used, with data sheets for the equipment. Note: If heat is used for coating operations, the heat and containment must be maintained to provide the required temperatures for the duration of the cure period.
6. Proof of SSPC-QP1 qualifications, CAS-certification(s) and QP2 qualifications, as applicable.
7. Proof that the finish coat complies with the color and gloss retention performance criteria of SSPC Paint 36, Level 3, for accelerated weathering.
8. Coating product information, including coating manufacturer, product name, application instructions, technical data, MSDS and color chips.

The Contractor shall not begin any paint removal work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply
approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the work in strict accordance with the requirements of Federal, State, or local regulations, this specification, or to adequately protect the health and safety of all workers involved in the Project and any members of the public who may be affected by the Project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

**Materials:** The paint shall be one of the following **2-coat systems**:

- Carbomastic 15
- Carbothane 134 HS, manufactured by: Carboline
  
  2150 Schuetz Road
  
  St. Louis, MO 63146
  
  (800) 848-4645

- Epoxy Mastic Aluminum II
- Acrolon 218 HS, manufactured by: Sherwin Williams
  
  425 Benton Street
  
  Stratford, CT 06615
  
  (203) 377-1711
  
  (800) 474-3794

- Carbomastic 90
- Carbothane 134 HS, manufactured by: Carboline
  
  2150 Schuetz Road
  
  St. Louis, MO 63146
  
  (800) 848-4645

All materials for the complete coating system shall be furnished by the same coating material manufacturer with no subcontracted manufacturing allowed. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written recommendations. The coating thickness shall be in accordance with the Manufacturer's printed instructions. All components of the coating system and the mixed paint shall comply with the Emission Standards for Volatile Organic Compounds (VOC) stated in the Connecticut Department of Energy and Environmental Protection's Administration Regulation for the Abatement of Air Pollution, Section 22a-174-20(s).

**Control of Materials:** A Materials Certificate will be required for the selected paint system in accordance with Article 1.06.07, confirming the conformance of the paint to the requirements set forth in these specifications. The selected Topcoat shall conform (as close as possible) in color to the existing topcoat.
Note: If any of the above and/or following stipulated Contract specifications differ from those of the manufacturer’s recommended procedures or ranges, the more restrictive of the requirements shall be adhered to unless directed by the Engineer in writing.

Construction Methods:

Contractor - Subcontractor Qualifications: Contractors and subcontractors doing this work are required to be certified by the SSPC Painting Contractor Certification Program (PCCP) to QP 1 entitled “Standard Procedure for Evaluating Qualifications of Painting Contractors (‘Field Application to Complex Structures’). When the work involves the disturbance of lead-containing paint, the Contractor and subcontractor are also required to be certified to SSPC-QP 2 “Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint.” The certification(s) must be kept current for the duration of the work. If a Contractor’s or subcontractor’s certification expires, the firm will not be allowed to do any work related to this item until the certification is reissued. Requests for extension of time for delay to the completion of the Project due to an inactive certification will not be considered and liquidated damages will apply. In addition, if any recoat times are exceeded, the affected areas shall be cleaned to SSPC-SP 15 and coatings reapplied in accordance with these specifications at no additional cost to the State.

Contractors and subcontractors are required to have at least one (1) Coating Application Specialist (CAS) (SSPC ACS/NACE No. 13)-certified (Level II-Interim Status-Minimal) craft-worker. CAS-certified (Level II-Interim Status-Minimal) craft-worker(s) are required for all crews/craft-workers up to four (4) crew members. For each crew larger than four (4), an additional CAS-certified (Level II-Interim Status-Minimal) craft-worker shall be present on each surface preparation/painting crew during surface preparation cleaning/removal and spray application (Atmospheric and Immersion Service) operations. A crew-member is a person who is on the job performing hand/power tool cleaning and/or spray application of protective coatings on a steel structure. The certification(s) must be kept current for the duration of the Project work. If a Contractor’s, subcontractor’s or any craft-worker’s certification expires, the firm will not be allowed to do any work on this item until the certification is reissued.

All Contractor activities associated with the work described and specified herein shall be conducted in accordance with all applicable Federal, State of Connecticut and local safety regulations and guidelines.

Quality Control Inspections: The Contractor shall perform first line, in process Quality Control (QC) inspections. The Contractor shall implement a Quality Control Program accepted by the Engineer, including written daily reports, that ensures that the work accomplished complies with these specifications. All Quality Control Reports must be reviewed and signed by either a NACE Coating Inspector Level 2 - Certified (must have completed sessions I, II and III) or SSPC – BCI Level 1 Inspector (Minimum qualifications). Copies of these reports shall be provided daily to the Engineer. Contractor QC inspections shall include, but not be limited to the following:
  • Suitability of protective coverings and containments
• Ambient conditions
• Surface preparation (solvent cleaning or hand/power tool cleaning)
• Coating application (mixing, thinning, and wet/dry film thickness)
• Recoat times and cleanliness between coats
• Coating continuity (freedom from runs, sags, pinholes, shadow-through, skips, misses, etc.)
• Final film acceptance

Limits of Paint Removal and Field Painting: Prior to applying the heat of welding equipment to localized areas of existing steel superstructures, the existing paint shall be removed to a width of 6 inches from wherever the heat will be applied, or as directed by the Engineer. The locations of the paint removal and field painting shall be reviewed and accepted by the Engineer prior to commencement of the work. Such acceptance by the Engineer does not relieve the Contractor of his responsibility for complying with applicable OSHA and DEEP regulations.

Containment for Paint Removal and Collection of Debris: The containment(s) shall be designed and erected to contain, as well as facilitate the collection of debris from the paint removal operations. Drawings and details of the containment(s) shall be submitted to the Engineer for review and comments prior to any paint removal. Review of the containment by the Engineer shall in no way relieve the Contractor of his responsibility for the containment. The containment shall conform to the requirements found within the SSPC Guide 6. The class of the containment shall be a minimum of Class 3P, modified to include the following:

A. The containment materials shall be air and water impenetrable and fire resistant.
B. With the exception of the entryways, all seams in the containment enclosure shall be lapped a minimum of 24 inches and shall be tied off at intervals not to exceed 18 inches.
C. All attachments to bridge parapets or the underside of the bridge deck shall be sealed to prevent the escape of dust and debris.

The above specified containment must be used for all paint removal and collection of debris operations. The containment must remain in place until all associated debris has been collected.

Storage and Disposal of Collected Debris: All of the debris resulting from the paint removal operations shall be contained and collected. Debris within containment enclosures shall be removed by HEPA vacuum collection prior to disassembly of the enclosures. All the debris, rust and paint chips shall be stored in leak-proof storage containers at the Project site. Debris storage shall be in accordance with Connecticut Hazardous Waste Management Regulations. The storage containers and storage locations shall be reviewed by the Engineer and shall be located in areas not subject to ponding. Storage containers shall be placed on pallets and closed and covered with tarps at all times except during placement, sampling, and disposal of the debris.

Prior to generation of any hazardous waste, the Contractor shall notify the Engineer of its selected hazardous waste transporter and disposal facility. The Contractor must submit to the Engineer: (1) the transporter’s current U.S DOT Certificate of Registration and (2) the transporter’s current Hazardous Waste Transporter Permits for the State of Connecticut, the hazardous waste destination state and any other applicable states. The Engineer will then obtain an EPA ID number that will be
forwarded to the Contractor. Any changes in transporter or facility shall be immediately forwarded to the Engineer for review.

The Contractor shall conform to the latest requirements of the Hazardous Waste Management Regulations prepared by the DEEP’s Hazardous Waste Management Section, subject to regulations of Section 22a-449(c) of the Connecticut General Statutes.

Disposal of the debris shall be in strict conformance with all Federal E.P.A. and DEEP regulations for hazardous materials.

All necessary forms, including the "Uniform Hazardous Waste Manifest" obtained from the Hazardous Waste Management Section of DEEP, must be filled out, approved and signed by the Department's Project Engineer (Construction), and appropriate copies returned to the Department's Division of Environmental Compliance.

A licensed hazardous waste transporter and a licensed hazardous waste treatment/disposal facility must be secured from lists available from the DEEP and approved by the Department's Division of Environmental Compliance.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of their failure to be in compliance with this special provision and all Federal, State and Local laws.

**Paint Removal/Surface Preparation:** The existing structural steel shall be power tool cleaned according to SSPC-SP 15 “Commercial Grade Power Tool Cleaning.” The power tools (needle guns, grinders, etc.) shall be equipped with HEPA vacuum attachments. Before the power tool cleaning, all dissolvable foreign matter, such as oil, grease, and dust shall be removed by wiping or scrubbing the surface with rags or brushes wetted with solvent in accordance with the provisions of SSPC-SP 1 “Solvent Cleaning.” Clean solvent and clean rags or brushes shall be used for the final wiping. The cleaned surface shall be accepted by the Engineer. If the surface is determined to meet the requirements of SSPC-SP 15, painting operations can commence.

**Note:** Chemical stripping and abrasive blast cleaning will not be permitted.

**Existing Steel Surfaces to be Painted:** After the designated areas have been inspected and accepted according to the surface preparation specification, SSPC SP 15, the steel surfaces which are to receive the field touch-up paint shall be cleaned immediately prior to coating operations by wiping or scrubbing the surface with rags or brushes wetted with solvent. Use clean solvent and clean rags for the final wiping.

- Solvent must be compatible with the specified coatings. Solvent cleaned surfaces shall be primed before any detrimental recontamination or corrosion occurs. Follow manufacturer’s safety recommendations when using any solvent.
- All foreign materials such as dirt, dust, loose rust scale, sand, bird droppings, and all materials loosened or deposited on the steel surface by cleaning operations shall also be completely removed by vacuuming before any painting operations commence.
• Failure by the Contractor to properly prepare and clean surfaces to be painted in accordance with the specifications shall be cause for rejection by the Engineer. All surfaces that are rejected shall be cleaned and painted to the satisfaction of the Engineer in accordance with the specifications, at no additional cost to the State.

Application of Field Paint: The method for coating application shall be by brush and roller equipment. The containment for paint application shall consist of drop cloths and a solid platform bottom.

Storage, opening, mixing, thinning and application of the paint shall be accomplished in strict accordance with the specified Contract requirements and procedures published by the paint manufacturer and supplier. The Contractor shall have at the Project site, at all times, the current copies of all technical data, recommendations and procedures published by the paint manufacturer. All coatings shall be supplied in sealed containers bearing the manufacturers name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used. Paint shall be furnished in the manufacturer's original sealed and undamaged containers. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not allowed. The paint shall be applied to produce a uniform smooth coat without runs, streaks sags, wrinkles, or other defects.

The Contractor shall provide a suitable facility for the storage of paint, which is in accordance with the latest Federal and State regulations. This facility must provide protection from the elements and insure that the paint is not subjected to temperatures outside the manufacturer's recommended extremes. Storage for paint must be located in reasonable proximity to the painting locations. The Engineer shall be provided access to the stored paint at any time, for inspection and to witness removal of the materials. The Contractor's facility for the storage of paint is subject to the approval of the Engineer.

Ambient Conditions: Solvent cleaning just prior to coating application or coating application work shall be performed when the conditions are as follows:
• The relative humidity is at or below 80% and when there is no falling rain or dew present, or anticipated, before a prepared surface can be coated.
• The substrate is not damp or covered by frost or ice.
• The surface temperature and air temperature are between 50° F and 100° F.
• The surface temperatures of the steel and air are more than 5° F above the dewpoint temperature, as determined by a surface temperature thermometer and electric or sling psychrometer.

If the requirements of the coating manufacturer differ from the ranges provided above, comply with the most restrictive requirements unless directed otherwise by the Engineer in writing.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of his failure to be in compliance with this special provision and all federal, state, and local laws.
Method of Measurement: This work will be measured by the actual square foot of existing steel at designated areas where paint was removed, surfaces cleaned, re-painted and accepted. Note: In some instances when new steel is being added to the designated areas where the paint was removed, the removal area may not equal the area to be re-painted. Measurement in these cases will be by the actual square foot of existing steel where the paint was removed and accepted.

Basis of Payment: This work will be paid for at the Contract unit price per square foot for "Localized Paint Removal and Field Painting of Existing Steel," complete in place, which price shall include all materials, containments, collection of non-hazardous debris, containers, equipment, tools, labor, heating devices, services of the technical advisor and for any incidental work.

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<th>Pay Item</th>
<th>Pay Unit</th>
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<tr>
<td>Localized Paint Removal and Field Painting Of Existing Steel</td>
<td>s.f.</td>
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ITEM #0603967A - PEENING COVER PLATE WELDS

Description:

This work shall consist of peening welds at the ends of cover plates and at additional weld locations designated on the plans and/or as directed by the Engineer.

Tools:

Tools for the peening operation shall conform to the following:

1. Peening Tool: The peening tool shall be shaped from a high grade carbon steel rod and the tip shall conform to the dimensions as shown on the plans. All sharp edges and burrs shall be ground smooth and the tool, including geometric configuration of same, shall be maintained in this condition at all times. The peening tool and techniques for usage shall be approved by the Engineer prior to commencement of the work.

2. Pneumatic Hammer: A small pneumatic hammer capable of supplying a pressure of 25 psi shall be used.

Construction Methods:

Welds shall be peened to the limits shown on the plans. Peening shall be performed with the use of a peening tool as indicated herein and on the plans. Peening shall be continued until the weld toe becomes smooth. Depth of indentation due to peening shall be approximately 1/32” to 1/16”. Lightly grind the peened surface to remove any lap marks.

Peening shall be performed with a small pneumatic hammer. Best results will be obtained by operating the pneumatic hammer at approximately 25 psi.

Peened areas shall be painted in accordance with the item “Localized Painted Removal and Field Painting of Existing Steel”.

Method of Measurement:

This work will be measured for payment by the actual number of peened weld locations as shown on the plans, completed and accepted.

Basis of Payment:

This work will be paid at the contract unit price each for “Peening Cover Plate Welds” completed and accepted which price shall include peening welds at the ends of cover plates and all other weld locations designated on the plans and all materials, tools, equipment, labor and work incidental thereto.
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<th>Pay Item</th>
<th>Pay Unit</th>
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<tr>
<td>Peening Cover Plate Welds</td>
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Cleaning and painting of peened welds will be paid separately under the item “Localized Paint Removal and Field Painting of Existing Steel”.
**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, an additional 40 mil 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 and 104°F 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 (peak to valley) and areas of minor surface deterioration of 1/2 inch 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. 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. 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 or failure in a concrete surface and greater than or equal to 300 psi 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 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. 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. 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. 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 or failure in a concrete surface and greater than or equal to 300 psi 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 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 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. 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 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 of waterproofed surface completed and accepted.

Basis of Payment: This item will be paid for at the contract unit price per square yard 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.

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<tr>
<td>Membrane Waterproofing (Cold Liquid Elastomeric)</td>
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ITEM #0728033A - NO. 8 CRUSHED STONE

Description: Work under this item shall consist of furnishing and placing crushed stone for Wingwalls and abutment for Site No. 2 where shown on the plans or as directed by the Engineer.

Materials: The material for this work shall conform to the requirements of Article M.01.01 for 3/8” (No. 8) coarse aggregate.

Construction Methods: The crushed stone shall be placed by suitable methods to backfill the retaining wall and shaped to a smooth uniform finished grade as shown on the plans or as directed by the Engineer.

Method of Measurement: Crushed stone will be measured by the cubic foot, complete in place. The volume shall be measured ahead of time prior to placement and agreed to by both the Engineer and Contractor prior to placement.

Basis of Payment: This work will be paid for at the contract unit price per cubic foot for “No. 8 Crushed stone”, complete in place, which price shall include all materials, tools, equipment and labor incidental thereto.
ITEM #0917010A - REPAIR GUIDERAIL

Description: Work under this item shall consist of the repair of newly installed guiderail. It shall be repaired in the locations originally installed and fabricated in conformity with the lines, designations, dimensions, and details shown on the plans or as ordered by the Engineer.

Materials: The material for guiderail shall meet the requirements as specified within the original applicable contract items.

When repairing guiderail, the Contractor shall reuse any undamaged existing guiderail elements, timber rail, wire rope, appropriate posts, delineators, lap bolts, and other hardware within the project limits as approved by the Engineer to repair the guiderail. The Contractor shall use new materials when any components of the existing railing are damaged or missing and cannot be obtained from other guiderail systems being removed or converted within the Project limits.

Construction Methods: The repair of guiderail shall be in accordance with contraction methods as specified within the original applicable contract items.

Guiderail, including end anchors, which has been installed in final condition and accepted by the Engineer, shall be eligible for reimbursement for repairs subject to the conditions described below. If multiple runs are to be installed in a single stage as indicated in the contract documents, determination for reimbursement shall be made when all runs within the stage are complete and accepted as previously described. On projects without designated stages, guiderail installations must be complete and serving the intended function as determined by the Engineer.

When newly installed guiderail is damaged by public traffic, the following conditions must be satisfied prior to reimbursement for payment:

1. The damage must have been caused solely by the traveling public.

2. The contractor shall provide satisfactory evidence that such damage was caused by public traffic. Such as accident reports obtained from the Connecticut Department of Public Safety, police agencies or insurance companies; statements by reliable, unbiased eyewitnesses; or identification of the vehicle involved in the accident.

3. The contractor shall attempt to collect the costs from the person or persons responsible for the damage and provide documentation of those efforts to the satisfaction of the Engineer.

4. If such evidence cannot be obtained, the Engineer may determine that the damage was not caused by the Contractor and reimbursement for payment is warranted.
This repair provision does not relieve the Contractor of the requirements of Section 1.07, any other contractual requirements for maintenance and protection of traffic and final acceptance and relief of responsibility for the project.

The contractor shall remain responsible for the safety and integrity of the guiderail system for the duration of the project. In the event the guiderail is damaged, the Contractor shall provide sufficient cones, drums and other traffic control devices to provide safe passage by the public. When ordered by the Engineer, the Contractor shall furnish replacement parts and immediately repair the guiderail, but in no case more than 24 hours after notification from the Engineer. In non-emergency situations, the guiderail shall be repaired within 72 hours. The repaired guiderail or anchorages, when completed, shall conform to these specifications for a new system. The Contractor shall be responsible for the removal and the proper disposal of all damaged material and debris.

**Method of Measurement:** Guiderail damaged solely by the traveling public will be measured for payment. Damage caused by the Contractor’s equipment or operations will not be measured for payment.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for repair of guiderail will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount bid for the contract.

**Basis of Payment:** Repair of guiderail will be paid for in accordance with Article 1.09.04 as required to restore the rail to its full working condition in conformance with these specifications for a new system. There will be no payment for maintenance and protection of traffic for work associated with this item unless, in the opinion of the Engineer, the sole purpose of the maintenance and protection of traffic is for repair of the guiderail.

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<tr>
<td>Repair Guiderail</td>
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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:

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<tr>
<th>Description</th>
<th>Office Size</th>
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<tr>
<td>Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.</td>
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<tr>
<td>Minimum number of exterior entrances.</td>
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<td>Minimum number of parking spaces.</td>
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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:

<table>
<thead>
<tr>
<th>Furnishing Description</th>
<th>Office Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Med. 3</td>
</tr>
<tr>
<td>Standard secretarial type desk and matching desk chair that has pneumatic seat</td>
<td>Med. -</td>
</tr>
<tr>
<td>Description</td>
<td>Quantity</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Height adjustment and dual wheel casters on the base.</td>
<td></td>
</tr>
<tr>
<td>Personal computer tables (4 ft. x 2.5 ft.).</td>
<td>3</td>
</tr>
<tr>
<td>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.</td>
<td>1</td>
</tr>
<tr>
<td>Conference table, 3 ft. x 12 ft.</td>
<td>-</td>
</tr>
<tr>
<td>Table – 3 ft. x 6 ft.</td>
<td>-</td>
</tr>
<tr>
<td>Office Chairs.</td>
<td>4</td>
</tr>
<tr>
<td>Mail slot bin – legal size.</td>
<td>-</td>
</tr>
<tr>
<td>Non-fire resistant cabinet.</td>
<td>-</td>
</tr>
<tr>
<td>Fire resistant cabinet (legal size/4 drawer), locking.</td>
<td>1</td>
</tr>
<tr>
<td>Storage racks to hold 3 ft. x 5 ft. display charts.</td>
<td>-</td>
</tr>
<tr>
<td>Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.</td>
<td>1</td>
</tr>
<tr>
<td>Double door supply cabinet with 4 shelves and a lock – 6 ft. x 4 ft.</td>
<td>-</td>
</tr>
<tr>
<td>Case of cardboard banker boxes (Min 10 boxes/case)</td>
<td>1</td>
</tr>
<tr>
<td>Open bookcase – 3 shelves – 3 ft. long.</td>
<td>-</td>
</tr>
<tr>
<td>White Dry-Erase Board, 36” x 48”min. with markers and eraser.</td>
<td>1</td>
</tr>
<tr>
<td>Interior partitions – 6 ft. x 6 ft., soundproof type, portable and freestanding.</td>
<td>-</td>
</tr>
<tr>
<td>Coat rack with 20 coat capacity.</td>
<td>-</td>
</tr>
<tr>
<td>Wastebaskets - 30 gal., including plastic waste bags.</td>
<td>1</td>
</tr>
<tr>
<td>Wastebaskets - 5 gal., including plastic waste bags.</td>
<td>3</td>
</tr>
<tr>
<td>Electric wall clock.</td>
<td>-</td>
</tr>
<tr>
<td>Telephone.</td>
<td>1</td>
</tr>
<tr>
<td>Full size stapler 20 (sheet capacity, with staples)</td>
<td>2</td>
</tr>
<tr>
<td>Desktop tape dispensers (with Tape)</td>
<td>2</td>
</tr>
<tr>
<td>8 Outlet Power Strip with Surge Protection</td>
<td>4</td>
</tr>
<tr>
<td>Rain Gauge</td>
<td>1</td>
</tr>
<tr>
<td>Business telephone system for three lines with ten handsets, intercom capability, and one speaker phone for conference table.</td>
<td>-</td>
</tr>
<tr>
<td>Mini refrigerator - 3.2 c.f. min.</td>
<td>1</td>
</tr>
<tr>
<td>Hot and cold water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.</td>
<td>1</td>
</tr>
<tr>
<td>Microwave, 1.2 c.f., 1000W min.</td>
<td>1</td>
</tr>
<tr>
<td>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.</td>
<td>*</td>
</tr>
<tr>
<td>Electric pencil sharpeners.</td>
<td>2</td>
</tr>
<tr>
<td>Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.</td>
<td>1</td>
</tr>
<tr>
<td>Small Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under Computer Related Hardware and Software.</td>
<td>1</td>
</tr>
</tbody>
</table>

Rev. Date 09/14/2016

ITEM #0969062A
Large Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under Computer Related Hardware and Software.

Field Office Wi-Fi Connection as specified below under Computer Related Hardware and Software. 1

Wi-Fi Printer as specified below under Computer Related Hardware and Software. 1

Digital Camera as specified below under Computer Related Hardware and Software. 1

Video Projector as specified below under Computer Related Hardware and Software. -

Smart Board as specified below under Computer Related Hardware and Software. -

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

Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment. 1

First Aid Kit 1

Flip Phones as specified under Computer Related Hardware and Software. -

Smart Phones as specified under Computer Related Hardware and Software. -

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 and software, 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 within 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.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Field Office, Medium</td>
<td>Month</td>
</tr>
</tbody>
</table>
ITEM #0971001A - MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description is supplemented by the following:

The Contractor shall maintain and protect traffic as described by the following and as limited in the Special Provision "Prosecution and Progress":

**Route I-84**

The Contractor shall maintain and protect the minimum number of through lanes and shoulders as dictated in the Special Provision for Section 1.08 - Prosecution and Progress “Limitations of Operations - Minimum Number of Lanes to Remain Open” Chart, on a paved travel path not less than 12 feet in width per lane.

**Route 6/67**

Excepted therefrom will be those periods, during the allowable periods, that the Contractor shall maintain and protect through and turn lanes as shown in the MPT 1 and MPT 2 Plans.

**All Other Roadways**

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction, each lane on a paved travel path not less than 11 feet in width.

**Commercial and Residential Driveways**

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the project limits. The Contractor will be allowed to close said driveways to perform the required work during those periods when the businesses are closed, unless permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor shall coordinate with the owner to determine the time period of the closure.

Article 9.71.03 - Construction Method is supplemented as follows:

**General**

Unpaved travel paths will only be permitted for areas requiring full depth and full width reconstruction, in which case, the Contractor will be allowed to maintain traffic on processed aggregate for a duration not to exceed 10 calendar days. The unpaved section shall be the full width of the road and perpendicular to the travel lanes. Opposing traffic lane dividers shall be used as a centerline.
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.

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.

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.
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.

<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT MILES PER HOUR</th>
<th>MINIMUM TAPER LENGTH IN FEET FOR A SINGLE LANE CLOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 OR LESS</td>
<td>180</td>
</tr>
<tr>
<td>35</td>
<td>250</td>
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<tr>
<td>40</td>
<td>320</td>
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<td>45</td>
<td>540</td>
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<td>600</td>
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<tr>
<td>55</td>
<td>660</td>
</tr>
<tr>
<td>65</td>
<td>780</td>
</tr>
</tbody>
</table>
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 travel path prior to merging/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

3.g) Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.

3.h) On limited access roadways, workers are prohibited from crossing the travel lanes to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

SECTION 4. USE OF HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

4.a) On limited access roadways, one Flashing Arrow shall be used for each lane that is closed. The Flashing Arrow shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the traffic control plan. For multiple lane closures, one Flashing Arrow is required for each lane closed. If conditions warrant, additional Flashing Arrows should be employed (i.e.: curves, major ramps, etc.).

4.b) On non-limited access roadways, the use of a Flashing Arrow for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the Flashing Arrow.

4.c) The Flashing Arrow shall not be used on two lane, two-way roadways for temporary alternating one-way traffic operations.

4.d) The Flashing Arrow board display shall be in the “arrow” mode for lane closure tapers and in the “caution” mode (four corners) for shoulder work, blocking the shoulder, or roadside work near the shoulder. The Flashing Arrow shall be in the “caution” mode when it is positioned in the closed lane.

4.e) The Flashing Arrow shall not be used on a multi-lane roadway to laterally shift all lanes of traffic, because unnecessary lane changing may result.
SECTION 5. USE OF TRUCK MOUNTED 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/drum 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”.

Rev. Date 7/25/17
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:
<table>
<thead>
<tr>
<th>Message No.</th>
<th>Frame 1</th>
<th>Frame 2</th>
<th>Message No.</th>
<th>Frame 1</th>
<th>Frame 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LEFT LANE</td>
<td>MERGE RIGHT</td>
<td>9</td>
<td>LANES CLOSED</td>
<td>REDUCE SPEED</td>
</tr>
<tr>
<td></td>
<td>CLOSED</td>
<td></td>
<td></td>
<td>AHEAD</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2 LEFT Lanes</td>
<td>MERGE RIGHT</td>
<td>10</td>
<td>LANES CLOSED</td>
<td>USE CAUTION</td>
</tr>
<tr>
<td></td>
<td>CLOSED</td>
<td></td>
<td></td>
<td>AHEAD</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>LEFT LANE</td>
<td>REDUCE SPEED</td>
<td>11</td>
<td>WORKERS ON</td>
<td>REDUCE SPEED</td>
</tr>
<tr>
<td></td>
<td>CLOSED</td>
<td></td>
<td></td>
<td>ROAD</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2 LEFT Lanes</td>
<td>REDUCE SPEED</td>
<td>12</td>
<td>WORKERS ON</td>
<td>SLOW DOWN</td>
</tr>
<tr>
<td></td>
<td>CLOSED</td>
<td></td>
<td></td>
<td>ROAD</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>RIGHT LANE</td>
<td>MERGE LEFT</td>
<td>13</td>
<td>EXIT XX</td>
<td>USE EXIT YY</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2 RIGHT Lanes</td>
<td>MERGE LEFT</td>
<td>14</td>
<td>EXIT XX</td>
<td>FOLLOW DETOUR</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>CLOSED</td>
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<td></td>
<td></td>
<td></td>
<td>USE YY</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>RIGHT LANE</td>
<td>REDUCE SPEED</td>
<td>15</td>
<td>2 LANES</td>
<td>USE CAUTION</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>SHIFT</td>
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<td></td>
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<td></td>
<td>AHEAD</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2 RIGHT Lanes</td>
<td>REDUCE SPEED</td>
<td>16</td>
<td>3 LANES</td>
<td>USE CAUTION</td>
</tr>
<tr>
<td></td>
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<td>SHIFT</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>AHEAD</td>
<td></td>
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</tbody>
</table>

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 RAMPS 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 SHAL BE USED ON ALL RAMPS, 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.
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 A, 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 DELINTE 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 D SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT (MILES PER HOUR)</th>
<th>MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 OR LESS</td>
<td>180' (55m)</td>
</tr>
<tr>
<td>35</td>
<td>250' (75m)</td>
</tr>
<tr>
<td>40</td>
<td>320' (100m)</td>
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<tr>
<td>45</td>
<td>540' (165m)</td>
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<tr>
<td>50</td>
<td>660' (180m)</td>
</tr>
<tr>
<td>55</td>
<td>660' (200m)</td>
</tr>
<tr>
<td>65</td>
<td>780' (240m)</td>
</tr>
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</table>

METRIC CONVERSION CHART (1" = 25mm)

<table>
<thead>
<tr>
<th>ENGLISH</th>
<th>METRIC</th>
<th>ENGLISH</th>
<th>METRIC</th>
<th>ENGLISH</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>300mm</td>
<td>24&quot;</td>
<td>600mm</td>
<td>36&quot;</td>
<td>900mm</td>
</tr>
<tr>
<td>18&quot;</td>
<td>450mm</td>
<td>30&quot;</td>
<td>750mm</td>
<td>30&quot;</td>
<td>750mm</td>
</tr>
<tr>
<td>24&quot;</td>
<td>600mm</td>
<td>36&quot;</td>
<td>900mm</td>
<td>36&quot;</td>
<td>900mm</td>
</tr>
</tbody>
</table>

CONSTRUCTION TRAFFIC CONTROL PLAN
NOTES

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

130-180 224 ITEM #0971001A
WORK IN SHOULDER AREA - MULTILANE HIGHWAY

SIGN FACE
94 SQ. FT. (MIN.)

REV. DATE 7/25/17

ITEM #0971001A

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 6
SEE NOTES 1, 2, 4, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

CHARLES G. HAYOU
PRINCIPAL ENGINEER
TYPICAL RAMP TREATMENTS FOR
MAINLINE LANE CLOSURE - MULTILANE HIGHWAY

SIGN FACE
SQ. FT VARIES

USE TRAFFIC CONTROL PLAN 1 TO CLOSE THE RIGHT LANE

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 8
SEE NOTES 1, 2, 3, 4, 5, 6, 8, 9, 10

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED
Charles B. Harlow
2017.08.08 15:33:31-0400

PRINCIPAL ENGINEER

ITEM #0971001A
MOVING OPERATION IN RIGHT LANE AND OUTSIDE SHOULDER AT THE SAME TIME
MULTILANE HIGHWAY

SIGN MOUNTED ON VEHICLE 5

END ROAD WORK

80-9612

SIGN MOUNTED ON TRUCKS 2, 3, & 4

DEPARTMENT APPROVED ARROW BOARD

SIGN MOUNTED ON VEHICLE 1

80-9815
THIS SIGN SHOULD BE COVERED WHEN NOT IN USE.

80-9914
USE APPROPRIATE MESSAGE FOR OPERATION.

SIGN MOUNTED ON VEHICLE 2

ROAD WORK AHEAD FINES DOUBLED

31-1906

SIGN MOUNTED ON VEHICLE 3

DISTANCE VARIES ACCORDING TO OPERATION

TRUCK MOUNTED ATTENUATOR UNIT

TRUCK MOUNTED ATTENUATOR UNIT

ADVANCE WARNING VEHICLE

WORK VEHICLE(S)

150'
MOVING OPERATION IN LEFT LANE AND INSIDE SHOULDER AT THE SAME TIME MULTILANE HIGHWAY

WHEN THE LEFT SHOULDER WIDTH CANNOT ACCOMMODATE A VEHICLE, THEN ADVANCE WARNING VEHICLE 1 MAY DRIVE PARTIALLY IN THE LANE.

SIGN MOUNTED ON VEHICLE 5

SIGN MOUNTED ON VEHICLE 2

SIGN MOUNTED ON TRUCKS 2, 3, & 4

SIGN MOUNTED ON VEHICLE 1

CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING & HIGHWAY OPERATIONS DIVISION OF TRAFFIC ENGINEERING CONSTRUCTION TRAFFIC CONTROL PLAN PLAN 21

APPROVED John D. Moot PRINCIPAL ENGINEER DATE 1/30/02

SCALE NONE

REV'D 1-02

130-180 231 ITEM #0971001A
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”.
ITEM #0974001A - REMOVAL OF EXISTING MASONRY

Work under this item shall conform to the requirements of Section 9.74 amended as follows:

Article 9.74.02 – Construction Methods: Add the following:

The concrete shall be saw cut to delineate the removal limits. Pneumatic hammers or any other method approved by the Engineer may be used to remove the concrete. Maximum 30 pound hammers shall be used for general removal while maximum 15 pound hammers shall be used near reinforcing steel that is to remain. Pneumatic tools shall not be placed in direct contact with the reinforcing steel that is to remain. Removal of concrete by blasting will not be permitted.

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, and at no cost to the State.

The Contractor shall also take necessary steps to identify the location of existing underground utilities in the vicinity of the portion of the structure where masonry is being removed. The utilities shall be protected from damage during all removal operations. Any damage to utilities resulting from masonry removal operations shall be repaired to the satisfaction of the affected utility company at no additional cost to the Department.

When removing the concrete and reinforcing steel, the Contractor shall take necessary precautions to prevent debris from impacting any traffic in the vicinity of the removal.

All debris shall be disposed of, from the site, by the Contractor.

Article 9.74.05 – Basis of Payment: Delete in its entirety and replace with the following:

This work will be paid for at the contract unit price per cubic yard for “Removal of Existing Masonry”, which price shall include all equipment, tools and labor incidental thereto. This item shall also include payment for the protection of any utilities that may be impacted as part of the removal of the existing masonry.
ITEM #0974105A - CONCRETE HAUNCH REMOVAL

Description: Work under this item shall consist of removing a portion of concrete beam haunch from the underside of the bridge deck slab along the edge of a beam in locations directly over underpass roadways, shoulders and sidewalks, as shown on the plans, and as directed by the Engineer, in accordance with these specifications.

Materials:

Epoxy Resin: The epoxy resin shall be a two component system. The base polymer shall be a thermosetting resin of the epoxy type. The epoxy resin shall be composed of 100% reactive constituents, which are a condensation product of the reaction of epichlorohydrin with bisphenol ether of bisphenol A, containing no more than trace amounts of hydrolyzable chloride. The epoxy resin shall have an epoxide equivalent between 465 and 530.

The reacting system shall consist of a blend of condensation polymers of dimerized and trimerized unsaturated fatty acids and an aliphatic polyamine.

Unless otherwise specified, pigmentation shall be required in the system so that the cured coating shall conform to the Federal Color Standard 595, No. 16357.

a) Physical Requirements of (Mixed) Epoxy Resin System:

A mixture of both components in the proportions recommended by the manufacturer shall conform to the following requirements:

Viscosity - 500 to 800 centipoises at 77°F
Pot life - 7 hours minimum at 75°F
Minimum solids content - 48%

The cured system shall not exhibit amine blushing or sweating.

When testing for abrasion by ASTM Designation D968, the pigmented finish coats shall require a minimum of 50 liters of sand to abrade a one mil thickness of coating.

A 2 ½ mil dry film thickness of the coating tested according to ASTM Designation D522 shall pass a 1/8 inch diameter mandrel test without splitting the film or causing loss of bond.

b) Sampling:

A representative sample of each component sufficient for the test specified shall be taken by a Department representative either from a well-blended bulk lot prior to packaging or by withdrawing 3 fluid ounce samples from no less than 5 percent by random selection of the
containers comprising the lot or shipment. Unless the samples of the same component taken from containers show evidence of variability, they may be blended into a single composite sample to represent that component. The entire lot of both components may be rejected if samples submitted for test fail to meet any requirements of this specification.

c) Packaging and Marking:

The two components of the epoxy resin system furnished under these specifications shall be supplied in separate containers which are non-reactive with the materials contained therein. The size of the container shall be such that the recommended proportions of the final mixture can be obtained by combining one container of one component with one or more whole containers of the other component.

Containers shall be identified as base polymer and reacting system, and shall show the mixing directions and usable temperature range as defined by these specifications. Each container shall be marked with the name of the manufacturer, the lot or batch number, the date of packaging, pigmentation if any, and the quantity contained therein in pounds and gallons.

Printed instructions from the manufacturer for mixing and applying the material shall be included.

Potential hazards shall be so stated on the package in accordance with the Federal Hazardous Products Labeling Act.

d) Control of Materials:

A Materials Certificate will be required in accordance with Article 1.06.07, certifying the conformance of the epoxy resin to the requirements set forth in this specification.

Construction Methods: The Contractor shall remove a portion of the concrete beam haunch located directly over underpass roadways and sidewalks in accordance with details and limits shown on the plans and as directed by the Engineer.

Concrete shall be removed by saw-cut and pneumatic hammer methods specified herein which do not damage the sound concrete in the bottom of the bridge deck, the adjacent steel beam, and portion of the beam haunch to remain.

A three (3) inch deep saw-cut shall be made into the haunch, as shown on the plans, using a concrete saw guided on a fixed track system for exact control of saw cut alignment and depth of cut, except at locations above bridge beam diaphragms or other obstructions having insufficient vertical clearance for saw-cutting equipment. Following the completion of the saw-cut, the portion of the haunch to be removed shall be broken away by percussive methods.

At haunch removal locations over bridge beam diaphragms or other obstructions having insufficient clearance for track guided concrete saw equipment, pneumatic hammers may be used.
to remove a portion of the beam haunch as shown on the plans. The maximum weight of pneumatic hammers used in the removal shall be 30 pounds.

The Engineer shall examine the underside of the bridge deck for popouts caused by the removal of haunches. The surface area of popouts shall be coated with epoxy resin where ordered by the Engineer. The concrete surface and exposed reinforcing steel, if any, which is to receive the coating material shall be cleaned of all loose or powder-like rust, oil, dust, dirt, loose particles, and other bond inhibiting matter just prior to coating.

The epoxy resin shall be mixed in accordance with the manufacturer’s instructions. Also in accordance with the manufacturer’s instructions, two coats of the mixed material shall be applied in uniform coats of approximately 2 to 3 mil dry film thickness each.

If the popouts extend beyond the bottom layer of reinforcing steel, the popouts shall be repaired as ordered by the Engineer.

Contractor shall take adequate measures to prevent concrete chips, concrete sawing slurry, tools and materials from accumulating on the bridge structure and dropping onto the travel lanes below the structure.

The Contractor shall design, furnish and install protective shielding on the underside of each beam undergoing haunch removal to prevent an unexpected fall of deteriorated concrete haunch material to roadways and shoulders below. The protective shielding shall be designed, furnished and installed by the Contractor. Working drawings and design calculations for the temporary shielding shall be submitted in accordance with the requirements of Article 1.05.02(a). 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.

All debris shall be promptly swept up, removed, and satisfactorily disposed of by the Contractor from the site.

**Method of Measurement:** This work will be measured for payment by the number of linear feet of concrete haunch on either side of steel flange removed in accordance with the plans and accepted by the Engineer.

**Basis of Payment:** This work will be paid for at the contract unit price per linear foot for “Concrete Haunch Removal”, which price shall include the removal of a portion of the concrete haunch along each edge of a beam, protective shielding, furnishing and application of epoxy resin, disposal of removed concrete, and all materials, equipment, tools and labor incidental thereto.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Haunch Removal</td>
<td>LF</td>
</tr>
</tbody>
</table>
**ITEM #1010902A - REMOVE CONCRETE HANDHOLE**

**DESCRIPTION:** Under this item the Contractor shall remove an existing concrete handhole where shown on the plans or as directed. The removed concrete handhole shall be disposed of by the Contractor.

**CONSTRUCTION METHODS:** The Contractor shall remove and dispose of a concrete handhole where shown on the plans or as directed. The hole shall be backfilled and graded to match surroundings, unless otherwise noted on the plans.

**METHOD OF MEASUREMENT:** This work will be measured for payment by the number of concrete handholes removed and disposed of, complete and accepted.

**BASES OF PAYMENT:** This work will be paid for at the contract unit price each for "Remove Concrete Handhole", which price shall include all materials, equipment and work incidental thereto including excavation, backfill when necessary, hauling and disposing of concrete handholes.
ITEM #1131002A - REMOTE CONTROLLED CHANGEABLE MESSAGE SIGN

Description: Work under this item shall include furnishing and maintaining a trailer-mounted, “Changeable Message Sign”, “Remote Controlled Changeable Message Sign”, “Changeable Message Sign with Radar”, or “Remote Controlled 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 Controlled 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 Controlled 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 Controlled 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 Controlled 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 Controlled Changeable Message Sign”, “Changeable Message Sign with Radar”, or “Remote Controlled 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 Controlled Changeable Message Sign”, “Changeable Message Sign with Radar”, or “Remote Controlled 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 Controlled Changeable Message Sign”, or “Remote Controlled Changeable Message Sign with Radar”, the cellular telephone service and telephone charges shall be included.

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<th>Pay Item</th>
<th>Pay Unit</th>
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<tr>
<td>Remote Controlled Changeable Message Sign</td>
<td>Day</td>
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130-180 240 ITEM #1131002A
ITEM #1206023A - REMOVAL AND RELOCATION OF EXISTING SIGNS

Section 12.06 is supplemented as follows:

Article 12.06.01 – Description is supplemented with the following:
Work under this item shall consist of the removal and/or relocation of designated side-mounted extruded aluminum and sheet aluminum signs, sign posts, sign supports, and foundations where indicated on the plans or as directed by the Engineer. Work under this item shall also include furnishing and installing new sign posts and associated hardware for signs designated for relocation.

Article 12.06.03 – Construction Methods is supplemented with the following:
The Contractor shall take care during the removal and relocation of existing signs, sign posts, and sign supports that are to be relocated so that they are not damaged. Any material that is damaged shall be replaced by the Contractor at no cost to the State.

Foundations and other materials designated for removal shall be removed and disposed of by the Contractor as directed by the Engineer and in accordance with existing standards for Removal of Existing Signing.

Sheet aluminum signs designated for relocation are to be re-installed on new sign posts.

Article 12.06.04 – Method of Measurement is supplemented with the following:
Payment under Removal and Relocation of Existing Signs shall be at the contract lump sum price which shall include all extruded aluminum and sheet aluminum signs, sign posts, and sign supports designated for relocation, all new sign posts and associated hardware for signs designated for relocation, all extruded aluminum signs, sheet aluminum signs, sign posts and sign supports designated for scrap, and foundations and other materials designated for removal and disposal, and all work and equipment required.

Article 12.06.05 – Basis of Payment is supplemented with the following:
This work will be paid for at the contract lump sum price for “Removal and Relocation of Existing Signs” which price shall include relocating designated extruded aluminum and sheet aluminum signs, sign posts, and sign supports, providing new posts and associated hardware for relocated signs, removing and disposing of foundations and other materials, and all equipment, material, tools and labor incidental thereto. This price shall also include removing, loading, transporting, and unloading of extruded aluminum signs, sheet aluminum signs, sign posts, and sign supports designated for scrap and all equipment, material, tools and labor incidental thereto.

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<th>Pay Item</th>
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<tr>
<td>Removal and Relocation of Existing Signs</td>
<td>L.S.</td>
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PERMITS AND/OR REQUIRED PROVISIONS

The following Permits and/or and Required Provisions follow this page are hereby made part of this Contract.

- **PERMITS AND/OR PERMIT APPLICATIONS**
  
  No Permits are required for this contract

- **Construction Contracts - Required Contract Provisions (FHWA Funded Contracts)**
(FHWA Funded Contracts)

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2. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements
4. Requirements of Title 49, CFR, Part 26, Participation by DBEs
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6. Americans with Disabilities Act of 1990, as Amended
7. Connecticut Statutory Labor Requirements
   a. Construction, Alteration or Repair of Public Works Projects; Wage Rates
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9. Executive Orders (State of CT)
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11. Whistleblower Provision
12. Connecticut Freedom of Information Act
   a. Disclosure of Records
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14. Substitution of Securities for Retainages on State Contracts and Subcontracts
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16. Forum and Choice of Law
17. Summary of State Ethics Laws
18. Audit and Inspection of Plants, Places of Business and Records

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**Index of Exhibits**

EXHIBIT A – FHWA Form 1273 (Begins on page 14)
EXHIBIT B – Title VI Contractor Assurances (page 35)
EXHIBIT C – Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity (page 36)
EXHIBIT D – Health Insurance Portability and Accountability Act of 1996 (HIPAA) (page 43)
EXHIBIT E - Campaign Contribution Restriction (page 51)
EXHIBIT F – Federal Wage Rates (Attached at the end)
EXHIBIT G - State Wage Rates (Attached at the end)
1. Federal Highway Administration (FHWA) Form 1273

The Contractor shall comply with the Federal Highway Administration (FHWA), Form 1273 attached at Exhibit A, as revised, which is hereby made part of this contract. The Contractor shall also require its subcontractors to comply with the FHWA – Form 1273 and include the FHWA – Form 1273 as an attachment to all subcontracts and purchase orders.

2. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements

The Contractor shall comply with Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000 et seq.), all requirements imposed by the regulations of the United States Department of Transportation (49 CFR Part 21) issued in implementation thereof, and the Title VI Contractor Assurances attached hereto at Exhibit B, all of which are hereby made a part of this Contract.


   (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
December 2015

(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
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.


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-ll2a 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

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). Laborors 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).


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 DEBARMMENT, 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

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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 of subcontractor’s failure to take good faith efforts to achieve the plan goals and timetables.

The Contractor shall implement the specific affirmative action standards provided in a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in
which it has employees in the covered area. Covered Construction contractors performing
construction work in geographical areas where they do not have a federal or federally assisted
construction contract shall apply the minority and female goals established for the geographical area
where the work is being performed. Goals are published periodically in the Federal Register in
notice form and such notices may be obtained from any Office of Federal Contract Compliance
Programs (OFCCP) Office or from Federal procurement contracting officers. The Contractor is
expected to make substantially uniform progress in meeting its goals in each craft during the period
specified.

Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom
the Contractor has a collective bargaining agreement, to refer either minorities or women shall
excuse the Contractors obligations under these specifications, Executive Order 11246, or the
regulations promulgated pursuant hereto.

In order for the nonworking training hours of apprentices and trainees to be counted in meeting the
goals, such apprentices and trainees must be employed by the Contractor during the training period,
and the Contractor must have made a commitment to employ the apprentices and trainees at the
completion of their training, subject to the availability of employment opportunities. Trainees must
be trained pursuant to training programs approved by the U.S. Department of Labor.

The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The
evaluation of the Contractor’s compliance with these specifications shall be based upon its effort to
achieve maximum results from its actions. The Contractor shall document these efforts fully, and
shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion
   at all sites; and in all facilities at which the Contractor’s employees are assigned to work.
   The Contractor, where possible, will assign two or more women to each construction
   project. The Contractor shall specifically ensure that all foremen, superintendents, and other
   on-site supervisory personnel are aware of and carry out the Contractor’s obligation to
   maintain such a working environment, with specific attention to minority or female
   individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide
   written notification to minority and female recruitment sources and to community
   organizations when the Contractor or its unions have employment opportunities available,
   and maintain a record of the organizations’ responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and
   female off the street applicant and minority or female referral from a union, a recruitment
   source or community organization and of what action was taken with respect to each such
   individual. If such individual was sent to the union hiring hall for referral and was not
   referred back to the Contractor by the union or, if referred, not employed by the Contractor,
   this shall be documented in the file with the reason thereafter; along with whatever
   additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the Union or Unions with which
   the Contractor has a collective bargaining agreement has not referred to the Contractor a
   minority person or women sent by the Contractor, or when the Contractor has other
information that the Union referral process has impeded the Contractor’s efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor’s employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under b above.

f. Disseminate the Contractor’s EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO Policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company EEO Policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment, decisions including specific Foreman, etc. prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor’s EEO Policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor’s EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor’s recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor’s work-force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and
employment related activities to ensure that the EEO policy and the Contractor’s obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review at least annually of all supervisors’ adherence to and performance under the Contractor’s EEO policies and affirmative action obligations.

Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (a through p). The efforts of a contractor association, joint contractor union, contractor community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor’s minority and female work-force participation, makes a good faith effort to meet with individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor’s and failure of such a group to fulfill an obligation shall not be a defense for the Contractor’s noncompliance.

A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of Executive Order 11246 if a particular group is employed in a substantially disparate manner, (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is under utilized).

The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in these
specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4 8.

The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status, (e.g. mechanic, apprentice, trainee, helper, or laborer) dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

Nothing herein provided shall be construed as a limitation upon the application of their laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

The Director of the Office of Federal Contract Compliance Programs, from time to time, shall issue goals and timetables for minority and female utilization which shall be based on appropriate work-force, demographic or other relevant data and which shall cover construction projects or construction contracts performed in specific geographical areas. The goals, which shall be applicable to each construction trade in a covered contractor’s or timetables, shall be published as notices in the Federal Register, and shall be inserted by the Contracting officers and applicants, as applicable, in the Notice required by 41 CFR 60-4.2.
### Standard Metropolitan Statistical Area (SMSA)

<table>
<thead>
<tr>
<th>Female</th>
<th>Minority</th>
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<tbody>
<tr>
<td><strong>Bridgeport – Stamford – Norwalk – Danbury</strong></td>
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<tr>
<td>6.9%</td>
<td>10.2%</td>
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<tr>
<td>Bethel</td>
<td>Brookfield</td>
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<tr>
<td>Darien</td>
<td>Derby</td>
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<td>Greenwich</td>
<td>Milford</td>
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<td>New Fairfield</td>
<td>Newton</td>
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<tr>
<td>Shelton</td>
<td>Stamford</td>
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<tr>
<td>Weston</td>
<td>Westport</td>
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</tbody>
</table>

| **Hartford – Bristol – New Britain**         |          |
| 6.9%                                        | 6.9%     |
| Andover                                     | Avon     | Berlin  | Bloomfield |
| Bolton                                      | Bristol  | Burlington | Canton |
| Colchester                                  | Columbia | Coventry | Cromwell  |
| East Granby                                 | East Hampton | East Hartford | East Windsor |
| Ellington                                   | Enfield  | Farmington | Glastonbury |
| Granby                                      | Hartford | Hebron  | Manchester |
| Marlborough                                 | New Britain | New Hartford | Newington |
| Plainville                                  | Plymouth | Portland | Rocky Hill |
| Simsbury                                    | South Windsor | Southington | Stafford |
| Suffield                                    | Tolland  | Vernon  | West Hartford |
| Wethersfield                                | Willington | Windsor | Windsor Locks |

| **New Haven – Waterbury – Meriden**          |          |
| 6.9%                                        | 9.0%     |
| Beacon Falls                                | Bethany  | Branford | Cheshire |
| Clinton                                     | East Haven | Guilford  | Hamden |
| Madison                                     | Meriden  | Middlebury | Naugatuck |
| New Haven                                   | North Branford | North Haven | Orange |
| Prospect                                    | Southbury | Thomaston | Wallingford |
| Waterbury                                   | Watertown | West Haven | Wolcott |
| Woodbridge                                  | Woodbury  |         |           |

| **New London – Norwich**                    |          |
| 6.9%                                        | 4.5%     |
| Bozrah                                      | East Lyme | Griswold | Groton |
| Ledyard                                     | Lisbon   | Montville | New London |
| Norwich                                     | Old Lyme  | Old Saybrook | Preston |
| Sprague                                     | Stonington | Waterford |           |
### Non SMSA

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<tr>
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<td>6.9%</td>
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<td>Ashford</td>
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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 Contactor must comply with all terms and conditions of this Section of the Contract. If the Contactor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contactor for this Contract.

(b) The Contactor 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 Contactor, 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 Contactor is a “business associate” of the Department, as that term is defined in 45 C.F.R. § 160.103; and

(f) The Contactor 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 Contactor.

(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 in necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.

(3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.

(4) Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.

(5) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.

(6) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate’s own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.

(7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the
HITECH Act, including, without limitation, attorney’s fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.
Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall knowingly solicit contributions from the state contractor's or prospective state contractor's employees or from a subcontractor or principals of the subcontractor on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties—Up to $2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to $2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than $5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may resulting the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to “Lobbyist/Contractor Limitations.”
DEFINITIONS

“State contractor” means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. “State contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Prospective state contractor” means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. “Prospective state contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Principal of a 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 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)
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.

### Minimum Rates and Classifications for Heavy/Highway Construction

**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.

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Hourly Rate</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>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. <strong>See Laborers Group 5 and 7</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Boilermaker</td>
<td>33.79</td>
<td>34% + 8.96</td>
</tr>
<tr>
<td>1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons</td>
<td>33.48</td>
<td>31.66</td>
</tr>
<tr>
<td>2) Carpenters, Piledrivermen</td>
<td>32.60</td>
<td>25.34</td>
</tr>
</tbody>
</table>

*As of:* Wednesday, February 14, 2018
### Project: Rehabilitation Of Bridge Number 01155 And Number 01156 I84 Over Route 6, Route 67 And Brook

#### 2a) Diver Tenders
- 32.60
- 25.34

#### 3) Divers
- 41.06
- 25.34

#### 03a) Millwrights
- 33.14
- 25.74

#### 4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray
- 48.55
- 20.45

#### 4a) Painters: Brush and Roller
- 32.72
- 20.45

#### 4b) Painters: Spray Only
- 35.72
- 20.45

#### 4c) Painters: Steel Only
- 34.72
- 20.45

**As of:** Wednesday, February 14, 2018
### Project: Rehabilitation Of Bridge Number 01155 And Number 01156 I84 Over Route 6, Route 67 And Brook

<table>
<thead>
<tr>
<th>4d) Painters: Blast and Spray</th>
<th>35.72</th>
<th>20.45</th>
</tr>
</thead>
<tbody>
<tr>
<td>4e) Painters: Tanks, Tower and Swing</td>
<td>34.72</td>
<td>20.45</td>
</tr>
</tbody>
</table>

| 5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9) | 38.27 | 25.00+3% of gross wage |

| 6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection | 35.47 | 33.39 + a |

| 7) Plumbers (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9) | 41.62 | 30.36 |

---LABORERS---

| 8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist | 29.25 | 19.50 |

*As of:* Wednesday, February 14, 2018
<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
<th>Hourly Rate</th>
<th>Fringe Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>9) Group 2</td>
<td>Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen</td>
<td>29.50</td>
<td>19.50</td>
</tr>
<tr>
<td>10) Group 3</td>
<td>Pipelayers</td>
<td>29.75</td>
<td>19.50</td>
</tr>
<tr>
<td>11) Group 4</td>
<td>Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators</td>
<td>29.75</td>
<td>19.50</td>
</tr>
<tr>
<td>12) Group 5</td>
<td>Toxic waste removal (non-mechanical systems)</td>
<td>31.25</td>
<td>19.50</td>
</tr>
<tr>
<td>13) Group 6</td>
<td>Blasters</td>
<td>31.00</td>
<td>19.50</td>
</tr>
<tr>
<td>Group 7</td>
<td>Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)</td>
<td>30.25</td>
<td>19.50</td>
</tr>
<tr>
<td>Group 8</td>
<td>Traffic control signalmen</td>
<td>16.00</td>
<td>19.50</td>
</tr>
</tbody>
</table>

As of: Wednesday, February 14, 2018
### Project: Rehabilitation Of Bridge Number 01155 And Number 01156 I84 Over Route 6, Route 67 And Brook

Group 9: Hydraulic Drills

<table>
<thead>
<tr>
<th></th>
<th>29.30</th>
<th>18.90</th>
</tr>
</thead>
</table>

---LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.---

13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders

<table>
<thead>
<tr>
<th></th>
<th>32.22</th>
<th>19.50 + a</th>
</tr>
</thead>
</table>

13b) Brakemen, Trackmen

<table>
<thead>
<tr>
<th></th>
<th>31.28</th>
<th>19.50 + a</th>
</tr>
</thead>
</table>

---CLEANING, CONCRETE AND CAULKING TUNNEL---

14) Concrete Workers, Form Movers, and Strippers

<table>
<thead>
<tr>
<th></th>
<th>31.28</th>
<th>19.50 + a</th>
</tr>
</thead>
</table>

15) Form Erectors

<table>
<thead>
<tr>
<th></th>
<th>31.60</th>
<th>19.50 + a</th>
</tr>
</thead>
</table>

**As of:** Wednesday, February 14, 2018
**Project:** Rehabilitation Of Bridge Number 01155 And Number 01156 I-84 Over Route 6, Route 67 And Brook  
---ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:---

<table>
<thead>
<tr>
<th>16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers</th>
<th>31.28</th>
<th>19.50 + a</th>
</tr>
</thead>
<tbody>
<tr>
<td>17) Laborers Topside, Cage Tenders, Bellman</td>
<td>31.17</td>
<td>19.50 + a</td>
</tr>
<tr>
<td>18) Miners</td>
<td>32.22</td>
<td>19.50 + a</td>
</tr>
</tbody>
</table>

---TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR:---

<table>
<thead>
<tr>
<th>18a) Blaster</th>
<th>38.53</th>
<th>19.50 + a</th>
</tr>
</thead>
<tbody>
<tr>
<td>19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders</td>
<td>38.34</td>
<td>19.50 + a</td>
</tr>
</tbody>
</table>

**As of:** Wednesday, February 14, 2018
<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change House Attendants, Powder Watchmen, Top on Iron Bolts</td>
<td>36.41</td>
<td>19.50 + a</td>
</tr>
<tr>
<td>Mucking Machine Operator</td>
<td>39.11</td>
<td>19.50 + a</td>
</tr>
</tbody>
</table>

---TRUCK DRIVERS---(*see note below)

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two axle trucks</td>
<td>29.13</td>
<td>22.32 + a</td>
</tr>
<tr>
<td>Three axle trucks; two axle ready mix</td>
<td>29.23</td>
<td>22.32 + a</td>
</tr>
<tr>
<td>Three axle ready mix</td>
<td>29.28</td>
<td>22.32 + a</td>
</tr>
<tr>
<td>Four axle trucks, heavy duty trailer (up to 40 tons)</td>
<td>29.33</td>
<td>22.32 + a</td>
</tr>
</tbody>
</table>

*As of:* Wednesday, February 14, 2018
Project: Rehabilitation Of Bridge Number 01155 And Number 01156 I84 Over Route 6, Route 67 And Brook

<table>
<thead>
<tr>
<th>Equipment Description</th>
<th>Rate 1</th>
<th>Rate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four axle ready-mix</td>
<td>29.38</td>
<td>22.32 + a</td>
</tr>
<tr>
<td>Heavy duty trailer (40 tons and over)</td>
<td>29.58</td>
<td>22.32 + a</td>
</tr>
<tr>
<td>Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)</td>
<td>29.38</td>
<td>22.32 + a</td>
</tr>
</tbody>
</table>

---POWER EQUIPMENT OPERATORS---

<table>
<thead>
<tr>
<th>Group 1:</th>
<th>Rate 1</th>
<th>Rate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>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. &amp; Over, Tunnel Boring Machines. (Trade License Required)</td>
<td>39.30</td>
<td>24.05 + a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 2:</th>
<th>Rate 1</th>
<th>Rate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>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)</td>
<td>38.98</td>
<td>24.05 + a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 3:</th>
<th>Rate 1</th>
<th>Rate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>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)</td>
<td>38.24</td>
<td>24.05 + a</td>
</tr>
</tbody>
</table>

As of: Wednesday, February 14, 2018
### Project: Rehabilitation Of Bridge Number 01155 And Number 01156 I84 Over Route 6, Route 67 And Brook

<table>
<thead>
<tr>
<th>Group 4:</th>
<th>Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)</th>
<th>37.85</th>
<th>24.05 + a</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group 5:</th>
<th>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&quot; Mandrell)</th>
<th>37.26</th>
<th>24.05 + a</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group 5 continued:</th>
<th>Side Boom; Combination Hoe and Loader; Directional Driller.</th>
<th>37.26</th>
<th>24.05 + a</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group 6:</th>
<th>Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).</th>
<th>36.95</th>
<th>24.05 + a</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group 7:</th>
<th>Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24&quot; and Under Mandrel).</th>
<th>36.61</th>
<th>24.05 + a</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group 8:</th>
<th>Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.</th>
<th>36.21</th>
<th>24.05 + a</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group 9:</th>
<th>Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).</th>
<th>35.78</th>
<th>24.05 + a</th>
</tr>
</thead>
</table>

**As of:** Wednesday, February 14, 2018
<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
<th>Hourly</th>
<th>Overtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.</td>
<td>33.74</td>
<td>24.05 + a</td>
</tr>
<tr>
<td>11</td>
<td>Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.</td>
<td>33.74</td>
<td>24.05 + a</td>
</tr>
<tr>
<td>12</td>
<td>Wellpoint Operator.</td>
<td>33.68</td>
<td>24.05 + a</td>
</tr>
<tr>
<td>13</td>
<td>Compressor Battery Operator.</td>
<td>33.10</td>
<td>24.05 + a</td>
</tr>
<tr>
<td>14</td>
<td>Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).</td>
<td>31.96</td>
<td>24.05 + a</td>
</tr>
<tr>
<td>15</td>
<td>Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.</td>
<td>31.55</td>
<td>24.05 + a</td>
</tr>
<tr>
<td>16</td>
<td>Maintenance Engineer/Oiler</td>
<td>30.90</td>
<td>24.05 + a</td>
</tr>
</tbody>
</table>

*As of:* Wednesday, February 14, 2018
Project: Rehabilitation Of Bridge Number 01155 And Number 01156 I84 Over Route 6, Route 67 And Brook

<table>
<thead>
<tr>
<th>Group</th>
<th>Job Description</th>
<th>Rate</th>
<th>Overtime + Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 17</td>
<td>Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.</td>
<td>35.21</td>
<td>24.05 + a</td>
</tr>
<tr>
<td>Group 18</td>
<td>Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).</td>
<td>32.79</td>
<td>24.05 + a</td>
</tr>
</tbody>
</table>

**NOTE: SEE BELOW**

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician

<table>
<thead>
<tr>
<th>Rate</th>
<th>Overtime + Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>47.14</td>
<td>6.5% + 20.98</td>
</tr>
</tbody>
</table>

21) Heavy Equipment Operator

<table>
<thead>
<tr>
<th>Rate</th>
<th>Overtime + Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>42.43</td>
<td>6.5% + 18.84</td>
</tr>
</tbody>
</table>

22) Equipment Operator, Tractor Trailer Driver, Material Men

<table>
<thead>
<tr>
<th>Rate</th>
<th>Overtime + Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>40.07</td>
<td>6.5% + 18.27</td>
</tr>
</tbody>
</table>

*As of:* Wednesday, February 14, 2018
<table>
<thead>
<tr>
<th>Position</th>
<th>Hourly Wage</th>
<th>Pay Rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Groundmen</td>
<td>25.93</td>
<td>6.5% + 8.53</td>
</tr>
<tr>
<td>Truck Driver</td>
<td>35.36</td>
<td>6.5% + 16.88</td>
</tr>
<tr>
<td>Driver Groundmen</td>
<td>30.92</td>
<td>6.5% + 9.70</td>
</tr>
<tr>
<td>Groundmen</td>
<td>22.67</td>
<td>6.5% + 6.20</td>
</tr>
<tr>
<td>Heavy Equipment Operators</td>
<td>37.10</td>
<td>6.5% + 10.70</td>
</tr>
<tr>
<td>Linemen, Cable Splicers, Dynamite Men</td>
<td>41.22</td>
<td>6.5% + 12.20</td>
</tr>
</tbody>
</table>

As of: Wednesday, February 14, 2018
### Project: Rehabilitation Of Bridge Number 01155 And Number 01156 I84 Over Route 6, Route 67 And Brook

| 28) Material Men, Tractor Trailer Drivers, Equipment Operators | 35.04 | 6.5% + 10.45 |

*As of:* Wednesday, February 14, 2018
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 journeyperson instructing and supervising the work of each apprentice in a specific trade.

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As Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ---

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website. The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

---

As of: Wednesday, February 14, 2018
Rehabilitation Of Bridge Number 01155 And Number 01156 I-84 Over Route 6, Route 67 And Brook

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: Wednesday, February 14, 2018
Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

Please Note: If the “Benefits” listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the “Benefits” section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons (Building Construction) and (Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics


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


Power Equipment Operators (Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year’s Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.
Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.
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, MILLRIGHTS. PILEDIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

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, facia, 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
You are here: DOL Web Site › Wage and Workplace Issues › Statute 31-55a

- Special Notice -

To All State and Political Subdivisions, Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the contractor’s responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor’s Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace

http://www.ctdol.state.ct.us/wgwkstnd/laws-regs/statute31-55a.htm (1 of 2) [6/20/2008 8:00:16 AM]
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.
THE 10-HOUR OSHA CONSTRUCTION
SAFETY AND HEALTH COURSE
(applicable to public building contracts entered into on or after July 1, 2007, where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a bona fide student course completion card issued by the federal OSHA Training Institute; or (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;
(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee’s name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTIMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.
Sec. 31-53b. Construction safety and health course. Proof of completion required for employees on public building projects. Enforcement. Regulations. (a) Each contract entered into on or after July 1, 2007, for the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public building project by the state or any of its agents, or by an political subdivision of the state or any of its agents, where the total cost of all work to be performed by all contractors and subcontractors in connection with the contract is at least one hundred thousand dollars, shall contain a provision requiring that, not later than thirty days after the date such contract is awarded, each contractor furnish proof to the Labor Commissioner that all employees performing manual labor on or in such public building, pursuant to such contract, have completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, in the case of telecommunications employees, have completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any employee required to complete a construction safety and health course required under subsection (a) of this section who has not completed the course shall be subject to removal from the worksite if the employee does not provide documentation of having completed such course by the fifteenth day after the date the employee is found to be in noncompliance. The Labor Commissioner or said commissioner’s designee shall enforce this section.

(c) Not later than January 1, 2007, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) For the purposes of this section, “public building” means a structure, paid for in whole or in part with state funds, within a roof and within exterior walls or fire walls, designed for the housing, shelter, enclosure and support or employment of people, animals or property of any kind, including, but not limited to, sewage treatment plants and water treatment plants, “Public building” does not include site work, roads or bridges, rail lines, parking lots or underground water, sewer or drainage systems including pump houses or other utility systems.
CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

I, ____________________________________________ of ________________________________

Office, 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