



Department of Conservation and Recreation

PART I

INSTRUCTIONS TO BIDDERS

CONTRACTS FOR PUBLIC WORKS PROJECTS
AND
FOR BUILDING PROJECTS ESTIMATED TO
COST MORE THAN \$25,000 BUT NOT MORE THAN \$100,000
SUBJECT TO THE PROVISIONS OF M.G.L. CH. 30 SEC. 39M

**NOTICE TO CONTRACTORS – M.G.L. C. 30, sec. 39M CONSTRUCTION
ADVERTISEMENT OF INVITATION FOR BIDS
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
10 PARK PLAZA, SUITE 6620, BOSTON, MA 02116
PHONE: 617-626-1250
www.mass.gov/dcr**

Contract No. P24-3551-M2A

Title: Bridge Maintenance and Repairs

Location: Barnstable, Berkshire, Bristol, Dukes, Essex, Franklin, Hampden, Hampshire, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, Worcester

GENERAL BID proposals shall be submitted on a form furnished by the Department and will be received until Thursday May 16, 2024 12:00PM through DCR's E-bid room at www.bidexpress.com/businesses/36765/home.

Individual sets of contract documents will only be available on DCR's E-bid room at www.bidexpress.com/businesses/36765/home.

If any addenda are issued throughout the open period for this project, DCR will distribute these addenda via Bid Express, which will also email identified prospective at the time plans and specifications are issued.

The estimated project cost is **\$ 4,500,000.00**

No pre-bid meeting is scheduled. Any questions or clarifications must be submitted through email dinesh.prashar@mass.gov before 12:00 PM on May 06, 2024.

Responses to questions or clarifications will be issued prior to 12:00 PM on May 09, 2024.

The work is to be accomplished within **730** calendar days of a notice to proceed. Liquidated damages in the amount of **\$500** per day will be assessed if the work has not been completed in accordance with the provisions of the contract within the time specified (as extended by any authorized extension of time granted in accordance with the contract provisions).

Bidders must be pre-qualified by the Massachusetts Dept. of Transportation (MassDOT) Highway Division in Bridge Construction to bid on the above project. An award will not be made to a Contractor who is not pre-qualified by MassDOT prior to the opening of Proposals.

The proposed contract includes a combined requirement of 10.4% of the bid price for minority-owned business enterprises and women-owned business enterprises. Proposed MBE/WBE. Plans that include solely MBE or solely WBE , or do not include a reasonable amount by both MBE and WBE firms to meet the combined requirements, will not be considered responsive.

The applicable local minority workforce utilization percentage is a minimum goal of 15.3%. The applicable local women workforce utilization percentage is a minimum goal of 6.9%.

The Commonwealth requires participation of Veteran-Owned Business Enterprises (“VOBE”) on its construction projects. The Veteran-Owned Business Enterprise participation benchmark for this contract is 3.0%.

Each bid must be accompanied by a bid deposit, in the form of a bid bond, cash, certified check, or a treasurer's or cashier's check issued by a responsible bank or trust company, payable to the Department of Conservation and Recreation in the amount of 5% of the bid.

Each bid must be submitted through DCR's E-Bid room at www.bidexpress.com/businesses/36765/home. Please ensure that your bid is complete and marked as responsive when submitting through DCR's Bid room. Any bids found to be incomplete and/or marked unresponsive will be rejected by DCR and will not be considered when awarding the project.

Bids are subject to the provisions of M.G.L. Ch. 30, Sect. 39F, G, H and M inclusive. Wages are subject to minimum wage rates as per M.G.L. Ch. 149, sections 26 to 27D inclusive. The Department reserves the right to waive any informalities in or to reject any and all bids if it be in the public interest to do so.

Brian M. Arrigo
Massachusetts Department of Conservation and Recreation



**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION**

**PART I
INSTRUCTIONS TO BIDDERS**

**CONTRACTS FOR PUBLIC WORKS PROJECTS
SUBJECT TO THE PROVISIONS OF M.G.L. C. 30. SEC. 39M**

Awarding Authority:

Department of Conservation and Recreation
10 Park Plaza, Suite 6620
Boston, MA 02116
Telephone: 617-626-1250

DCR Contract No.: P24-3551-M2A

Title: Bridge Maintenance and Repairs

Project Scope: The project consists of undertaking scheduled and emergency bridge repairs to bridges statewide. The intention of this Contract is for most work order assignments to be scheduled to provide some flexibility in providing these services. However, there is the possibility that an emergency may materialize that needs immediate response, and the Contractor shall be required to mobilize and respond to the work order within 4 hours of notification. Some work assignments may be required to be performed at nighttime to minimize the impact to the traveling public.

Work order assignments will typically consist of furnishing equipment, materials, engineering, & labor to undertake bridge repairs and maintenance, including furnishing traffic management set-ups to support worksite access and coordinating Traffic Police Details.

Work shall include, but is not limited to: steel repairs; concrete superstructure and substructure repairs: replacing excavated, spalled, delaminated, or deteriorated concrete; replacing missing or deteriorated reinforcing steel, repairing concrete cracks, coring and grouting dowels; bridge railings repairs; replacing bridge railing anchor bolts; bridge drainage cleaning and repairs; application of elastomeric protective coatings; application of concrete deck antiskid waterproofing; replacement of caulking; repair and/or removal and replacement of timber decking, curbing and bridge railings; repairs to stone masonry abutments and walls; cleaning of bridge decks, beam seats and bearings.

Deadline for filing general bids is 12:00 P.M. on Thursday, May 16, 2024

The minimum wage rate and truck rate requirements for this Contract are located www.bidexpress.com/businesses/36765/home.

Bid forms for this Contract are located @ www.bidexpress.com/businesses/36765/home.

The Minority and Women Business Enterprise participation for this Contract are to be found in the Notice to Contractors section (Part I - Page 2/3).

The time for completion of the Work is specified in Article 2 of the Department of Conservation and Recreation - Contractor Agreement. Liquidated damages for failure to complete on time are as stated in Article 8 of the Department of Conservation and Recreation - Contractor Agreement.

As used herein, capitalized terms shall have the meaning assigned to them in the General Conditions of the Contract and the Department of Conservation and Recreation - Contractor Agreement unless the context clearly indicates otherwise.

SECTION 1 - BIDDER'S REPRESENTATION

1.1 Each bidder (hereinafter sometimes referred to as "Bidder") by making a bid (hereinafter sometimes referred to as "Bid") represents and warrants that Bidder has visited and examined the Site and the Contract Documents; that Bidder is familiar with the local conditions under which the Work is to be performed; that Bidder has correlated personal observations with the requirements of the Contract Documents; and that where the Contract Documents require, in any part of the Work, a given result to be produced, the Contract Documents are adequate and that Bidder will produce the required result within the Bid price and that the Bid is made in accordance therewith.

1.2 FAILURE TO EXAMINE THE CONTRACT DOCUMENTS AND THE SITE WILL NOT RELIEVE ANY BIDDER FROM ANY OBLIGATION UNDER THE BID AS SUBMITTED. NEITHER THE COMMONWEALTH NOR THE DESIGNER WILL BE RESPONSIBLE FOR ERRORS, OMISSIONS AND/OR CHARGES FOR EXTRA WORK ARISING FROM BIDDER'S FAILURE TO FAMILIARIZE ITSELF WITH THE CONTRACT DOCUMENTS OR EXISTING CONDITIONS.

1.3 Pre-Bidding Conference

- A. If applicable, a pre-bidding conference for prospective bidders will be held at the date, time and location as specified in the Notice to Contractors section (Part I – page 2/3).
- B. At the conference the project will be discussed in general. It is desirable that all prospective bidders attend. The Contract, Specifications, Drawings, and any other aspects of this project will be explained in response to questions by those attending. For interpretations of questions requiring legal,

administrative, or engineering decision, prospective bidders shall comply with Section 3 herein.

SECTION 2 - GENERAL BIDDERS - QUALIFICATION

2.1 Every Bidder must submit the following documents, as required:

Special certification may be required as required by the Department on a contract-specific basis.

Refer to the Notice to Contractors for the specific qualification requirements of this contract.

SECTION 3 - REQUESTS FOR INTERPRETATION

3.1 Interpretation

A. The Plans and Specifications and other Contract Documents are to be considered together and are intended to be mutually complementary, so that any work shown on the Plans though not specified in the Specifications, and any work specified in the Specifications though not shown on the Plans, is to be executed by the Contractor as a part of this Contract.

B. All things that in the opinion of the Awarding Authority may be reasonably inferred from the Plans, Specifications and other Contract Documents are to be executed by the Contractor. The Awarding Authority shall determine whether the detail Plans conform to the general Plans and Contract Documents.

C. The tables of contents, titles, headings and marginal notes or sub-scripts contained herein are solely to facilitate references, are not intended to be construed as provisions of the Contract, and in no way affect the interpretation of the provisions to which they refer.

D. Where reference is made in the Contract Documents to publications, standards, or codes issued by associations or societies, such reference shall be interpreted to mean the current edition of such publications, standards, or codes, including revisions in effect on the date of the Advertisement, notwithstanding any reference to a particular date. The foregoing sentence shall not apply to the dates, if any, specified with respect to insurance policy endorsement forms.

E. In case of any conflict among the Contract Documents, unless the context clearly otherwise requires, the Contract Documents shall be construed according to the following priorities:

- First Priority: Contract Modifications
- Second Priority: Department of Conservation and Recreation - Contractor Agreement
- Third Priority: General Conditions of the Contract

Fourth Priority: Drawings - Schedules take precedence over enlarged detail Drawings and enlarged Detail Drawings take precedence over reduced scale Drawings; figured dimensions shall prevail over scale.

Fifth Priority: Specifications

3.2 Any questions by prospective Bidders concerning interpretation of the Contract Documents must be submitted in writing to the Awarding Authority and should be in its possession at least five working days before the date set for the receipt of Bids. The Awarding Authority will post to Bid Express any addenda or written interpretations that it deems necessary to Bidders who have taken out plans at the address given by them before the date set for the receipt of affected Bids. Bidders may not rely upon oral communications or interpretations from the Awarding Authority or the Designer, and the Awarding Authority shall not be bound by them.

Written Questions shall be submitted to:

Attn: Dinesh Prashar, Project Manager
Department of Conservation and Recreation
10 Park Plaza, Suite 6620
Boston, MA 02116
Telephone: 617-921-5289
Email: dinesh.prashar@mass.gov

Questions must be received no later than 12:00 PM on May 02, 2024. Response to questions / addendums will issued prior to 12:00 PM on May 09, 2024.

3.3 It is the sole responsibility of the Bidder to ascertain the existence of any addenda issued by the Awarding Authority, all addendums are posted on Bid Express- www.bidexpress.com/businesses/36765/home. Copies of addenda will be made available for inspection at the locations listed in the Advertisement where the Contract Documents are on file.

3.4 Wherever in the Contract Documents reference is made to Massachusetts General Laws, it shall be construed to include all amendments thereto effective as of the date of the issuance of the invitation to bid on the proposed work.

SECTION 4 - PREPARATION OF BIDS; ALTERNATES

4.1 Bids shall be submitted through the DCR E-Bid room at www.bidexpress.com/businesses/36765/home?agency=true.

4.2 All Bids submitted thru Bid Express must be deemed responsive by Bid Express to be considered

4.3 Where so indicated on the Bid Form, sums shall be expressed in both words and numerals. Where there is a discrepancy between the Bid sum expressed in words and the Bid sum expressed in figures, the Bid sum expressed in words shall control unless the intention of the Bidder clearly is otherwise as determined by the Awarding Authority in its sole discretion.

4.4 Each Bidder shall acknowledge all required alternates in Section C on the Bid Express by entering the dollar amount of addition or subtraction necessitated by the alternate(s).

4.5 If an alternate includes work within the Bidder's scope of work and does not involve a change in the cost of the Bid, the Bidder shall so indicate by writing "No Change" or "N/C" or "0" in the space provided for that alternate.

4.6 The lowest Bidder will be determined based on the sum of the base Bid and the accepted alternates.

4.7 Each bid must be accompanied by a bid deposit, payable to the Department of Conservation and Recreation in the amount of 5% of the bid. Bid Bonds must be submitted electronically, please ensure your company and your bonding agent's company register with one of the Bid Bond agencies affiliated with Bid Express: If you need additional assistance, please call the Bid Express Customer Support Team at [888-352-2439](tel:888-352-2439), available Monday - Friday from 7:00am – 8:00pm (EST). You can also email the team at support@bidexpress.com

4.8 The amount of such bid deposit shall be **5% five per cent** of the value of the Bid.

SECTION 5 - SUBMISSION OF BIDS

5.1 Each bid, **including the bid deposit**, shall be submitted via DCR's Bid room at www.bidexpress.com/businesses/36765/home?agency=true

5.2 All Bids must be received by the Awarding Authority no later than the applicable date and time specified on page 1 of these Instructions to Bidders. Any Bid not received by the applicable deadline will not be accepted.

SECTION 6 - WITHDRAWAL OF BIDS; REJECTION OF BIDS

6.1 Any Bid may be withdrawn prior to the specified deadline for the receipt of Bids provided that the withdrawal shall be made by a written request signed by a person having the authority to bind the Bidder. The written request must be hand delivered or otherwise delivered to Robert Boncore, Director of Contracts and Procurement, at 251 Causeway St., 6th Floor, Boston, MA 02114 or through email at Robert.Boncore@Mass.Gov, and must be received on or before the date and time appointed as the deadline for the receipt of Bids.

6.2 A Bidder may withdraw its Bid without penalty at any time up to the time of Award as defined below in subsection 9.1 only upon demonstrating to the satisfaction of the Awarding Authority that a death or disability has occurred, or a bona fide clerical error or mechanical error of a substantial nature was made during the preparation of the bid. Failure to demonstrate conclusively that a bona fide clerical error or mechanical error of a substantial nature was made may result in forfeiture of the Bid deposit

6.3 The Awarding Authority reserves the right to waive any informality in or to reject any and all Bids if it is in the public interest to do so. Without limiting the foregoing,

the Awarding Authority reserves the right to reject unit prices which it deems unduly high or unduly low as unbalanced.

SECTION 7 – INSURANCE

7.1 Insurance Generally

A. The Contractor shall take out and maintain the insurance coverages listed in this Section with respect to the operations as well as the completed operations of this Contract. The insurance requirements stipulated shall cover all damage to property, whether above or below ground, and shall apply to all the Work to be performed under this Contract. This insurance shall be provided at the Contractor's expense and shall be in full force and effect for the full term of the Contract or for such longer period as this Article requires.

B. All policies shall be written on an occurrence basis and be issued by companies authorized to write that type of insurance under the laws of the Commonwealth and rated in Best's Insurance Guide (or any successor thereto or replacement thereof) as having a general policy holder rating of "A" or better and a financial rating of at least "9" or otherwise acceptable to the DCR.

C. The Contractor shall submit two (2) originals of each certificate of insurance, acceptable to the DCR, simultaneously with the execution of this Contract. Certificates shall include: **DCR Contract Number and state DCR as an additional insured as to all policies of liability insurance and shall state that the Contractor has paid all premiums and that none of the coverages shall be cancelled, terminated, or materially modified unless and until ten (10) days prior notice is given in writing to the DCR.** The Contractor shall submit updated certificates prior to the expiration of any of the policies referenced in the certificates so that the DCR shall at all times possess certificates indicating current coverage. Certificates shall indicate the contractual liability coverage, and the Contractor's Protective Liability coverage is in force. Certificates shall include specific acknowledgment that the coverages set forth in this Section 7 are included in the policies.

7.2 Types and Amounts of Insurance

Contractor's Commercial General Liability

Bodily Injury & Property Damage	<u>500,000.00</u> each occurrence <u>1,000,000.00</u> general aggregate, per project
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This policy shall include coverage relating to explosion, collapse, and underground property damage if blasting operations constitute part of the Work to be performed under this Contract.

If the Contract work includes work to be performed within 50 feet of a railroad, any exclusion for liability assumed under contract for work within 50 feet of a railroad shall be deleted.

Vehicle Liability

The Contractor shall provide the following minimum coverage with respect to the operations of any employee, including coverage for owned, non-owned, and hired vehicles:

Combined Single Limit: 1,000,000.00

Worker's Compensation

The Contractor shall provide the following coverage in accordance with M.G.L. c. 149, sec. 34A and M.G.L. c. 152 as amended, unless a higher coverage is specified below:

Part One	Provide Statutory Minimum
Employer's Liability	\$500,000.00 each accident
Part Two	\$500,000.00 disease per employee
	\$500,000.00 disease policy aggregate

SECTION 8 – MBE, WBE AND VOB PARTICIPATION

8.1 The apparent low Bidder's compliance with the requirements of this Section 8 is a prerequisite for receiving the Award of the Contract. The MBE, WBE and VOB participation for this Contract are as set forth on the first page of these Instructions to Bidders

8.2. The Awarding Authority reserves the right to reduce or waive the MBE or WBE participation established for this Contract upon written request made by a Bidder. Requests to reduce or waive the M/WBE participation for this Contract should be received by the Awarding Authority no later than Ten (10) working days before the date set for the receipt of general Bids. **THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY REQUEST TO REDUCE OR WAIVE THE M/WBE REQUIREMENTS FOR THIS CONTRACT THAT IS RECEIVED AFTER THESE DEADLINES.** Such written request must demonstrate to the satisfaction of the Awarding Authority that it is not feasible for a non-MBE or non-WBE general Bidder to meet the percentage established for this Contract based upon any or all of the following: (i) actual M/WBE availability, (ii) the geographic location of the project to the extent related to M/WBE availability, (iii) the scope of the work, (iv) the percentage of work available for subcontracting to M/WBEs and/or (v) other relevant factors, including a **documented** inability by the prospective Bidder to obtain commitments from M/WBE subcontractors sufficient to meet the M/WBE requirements after having made a diligent, good faith effort to do so. All the foregoing documentation shall accompany the Bidder's request for a reduction or waiver of the M/WBE participation requirements. Such documentation shall include, at a minimum, the following:

-- A list of all items of work under the Contract that the Bidder made available for subcontracting to M/WBEs. The Bidder shall identify all items of work that the Bidder did not make so available and shall state the reasons for not making such work available for subcontracting to M/WBEs. The Bidder shall also demonstrate that, where commercially reasonable, subcontracts were divided into units capable of being performed by M/WBEs.

-- Evidence that the Bidder sent written notices soliciting Bids or proposals to perform the items of work made available by the Bidder for subcontracting to M/WBEs to all M/WBEs qualified to perform such work. The Bidder shall identify (i) each M/WBE solicited, and (ii) each M/WBE listed in the Massachusetts Supplier Diversity Office ("SDO" formerly "SOMWBA") directory under the applicable trade category that was not solicited and reasons, therefore. The Bidder shall also state the dates that notices were mailed and provide a copy of the written notice(s) sent.

-- Evidence that the Bidder made reasonable efforts to follow up the written notices sent to M/WBEs with telephone calls or personal visits to determine with certainty whether the M/WBEs were interested in performing the work. Phone logs or other documentation must be submitted.

-- A statement of the response received from each M/WBE solicited, including the reason for rejecting any M/WBE who submitted a bid or proposal.

-- Evidence of efforts made to assist M/WBEs that needed assistance in obtaining bonding or insurance, or lines of credit with suppliers if the inability of M/WBEs to obtain bonding, insurance, or lines of credit is the reason given for the Bidder's inability to meet the M/WBE requirements.

The Bidder may also submit any other information supporting its request for a waiver or reduction in the M/WBE participation, including without limitation evidence that the Bidder placed advertisements in appropriate media and trade association publications announcing the Bidder's interest in obtaining bids or proposals from M/WBEs, and/or sent written notification to M/WBE economic development assistance agencies, trade groups and other organizations notifying them of the Contract and the work to be subcontracted by the Bidder to M/WBEs. The Bidder shall also submit any other information reasonably requested by the Awarding Authority to show that the Bidder has taken all actions that could reasonably be expected to achieve the M/WBE participation.

8.3 Any reduction or waiver of the M/WBE participation for this Contract will be made by written addendum mailed to all persons who have taken out plans for the project.

8.4 No later than five (5) working days after the opening of Bids, the apparent low Bidder shall submit the following documents to the Awarding Authority's Contract Officer listed in subsection 5.1: (i) a completed Schedule for Participation by Minority/Women Business Enterprises ("Schedule for Participation") in the form provided by the Awarding Authority showing M/ WBE participation in amounts equal to or exceeding the M/WBE requirements for this Contract, (ii) a completed Letter of Intent in the form provided by the Awarding Authority for each M/WBE listed in the Schedule for Participation, and (iii) a current SDO certification letter for each M/WBE listed in the Schedule of M/WBE

Participation showing that the M/WBE is certified in the area of work for which it is listed on the Letter of Intent.

8.5 Each Letter of Intent shall identify and describe the work to be performed by the named M/WBE (the “M/WBE Work”) with enough specificity to permit the Awarding Authority to identify the items of contract work that the M/WBE will perform for M/WBE participation credit. The Awarding Authority reserves the right to reject any Letter of Intent if the price to be paid for the M/WBE Work does not bear a reasonable relationship to the value of such work under the Contract as determined by the Awarding Authority.

8.6 Within five (5) working days after receipt of the Schedule For M/WBE Participation, Letters of Intent, and SDO certification letters, the Awarding Authority shall review and either approve or disapprove the apparent low Bidder’s submissions. If the apparent low Bidder has not submitted an appropriate Schedule For M/WBE and appropriate Letters of Intent and SDO certification letters establishing that the M/WBE participation for the project will be met, the apparent low Bidder may be considered ineligible for Award of the Contract and the Awarding Authority will Award the Contract to the second lowest Bidder, subject to said Bidder’s compliance with these conditions.

8.7 The Contractor is required to submit to the Awarding Authority signed subcontracts with all subcontractors prior to the commencement of work to be performed under these contracts, and/or a purchase order or invoice from each material supplier and/or manufacturer listed on the Schedule For M/WBE Participation within thirty (30) days of the issuance of the Notice to Proceed by the Awarding Authority.

8.8. VOB Participation and Program Operation

8.8.1 In order to be an eligible VOB for this Contract, the business enterprise must be listed as a veteran-owned business within the VetBiz database, located at www.VetBiz.gov, at the time of the bid submission deadline. Only a VOB identified as a veteran-owned small business via the VetBiz database shall count towards meeting the Program requirements.

8.8.2 The Contractor must demonstrate that VOBs are eligible for the following participation via its listing as a veteran-owned small business within the VetBiz database, located at www.VetBiz.gov, at the time said VOB seeks to participate in business provided under this Contract; provided, that it shall also be the responsibility of the Awarding Authority to verify the status of the VOB via said VetBiz database prior to the awarding of the Contract.

8.8.3 VOB Reduction/Waiver

8.8.3.1 The Awarding Authority reserves the right to reduce or waive the VOB participation established for this Contract upon written

request made by a Bidder using their Letterhead and addressed to Procurement Director Robert.Boncore@mass.gov

8.8.3.2 If filed Sub-Bids are solicited for this Contract, requests from prospective general Bidders to reduce or waive the VOB participation for this Contract should be received by the Awarding Authority no later than four (4) working days after the list of filed Sub-Bidders is mailed by the Awarding Authority to persons who have taken out plans for the Contract, using their Letterhead and addressed to Procurement Director Robert.Boncore@mass.gov

8.8.3.3 If there are no filed sub-Bids solicited for this Contract, requests to reduce or waive the VOB participation for this Contract should be received by the Awarding Authority no later than ten (10) working days before the date set for the receipt of general Bids. **THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY REQUEST TO REDUCE OR WAIVE THE VOB REQUIREMENTS FOR THIS CONTRACT THAT IS RECEIVED AFTER THESE DEADLINES.** Such written request must demonstrate to the satisfaction of the Awarding Authority that it is not feasible for a non- VOB or non- VOB general Bidder to meet the percentage established for this Contract based upon any or all the following:

- i. actual VOB availability.
- ii. the geographic location of the project to the extent related to VOB availability.
- iii. the scope of the work.
- iv. the percentage of work available for subcontracting to VOBs; and/or
- v. Other relevant factors, including a **documented** inability by the prospective Bidder to obtain commitments from VOB subcontractors sufficient to meet the VOB requirements after having made a diligent, good faith effort to do so. All the foregoing documentation shall accompany the completed Waiver Request Form. Such documentation shall include, at a minimum, the following: of efforts made to assist VOB's that needed assistance in obtaining bonding or insurance, or lines of credit with suppliers if the inability of VOB to obtain bonding, insurance, or lines of credit is the reason given for the Bidder's inability to meet the VOB requirements.

8.8.3.4 The Bidder may also submit any other information supporting its request for a waiver or reduction in the VOB requirements, including without limitation evidence that the Bidder placed advertisements in appropriate media and trade association publications announcing the Bidder's interest in obtaining bids or proposals from VOBs, and/or sent written notification to VOB economic development assistance agencies, trade groups and other organizations notifying them of the Contract and the work to be subcontracted by the Bidder to VOBs. The Bidder shall also submit any other information reasonably

requested by the Awarding Authority to show that the Bidder has taken all actions that could reasonably be expected to achieve the VOB requirements.

8.8.3.5 No later than five (5) working days after the opening of general Bids, the apparent low Bidder shall submit the following documents to the Awarding Authority's Contract Officer:

- (i) a completed Schedule for Participation by VOBs ("Schedule for Participation") in the form provided by the Awarding Authority showing VOB participation in amounts equal to or exceeding the VOB requirements for this Contract; and
- (ii) a completed Letter of Intent in the form provided by the Awarding Authority for each VOB listed in the Schedule for Participation.

Each Letter of Intent shall identify and describe the work to be performed by the named VOB (the "VOB Work") with enough specificity to permit the Awarding Authority to identify the items of contract work that the VOB will perform for VOB participation credit. The Awarding Authority reserves the right to reject any Letter of Intent if the price to be paid for the VOB Work does not bear a reasonable relationship to the value of such work under the Contract as determined by the Awarding Authority.

8.8.3.6 Within five (5) working days after receipt of the Schedule for VOB Participation and Letters of Intent, the Awarding Authority shall review and either approve or disapprove the apparent low Bidder's submissions. If the apparent low Bidder has not submitted an appropriate Schedule for VOB Participation and appropriate Letters of Intent establishing that the VOB requirements for the project will be met, the apparent low Bidder will be considered ineligible for Award of the Contract and the Awarding Authority will Award the Contract to the second lowest Bidder, subject to said Bidder's compliance with these conditions.

8.8.3.7 The Contractor is required to submit to the Awarding Authority signed subcontracts with all subcontractors prior to the commencement of work to be performed under these contracts, and/or a purchase order or invoice from each material supplier and/or manufacturer listed on the Schedule for VOB Participation within thirty (30) days of the issuance of the Notice to Proceed by the Awarding Authority.

8.8.3.8 A filed Sub-Bidder is not required to submit a Schedule for VOB Participation with its Bid. A filed Sub-Bidder may, at its option, submit a Letter of Intent with its Bid if it is a VOB. If a filed sub-Bidder intends to sub-subcontract work to a VOB, and the filed sub-Bidder wishes that sub-subcontract to be credited toward the requirements for this Contract, the filed sub-Bidder should submit a Letter of Intent from that VOB with its Bid. A filed sub-Bidder can subcontract out up to 20% of its work to VOBs, unless such work is designated as sub-subcontract Paragraph E work in the Bid Documents, in which case the 20% cap does not apply.

SECTION 9 - CONTRACT AWARD

9.1 "Award" means the determination, selection, and notification of the lowest, responsible, and eligible Bidder by the Awarding Authority.

9.2 The Contract will be awarded to the lowest responsible and eligible Bidder as determined by the Awarding Authority. Bidders will be required to hold firm their respective bids for thirty (30) days, Saturdays, Sundays, and legal holidays excluded, after the opening of the Bids.

9.3 As used herein, the term "lowest responsible and eligible Bidder" shall mean the Bidder whose Bid is the lowest of those Bidders who, in the Awarding Authority's opinion, are ready, willing and able to comply with all requirements of the Contract Documents and demonstrably possess the skill, ability, and integrity necessary for the faithful performance of the Work, based on the determination of past performance and financial soundness under M.G.L. c. 30, sec. 39M, (ii) the rules, regulations, orders, guidelines and policies promulgated from time to time by the Commissioner of the Department of Conservation and Recreation and (iii) any other relevant criteria that the Awarding Authority may prescribe.

9.4 The Bid price shall be the price set forth in paragraph C of the Bid Form.

9.5 Should the Contract Documents require submission of special data to accompany the Bid, the Awarding Authority reserves the right to rule the Bidder's failure to submit such data an informality and to receive said data subsequently within a reasonable time as set by the Awarding Authority, provided that no such ruling shall result in an unfair advantage to the Bidder.

9.6 Should the Contract Documents require submission of special data to accompany the Bid, the Awarding Authority reserves the right to rule the Bidder's failure to submit such data an informality and to receive said data subsequently within a reasonable time as set by the Awarding Authority, provided that no such ruling shall result in an unfair advantage to the Bidder. **In addition**, the Department reserves the right to waive minor defects in documents or time limits

SECTION 10 - EXECUTION OF CONTRACTS

10.1 Upon receipt of the Award, the Bidder awarded the Contract shall submit two (2) properly executed originals of each of the following documents prior to execution of the Contract by the Awarding Authority. All such documents shall be in the form prescribed by the Awarding Authority and received within five working days from receipt of the Award.

- Department of Conservation and Recreation-Contractor Agreement
- Certificate of Corporate Vote
- Joint Venture Authorization (if appropriate)
- Performance and Payment Bonds with power of attorney
- Certificates of Insurance evidencing coverages in amounts required by the Contract Documents.
- Any other documents that the Awarding Authority may reasonably require in connection with the Contractor's execution of the Contract.

10.2 Please note that no part of the Contractor's work may be subcontracted without the prior written approval of the Awarding Authority. The Contractor must complete a minimum of 51% of the scope of this contract by his own work force. If the Contractor desires to subcontract any part of the Work, the Contractor must promptly forward to the Awarding Authority a list in duplicate designating the work to be performed and the name of each proposed subcontractor. Approved subcontractors are eligible for direct payments under M.G.L. 30, sec. 39F, as amended. Material suppliers not involving site labor need not be submitted for approval.

SECTION 11 - RETURN OF BID DEPOSITS

11.1 All Bid deposits of Bidders, except those of the three (3) lowest responsible and eligible general Bidders, shall be returned within five days, Saturdays, Sundays, and legal holidays excluded, after the opening of the Bids. The Bid deposits of the three (3) lowest responsible and eligible Bidders shall be returned upon the execution and delivery of the Contract, or if no award is made; except that, if any Bidder fails to perform its agreement to execute the Contract and furnish performance and payment bonds as stated in its Bid, then said Bidder's Bid deposit shall become the property of the Commonwealth as liquidated damages; provided that the amount of the Bid deposit that becomes the property of the Commonwealth shall not exceed the difference between the Contractor's Bid price and the Bid price of the next lowest responsible and eligible Bidder; and provided further that, in the case of death, disability, bona fide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the Bidder, such Bidder's Bid deposit shall be returned.

11.2 In addition to the provisions for the return of Bid deposits as provided above, upon receipt of a Bid Bond in an amount not less than the amount of the required Bid deposit, the Awarding Authority shall return any Bid deposit of a Bidder forthwith after the public opening of Bids.



**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION & RECREATION
STANDARD CONSTRUCTION CONTRACT
For Projects Subject to M.G.L. c. 149 or M.G.L. c. 30, sec. 39M**

PART II

**DEPARTMENT OF CONSERVATION AND RECREATION -
CONTRACTOR AGREEMENT**

Awarding Authority: The Massachusetts Department of Conservation and Recreation

Department Code: DCR

This agreement ("Contract") is made by and between the Commonwealth of Massachusetts acting by and through the Awarding Authority identified above with a principal place of business at 10 Park Plaza, Suite 6620, Boston, MA 02116, and hereinafter called the "Contractor".

Terms used in this Department of Conservation and Recreation - Contractor Agreement, which are defined in the General Conditions of the Contract shall have the meanings designated therein.

The Awarding Authority and the Contractor agree as follows:

Article 1. Scope of Work. The Work under this Contract is defined as all work required by the Contract Documents for the construction of Contract No: P in accordance with and as described in the Plans and Specifications prepared by and as modified by Addenda () included herein.

Article 2. Time for Completion. The Contractor shall commence the Work under this Contract on the date specified in the written "Notice to Proceed," and shall within Days after such date, bring the Work to Substantial Completion and to the point at which a Certificate of Agency Use and Occupancy may be issued, and shall bring the Work to Final Acceptance within 10 days after the date specified for Substantial Completion.

Article 3. Contract Price. The Awarding Authority shall pay the Contractor, in current funds, for the performance of the Work, subject to additions and deductions by Approved Change Order(s), the Contract Price of Dollars and Zero Cents (\$,100.00). The Unit Prices, if any, approved by the Awarding Authority are those included in the Contractor's General Bid. The following Alternates have been accepted and their costs are included in the Contract Price:

Article 4. Approved Subcontractors. The filed Subcontractors listed in the Contractor's General Bid submitted by the Contractor have been approved for the performance of the specified portions of the Work subject to the Commonwealth's verification that they have complied with state corporation and partnership registration laws. No other filed Subcontractors and no non-filed Subcontractors shall be used for these or any other portions of the Work without the prior written approval of the Awarding Authority.

Article 5. Certifications. Pursuant to M.G.L. c. 62C, sec. 49A, the individual signing this Contract on behalf of the Contractor hereby certifies, under the penalties of perjury, that to the best of his or her knowledge and belief the Contractor has complied with any and all applicable state and federal tax laws. The individual signing this Contract on behalf of the Contractor further certifies under penalties of perjury that the Contractor is not presently debarred from doing public construction work in the Commonwealth under the provisions of M.G.L. c. 29, sec. 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder and is not presently debarred from doing public construction work by any agency of the United States.

Article 6. The Contract Documents: The following documents form the Contract, are incorporated by reference herein, and are referred to as the "Contract Documents:"

- The Instructions to Bidders
- The General Bid submitted by the Contractor
- This Department of Conservation and Recreation – Contractor Agreement
- The General Conditions of the Contract
- The Special Conditions [Note: the term "Special Conditions" may also refer to Division 1 of the Specifications.]
- The Plans and Specifications, including Addenda identified in Article 1 above
- All Approved Change Orders issued after execution of this Department of Conservation and Recreation - Contractor Agreement

Article 7. Minority Business Enterprise, Women Business Enterprise and Veteran-Owned Business Enterprises Participation Goals and Minority/Women and Veteran-Owned Business Enterprises Workforce Utilization Percentages: The applicable goals, if any, for minority business enterprise and women business enterprise participation, as well as those for minority and women workforce utilization percentages established for this Contract are to be found at the Notice to Contractors for this project, at Part I – Instructions to Bidders, and are incorporated by reference herein.

Article 8. Liquidated Damages. For the purposes of Article VI of the General Conditions of the Contract, liquidated damages for delay are to be found at the Notice to Contractors for this project at Part I – Instructions to Bidders and are incorporated by reference herein.

Article 9. Insurance Requirements. The insurance requirements are set forth in the Instructions to Bidders and are incorporated herein.

In witness whereof, the parties hereto have caused this instrument to be executed in duplicate under seal as of the date set forth above.

Forms Used During Contract Award and Execution

PAYMENT BOND
PERFORMANCE BOND
CERTIFICATE OF CORPORATE VOTE OF AUTHORITY
CERTIFICATE OF COMPLIANCE WITH STATE TAX LAWS AND WITH UNEMPLOYMENT
COMPENSATION CONTRIBUTION REQUIREMENTS
CERTIFICATE OF LIABILITY INSURANCE
A. SEE PART I, SECTION 7 – ARTICLE 7.1 C.
B. ADDING IN THE DESCRIPTION **DCR AS ADDITIONAL INSURED.**
SCHEDULE FOR WOMEN AND MINORITY BUSINESS ENTERPRISE
LETTER OF INTENT – MINORITY AND WOMEN BUSINESS PARTICIPATION
SCHEDULE FOR VETERAN-OWNED BUSINESS ENTERPRISE
LETTER OF INTENT – VETERAN-OWNED BUSINESS ENTERPRISE
EXECUTIVE ORDER 546 – CONTRACTOR CERTIFICATION - VOB POLICY OF THE
COMMONWEALTH
EXECUTIVE ORDER 481 – CONTRACTOR CERTIFICATION - UNDOCUMENTED WORKERS
POLICY OF THE COMMONWEALTH
EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCE FORM
IF APPLICABLE FORM OF SUBCONTRACTOR(S)

IN WITNESS WHEREOF, said Contractor has caused these presents to be signed in its name and its behalf under seal by its officers, duly authorized to do so, and the said Commonwealth has executed these presents by the Commissioner of said Department, or its authorized agent, as prescribed by law, who shall not incur any personal liability by reason of the execution of these presents or of anything herein contained, and who hereby certifies under penalties of perjury that all applicable provisions of M.G.L. c. 149, sec. 44J, have been complied with.

(Executed in duplicate under Seal)

CONTRACTOR: Kodiak Corporation

By: _____ SIGNATURE & SEAL

Name: _____

Title: _____

Date: _____

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION**

By: _____

Name: Brian M. Arrigo

Title: Commissioner

Date: _____

PAYMENT BOND

BOND No. _____

Know all men by these presents, that

_____ as principal and _____ as surety are held and firmly bound unto the Commonwealth of Massachusetts in the sum of Cents (\$.00) in lawful money of the United States of America, to be paid to the Commonwealth of Massachusetts, for which payments, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Whereas the said principal has made a Contract with the Commonwealth acting through its Department of Conservation and Recreation ("Awarding Authority") the construction of

Now the condition of this obligation is such that if the principal shall pay for all labor performed or furnished and for all materials used or employed in said Contract and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said Contract that may hereafter be made, notice to the surety of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, the provisions of Massachusetts General Laws, Chapter 30, Section 39A, and Chapter 149, Section 29, as amended, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

In witness whereof we hereunto set our hand and seals this ___ day of _____, _____

_____ (Seal)
(Print Name of General Contractor)

_____ (Seal)
(Print Name of Surety)

By _____
(Signature – Title)

By _____
(Signature – Title)

Surety Address _____

PERFORMANCE BOND

BOND No. _____

Know all men by these presents, that

_____ as principal and _____ as surety are held and firmly bound unto the Commonwealth of Massachusetts in the sum of Cents (\$.00) in lawful money of the United States of America, to be paid to the Commonwealth of Massachusetts, for which payments, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Whereas the said principal has made a Contract with the Commonwealth acting through its Department of Conservation and Recreation ("Awarding Authority") the construction of Mass Central Rail Trail Phase 1.

Now the condition of this obligation is such that if the principal shall well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of said Contract and any extensions thereof that may be granted by the Commonwealth, with or without notice to the surety, and during the life of any guarantee required under the Contract, and shall also well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of any and all duly authorized modifications, alterations, changes or additions to said Contract that may hereafter be made, notice to the surety of such modifications, alterations, changes or additions being hereby waived, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

In the event that the Contract is abandoned by the Contractor or is terminated by the Commonwealth under the provisions of said Contract, said surety shall, if requested in writing by the Commonwealth, take such action as is necessary to complete the Contract.

In witness whereof we hereunto set our hand and seals this _____ day of _____, _____

_____ (Seal)
(Print Name of General Contractor)

_____ (Seal)
(Print Name of Surety)

By _____
(Signature – Title)

By _____
(Signature – Title)

Surety Address _____

CERTIFICATE OF CORPORATE VOTE

I hereby certify that I am the ___ clerk, ___ assistant clerk, of

_____ (the "Corporation") and that at a
(Name of Corporation)

duly authorized meeting of the Board of Directors of the Corporation held on

_____ in _____ at which a quorum was
(Date) (Location)

present and voting it was voted to authorize _____
(Name)

_____ of the Corporation to execute
(Officer Title)

and deliver on behalf of the Corporation Contract, and to act as principal to execute bonds in connection therewith,

I further certify that _____ is the duly qualified and acting
(Name of Corporate Officer)

_____ of the Corporation and that said vote has not been
(Officer Title)

Repealed, rescinded, or amended.

Name

Print Name

Date

(CORPORATE SEAL)

SUBSCRIBED AND SWORN TO THIS ___ DAY OF _____, 20___ BEFORE ME

Notary Public

My Commission Expires: _____

CERTIFICATE OF COMPLIANCE WITH STATE TAX LAWS AND WITH UNEMPLOYMENT
COMPENSATION CONTRIBUTION REQUIREMENTS

Pursuant to MGL, c. 62C, s. 49A and MGL, c. 515A, s. 29A, I,

_____ authorized signatory for
_____ whose principal place of business is at
_____ do hereby certify
under penalties of perjury that _____ has filed all
state tax returns and paid all taxes as required by law and has complied with all state laws
pertaining to contributions to the unemployment compensation fund and to payments
in lieu of contributions.

The Business Organization Social Security Number or Federal Identification Number is

_____.

Signed under the penalties of perjury the _____ day of _____ 20 _____

Signature: _____

Name and Title: _____

Schedule for Participation by Women and Minority Business Enterprise

(To be completed and submitted within five calendar days from bid opening)

NOTE I: Participation of a Woman-owned or Minority-owned enterprise may be counted in only one category; the same participation cannot be used in computing the percentage of Minority participation and again of Women participation.

Minority Business Enterprise Participation in the work

Name & address of MBE	Dollar Value of Participation	Nature of Participation
1. _____ _____		
2. _____ _____		
3. _____ _____		

Total MBE Commitment: _____

Participation (divide Total Commitment by Total Bid Price)= _____ Percentage MBE

ITEM II - Women Business Enterprise Participation in the work

Name & address of WBE	Dollar Value of Participation	Nature of Participation
1. _____ _____		
2. _____ _____		
3. _____ _____		

Total WBE Commitment: _____

Percentage WBE Participation (divide Total Commitment by Total Bid Price) = _____

The bidder agrees to furnish implementation reports as required by the Department to indicate the M/WBE(s) which it has used or intends to use. Breach of this commitment constitutes a breach of the contract.

Name of bidder: _____

Date: _____ By: _____

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
VETERAN OWNED BUSINESS ENTERPRISE POLICY
AND CONTRACTOR CERTIFICATION**

In accordance with Executive Order No. 546, it is the policy of the Commonwealth and its executive agencies to promote self-reliance among veterans by offering such veterans who own and control business enterprises the opportunity to participate in state contracting activity, as well as to assist and encourage the participation of businesses owned and controlled by veterans in all areas of state procurement contracting, including contracts for public construction, design services, and commodities and services.

The Massachusetts Executive Office of Administration and Finance has therefore established the Veteran-Owned Business Enterprise (VOBE) Program (the "Program") to oversee the inclusion of business enterprises owned and controlled by veterans in all areas of state procurement contracting, including contracts for construction, design and professional services, and commodities and services. For more information on this Order, see: <http://www.mass.gov/governor/legislation/eexecorder/executiveorder/executive-order-no-546.html>.

DCR Requires Contractors to acknowledge this policy and the requirements as provided in the contract by signing this certification as well as the Contract Documents.

CONTRACTOR CERTIFICATION

As evidence by the signature of the Contractor's Authorized Signatory below, the Contractor certifies under the pains and penalties of perjury that the Contractor acknowledges the above-referenced policy as set forth in Executive Order 546, has read Executive Order 546, and will abide the requirements concerning the policy and order as set forth in the referenced Contract. The Contractor acknowledges that if the Contractor has not submitted an appropriate Schedule for VOB Participation and appropriate Letters of Intent establishing that the VOB participation goal for the project will be met, the Contractor may not be considered eligible for Award of the Contract unless he/she requests a waiver by completing and submitting the waiver form to the Contracts Administrator/DCR and that request is approved. The Contractor also understands and agrees that a breach of any of these terms during the period of the Contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension and /or termination.

Contractor Authorizing Signature

Date: _____

Print Name

Title: _____

Telephone: _____

Cell: _____

Email: _____

Schedule for Participation by Veteran-Owned Business Enterprise

(To be completed and submitted within five (5) calendar days from bid opening)

NOTE: Participation of a Veteran-Owned Enterprise may be counted in only one category; the same participation cannot be used in computing the percentage of DBE/M/WBE participation.

Veteran-Owned Business Enterprise Participation in the work

Name & address of VOB	Dollar Value of Participation	Nature of Participation
1. _____		

2. _____		

3. _____		

Total VOB Commitment: _____

Percent VOB Participation (divide Total Commitment by Total Bid Price)= _____

The bidder agrees to furnish implementation reports as required by the Department to indicate the VOB(s) which it has used or intends to use. Breach of this commitment constitutes a breach of the contract.

Name of bidder: _____

Date: _____ By: _____

Letter of Intent – Veteran-Owned Business Enterprise Participation

(To be completed by VOB and Submitted by the Low Bidder within five (5) calendar days of bid opening; use and prepare extra forms as needed)

DCR Contract/ Project Number: _____

Project Location: _____

To: _____

VOBE

Name of General Bidder

My company has been certified by the Department of Veterans Affairs (VetBiz.gov) and or Supplier Diversity Office (SDO). it has not changed its veteran ownership, control, or management without notifying the Department of Veterans Affairs (VetBiz.gov) within thirty (30) calendar days of such a change.

1. My company understands that if your company is awarded the contract, your company intends to enter into an agreement with my company to perform the activity described below for the prices indicated. My firm also understands that your firm, as General Bidder, will make substitutions and quantity changes as allowed or required by the provisions of the contract with the Commonwealth.
2. This firm understands that under all relevant terms of the contract, only work **actually performed** by an VOB will be credited toward VOB participation goals, and this firm **cannot assign or subcontract out any of its work** without prior written approval of the DCR Compliance Office, and that any such assignment or subcontracting will not be credited toward SDVOB participation goals.

VOB PARTICIPATION

Contract **Description of Activity** (with Item Notation such as “Labor Only”, Quantity, Unit Price, Total Amount, “Material Only”, etc.):

Activity	Labor or Material Only?	Quantity Unit Price	Total Dollar Value

VOB Firm Name _____

Authorized Signature _____

Printed Name _____ Title _____

Telephone No. _____ Cell No. _____

E-mail: _____@_____ ; Date _____

INSTRUCTIONS:

Executive Order 481 applies to all state agencies in the Executive Branch, including all executive offices, boards, commissions, agencies, departments, divisions, councils, bureaus, and offices, now existing and hereafter established. As it is the policy of the Executive Branch to prohibit the use of undocumented workers in connection with the performance of state contracts, all contracts entered after February 23, 2007, require that contractors, as a condition of receiving Commonwealth funds under any Executive Branch contract, make the following certification:

CONTRACTOR CERTIFICATION:

As evidenced by the signature of the Contractor's Authorized Signatory below, the Contractor certifies under the pains and penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of all Executive Branch contracts; that pursuant to federal requirements, the Contractor shall verify the immigration status of all workers assigned to such contracts without engaging in unlawful discrimination; and that the Contractor shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the period of each contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

Date: _____

Contractor Authorizing Signature

Print Name

Title: _____

Telephone: _____

Cell: _____

Email: _____

EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCE FORM

Contractor's Certificate

A contractor shall not be eligible for award of a contract unless such contractor has submitted the following certification to the Awarding Authority, said certification shall be deemed a part of the resulting contract:

Contractor's Certification

X

(Contractor)

certifies that it intends to use the following listed **certification trades** in the work subject to this contract.

X

and, further, that it will comply with the minority manpower ratio and specific affirmative action steps contained herein; and will obtain from each of its subcontractors and submit to the Awarding Authority prior to the award of any subcontract under this contract, the subcontractor certification required by these bid conditions.

X

(Signature of authorized representative of contractor)

Subcontractor's Certification

Prior to the award of any subcontract, regardless of tier, the prospective subcontractor must execute and submit to the general contractor the following certification, which shall be deemed a part of the resulting subcontract:

(Subcontractor)

certifies that: it intends to use the following listed construction trades in the work under the subcontract

and, further, it will comply with the manpower ratio and specific affirmative action steps contained herein and will obtain from each of the subcontractors prior to the award of any subcontract under this subcontract, the subcontractor certification required by these bid conditions.

(Signature of authorized representative of subcontractor)

In order to ensure that said subcontractor's certification becomes a part of all subcontracts under the general contract, no subcontract shall be executed unless or until an authorized representative of the Awarding Authority administering this contract has determined, in writing, that said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

Exhibit A
Executive Order 504 Contractor Certification Form

BIDDER/CONTRACTOR LEGAL NAME:

BIDDER/CONTRACTOR VENDOR/CUSTOMER CODE: VC

Executive Order 504: For all Contracts involving the Contractor’s access to personal information, as defined in M.G.L. c. 93H, and personal data, as defined in M.G.L. c. 66A, owned or controlled by Executive Department agencies, or access to agency systems containing such information or data (herein collectively “personal information”), Contractor certifies under the pains and penalties of perjury that the Contractor (1) has read Commonwealth of Massachusetts Executive Order 504 and agrees to protect any and all personal information; and (2) has reviewed all of the Commonwealth of Massachusetts Information Technology Division’s Security Policies available at www.mass.gov/ITD under Policies and Standards.

Notwithstanding any contractual provision to the contrary, in connection with the Contractor’s performance under this Contract, for all state agencies in the Executive Department, including all executive offices, boards, commissions, agencies, departments, divisions, councils, bureaus, and offices, now existing and hereafter established, the Contractor shall:

(1) obtain a copy, review, and comply with the contracting agency’s Information Security Program (ISP) and any pertinent security guidelines, standards, and policies; (2) comply with all of the Commonwealth of Massachusetts Information Technology Division’s Security Policies (“Security Policies”) available at www.mass.gov/ITD under Policies and Standards.

(2) communicate and enforce the contracting agency’s ISP and such Security Policies against all employees (whether such employees are direct or contracted) and subcontractors.

(3) implement and maintain any other reasonable appropriate security procedures and practices necessary to protect personal information to which the Contractor is given access by the contracting agency from the unauthorized access, destruction, use, modification, disclosure, or loss.

(4) be responsible for the full or partial breach of any of these terms by its employees (whether such employees are direct or contracted) or subcontractors during or after the term of this Contract, and any breach of these terms may be regarded as a material breach of this Contract.

(5) in the event of any unauthorized access, destruction, use, modification, disclosure or loss of the personal information (collectively referred to as the “unauthorized use”): (a) immediately notify the contracting agency if the Contractor becomes aware of the unauthorized use; (b) provide full cooperation and access to information necessary for the contracting agency to determine the scope of the unauthorized use; and (c) provide full cooperation and access to information necessary for the contracting agency and the Contractor to fulfill any notification requirements.

Breach of these terms may be regarded as a material breach of this Contract, such that the Commonwealth may exercise any and all contractual rights and remedies, including without limitation indemnification under Section 11 of the Commonwealth’s Terms and Conditions, withholding of payments, contract suspension, or termination. In addition, the Contractor may be subject to applicable statutory or regulatory penalties, including and without limitation, those imposed pursuant to M.G.L. c. 93H and under M.G.L. c. 214, § 3B for violations under M.G.L. c. 66A.

Bidder/Contractor Name: _____

Bidder/Contractor Authorized Signature: _____

Print Name and Title of Authorized Signatory: _____

Date: _____

This Certification may be signed once and photocopied to be attached to any Commonwealth Contract that does not already contain this Certification Language and shall be interpreted to be incorporated by reference into any applicable contract subject to Executive Order 504 for this Contractor.



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION & RECREATION
STANDARD CONSTRUCTION CONTRACT

PART III

GENERAL CONDITIONS OF THE CONTRACT

FOR PROJECTS SUBJECT TO M.G.L. CH. 149 OR
M.G.L. CH. 30, SEC. 39M

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ARTICLE I: DEFINITION OF TERMS

The following words shall have the following meanings as used in this Contract:

Advertisement: The Advertisement or Notice Inviting Bids or Proposals for the Work identified in Article 1 of the Department of Conservation and Recreation - Contractor Agreement.

Approval: (or Approved): An approval in writing signed by the authorized signatory of the Awarding Authority.

As directed (As permitted, as required, as determined or words of like effect): The direction, permission, requirement, or determination of the Awarding Authority. Similarly, *approved, acceptable, satisfactory* or words of like import shall mean approved by or acceptable or satisfactory to the Awarding Authority.

Awarding Authority: The Department of Conservation and Recreation, the public agency awarding and administering this Contract, as identified in the Department of Conservation and Recreation - Contractor Agreement. Where the Awarding Authority is an agency of the Commonwealth, references to the Awarding Authority shall also include the Commonwealth and its agencies.

Building Code: All applicable rules and regulations to which the Awarding Authority is subject, and which are contained or referenced in the code authorized by M.G.L. c. 143, sec. 93 et seq., including all amendments thereto.

Change Order: (1) A written order not requiring the consent of the Contractor, signed by the Project Engineer, and designated as a Change Order, directing the Contractor to make changes in the Work within the general scope of the Contract, or (2) any written or oral order from the Project Engineer that causes any change in the Work, provided that the Contractor has given the Awarding Authority written notice stating the date, circumstances, and source of the order and that the Contractor regards the order as a Change Order.

Contract: The Contract formed by the Contract Documents as defined in Article 6 of the Department of Conservation and Recreation - Contractor Agreement.

Contract Documents: The documents listed in Article 6 of the Department of Conservation and Recreation - Contractor Agreement.

Contract Modification: Any alteration of the Contract Documents accomplished by a written agreement properly executed by the parties to this Contract.

Contract Price: The Contract Price stated in Article 3 of the Department of Conservation and Recreation - Contractor Agreement, which is the total sum, owed to the Contractor for all of the Work.

DCR: The Department of Conservation and Recreation, the public agency awarding and administering this Contract.

Designer: The architect or engineer who prepared the plans and specifications for the work, identified as the Designer in Article 1 of the Department of Conservation and Recreation – Contractor Agreement.

Dispute Review Board: A panel of three experienced impartial reviewers organized and agreed upon by the DCR and Contractor. The Board members are provided with project plans and Specifications, and become familiar with project procedures and participants. The Board meets on the job site regularly to encourage the resolution of disputes at the job level and renders non-binding recommendations on the resolution of the dispute.

Drawings: The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location, and dimensions of the Work, generally including Plans, elevations, sections, details, schedules, and diagrams.

Engineer: The Project Engineer, except that the term "Resident Engineer" shall have the meaning otherwise specified herein.

Final Acceptance: The written determination by the Awarding Authority that the Work has been 100% completed, except for the Contractor's indemnification obligations, warranty obligations, obligations to continue to maintain insurance coverage for the time periods provided in the Contract Documents, and any other obligations which are intended to survive Final Acceptance and/or the termination of the Contract.

General Bid: The completed bid form submitted by the Contractor in accordance with the requirements of either M.G.L. c. 149 or M.G.L. c. 30, sec. 39M.

Laws: All applicable statutes, regulations, ordinances, codes, laws, orders, decrees, approvals, certificates, and requirements of governmental and quasi-governmental authorities.

Neutral: An impartial third party not having an interest in the Owner, DCR, the Contractor or the Project.

Notice to Proceed: The written notice provided by the Awarding Authority to the Contractor which authorizes the Contractor to commence the Work as of a date specified therein and complete the entire Work of the Contract by a date specified therein.

Or equal (or words of like import): Equal in the opinion of the Awarding Authority, determined pursuant to the provisions of M.G.L. c. 30, sec. 39M and the provisions of these General Conditions of the Contract.

Owner: The Commonwealth of Massachusetts or political subdivision thereof, authority, or other instrumentality that will own the Work.

Plan(s): Drawing(s).

Product Data: Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor or its Subcontractors and suppliers to illustrate materials or equipment for some portion of the Work. Product data also include any such information or instructions produced by the manufacturer or distributor of such materials or equipment and made readily available by said manufacturer or distributor.

Progress Schedule: The progress schedule Approved by the Awarding Authority in accordance with Article VI of these General Conditions of the Contract.

Project: The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner, the Department of Conservation and Recreation, or by separate contractors.

Project Engineer: The Awarding Authority's representative assigned to the Project.

Punch List: A list of items determined by the Awarding Authority to be minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work for its intended purpose.

Resident Engineer: The On-Site representative of the Awarding Authority.

Samples: Samples are physical examples that illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.

Schedule of Values: The schedule Approved by the DCR pursuant to Article VIII of these General Conditions of the Contract which allocates the Contract Price to the various portions of the Work and is used as a basis for payments to the Contractor.

Shop Drawings: Drawings, diagrams, details, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate a portion of the Work.

Site: The land and, if any, building(s), space within any such building(s), or other structures on which or in which the Contractor is to perform the Work.

Specifications: The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, and workmanship for the Work and performance of related services.

Subcontractor: Person or entity with whom the Contractor contracts in order to perform the Work, except as otherwise specifically provided or required herein or by Law.

Substantial Completion: For work subject to M.G.L. c. 30 sec. 39K, "substantial completion" shall occur when (1) the Contractor fully completes the Work or substantially completes the Work so that the value of the Work remaining to be done is, in the estimate of the DCR, less than one percent of the original contract price, or (2) the Contractor substantially completes the Work and the DCR takes possession for occupancy, whichever occurs first. For work subject to M.G.L. c. 30 sec. 39G, "substantial completion" shall mean either that the work required by the Contract has been fully completed, completed except for work having a Contract Price of less than one percent of the then adjusted total Contract Price, or substantially all of the Work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work.

Superintendent: The licensed construction supervisor who is an employee of the Contractor designated to be in full-time attendance at the Site throughout the prosecution and progress of the Work and who shall have complete authority to act for the Contractor.

Work: The Work defined in Article 1 of the Department of Conservation and Recreation - Contractor Agreement, Article II, Section 2 of these General Conditions of the Contract and otherwise in the Contract Documents.

Working Hours: 7:00 a.m. to 5:00 p.m., but not more than eight hours per day, Monday through Friday, unless otherwise specified by applicable Laws or deemed necessary by the DCR for traffic considerations or to minimize other contract impacts to the public.

All terms that this Contract defines may be used with or without initial capital letters. Other terms, abbreviations and references are defined as they appear herein. Words and abbreviations that are not defined in the Contract Documents, but which have recognized technical, or trade meanings are used in accordance with those meanings. For additional definitions of terms, abbreviations and references refer to the *Special Conditions or Specifications*.

ARTICLE II: EXECUTION OF THE CONTRACT, SCOPE OF WORK, INTERPRETATION OF CONTRACT DOCUMENTS

1. Execution.

The execution of the Department of Conservation and Recreation – Contractor Agreement by the Contractor is a representation that the Contractor has visited the Site, has become familiar with local conditions under which the Work is to be performed and has correlated personal observations with requirements of the Contract Documents.

2. Scope of Work.

The Work consists of the Work identified in the Contract Documents. The Work comprises the completed construction required by the Contract Documents and includes all labor, tools, materials, supplies, equipment, permits, approvals, paperwork, calculations, submittals, and certificates necessary to develop, construct and complete the Work in accordance with all Laws, and all construction and other services required to be supervised, overseen, performed or furnished by the Contractor or that the Contract Documents require the Contractor to cause to be supervised, overseen, performed or furnished. The Contractor shall provide and perform for the Contract Price all of the duties and obligations set forth in the Contract Documents.

3. Interpretation.

A. The Plans and Specifications and other Contract Documents are to be considered together and are intended to be mutually complementary, so that any work shown on the Plans though not specified in the Specifications, and any work specified in the Specifications though not shown on the Plans, is to be executed by the Contractor as a part of this Contract.

B. All things that in the opinion of the Project Engineer may be reasonably inferred from the Plans, Specifications and other Contract Documents are to be executed by the Contractor. The Project Engineer shall determine whether the detail Plans conform to the general Plans and Contract Documents, except as may be otherwise determined by the DCR.

C. The tables of contents, titles, headings and marginal notes or sub-scripts contained herein are solely to facilitate references, are not intended to be construed as provisions of the Contract, and in no way affect the interpretation of the provisions to which they refer.

D. Where reference is made in the Contract Documents to publications, standards, or codes issued by associations or societies, such reference shall be interpreted to mean the current edition of such publications, standards, or codes, including revisions in effect on the date of the Advertisement, notwithstanding any reference to a particular date. The foregoing sentence shall not apply to the dates, if any, specified with respect to insurance policy endorsement forms.

E. In case of any conflict among the Contract Documents, unless the context clearly otherwise requires, the Contract Documents shall be construed according to the following priorities:

- First Priority: Contract Modifications
- Second Priority: Department of Conservation and Recreation - Contractor Agreement
- Third Priority: General Conditions of the Contract
- Fourth Priority: Special Conditions of the Contract
- Fifth Priority: Drawings -- Schedules take precedence over enlarged detail Drawings, and enlarged Detail Drawings take precedence over reduced scale Drawings; figured dimensions shall prevail over scale.
- Sixth Priority: Specifications

4. Distribution of Work.

The distribution of the Work is intended to be described under the appropriate trades and, except for filed sub-bid work, may be redistributed, except as directed herein, provided that such redistribution shall cause no controversy among the trades and no delay in the progress of the Work.

5. Contract Price.

The Contract Price constitutes full compensation to the Contractor for everything to be performed and furnished in connection with the Work and for all damages arising out of the performance of the Work and/or the action of the elements and constitutes the maximum compensation regardless of any difficulty incurred by the Contractor in connection with the Work or in consequence of any suspension or discontinuance of the Work. The costs associated with the requirements of the General Conditions and any required in the Special Conditions or Specifications shall be included in the Contract Price and no direct or separate payment shall be made to the Contractor.

ARTICLE III: CONTROL OF WORK/ADMINISTRATION OF THE CONTRACT

1. DCR.

The Project Engineer shall be responsible for the general administration of the Contract. Except as otherwise specifically provided herein, the Project Engineer shall decide all questions which may arise as to the conduct, quantity, quality, equality, acceptability, fitness, and rate of progress of the several kinds of work and materials to be performed and furnished under this Contract and shall decide all questions which may arise as to the interpretation of the Plans and Specifications and as to the fulfillment of this Contract on the part of the Contractor.

2. Right of Access to Work.

The DCR, and persons designated by it, may for any purpose enter upon the Work, the Site, and premises used by the Contractor, and the Contractor shall provide safe facilities therefor. Other contractors of the DCR may also enter upon the same for the purposes which may be required by their contracts or work. Any differences or conflicts which may arise between the Contractor and other contractors of the DCR with respect to their work shall be initially resolved by the DCR.

3. Inspection No Waiver.

No inspection by the DCR or its employees or agents, and no order, measurement, certificate, approval, payment order, payment, acceptance or any other action or inaction of any of them, shall operate as a waiver by the DCR of any provision of this Contract.

ARTICLE IV: GENERAL PERFORMANCE OBLIGATIONS OF THE CONTRACTOR

The Contractor shall complete for the Contract Price all of the Work in a proper, thorough, and workmanlike manner in accordance with the Contract Documents. Without limiting the foregoing and without limiting the Contractor's obligations under any other provision of the Contract Documents, the Contractor shall for the Contract Price perform the following general obligations:

1. Review of Contract Documents and Field Conditions.

A. Before commencing the Work, the Contractor shall carefully study the Contract Documents and carefully compare all Specifications, Plans, Drawings, figures, dimensions, lines, marks, scales, directions of the Project Engineer, and any other information provided by the DCR and shall at once report to the Project Engineer in writing any questions, errors, inconsistencies, or omissions.

B. Before commencing the Work, the Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents and shall at once report to the Project Engineer in writing any questions, errors, inconsistencies, or omissions.

C. Any work performed by the Contractor after the discovery of said discrepancies without the written approval of the DCR shall be at the Contractor's risk and expense.

D. The Contractor shall be responsible for any and all errors in the Work arising from the Contractor's failure to comply with any of the requirements set forth in this section. The Contractor shall not be entitled to any extra compensation for any work or expense arising from or caused by his/her failure to comply with said requirements.

2. Supervision and Construction Procedures: Coordination: Cutting, and Patching.

A. The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and shall have control over, construction means, methods, techniques, sequences, and procedures, and shall be responsible for coordinating all portions of the Work under the Contract.

B. The Contractor shall be responsible for the proper fitting of all work and the coordination of the operations of all trades, subcontractors, and material suppliers engaged upon the Work. The Contractor shall guarantee to each of its subcontractors all dimensions which they may require for the fitting of their work to all surrounding work. Where equipment and lines of piping are shown diagrammatically, the Contractor shall be responsible for the coordination and orderly arrangement of the various lines of embedded piping and conduit included in the Work. The Contractor shall coordinate the work of any Subcontractor and prevent all interferences between the equipment, lines of piping or structural and architectural features, and avoid any unsightly arrangements in exposed work.

C. The Contractor should note that other contractors may be working on or near the Site where the Contractor's Work is being performed. The Contractor shall coordinate his/her work and the operations of all trades, subcontractors, and material suppliers engaged upon the Work so as not to interfere with or hinder the progress or completion of work being performed under another DCR contract.

D. All necessary cutting, coring, drilling, grouting, and patching required to fit together the several parts of the Work shall be done by the Contractor, except as may be specifically noted otherwise under any particular filed sub-bid section of the Specifications.

E. The Contractor shall be responsible to the DCR for the acts and omissions of the Contractor's employees, agents and Subcontractors, and their agents and respective contractors' employees, and other persons performing portions of the Work or supplying materials therefor.

F. The Contractor shall be responsible for the inspection of portions of the Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

G. The Contractor shall employ a registered land surveyor to perform any engineering required for establishing grades, lines, levels, dimensions, layouts, and reference points for the trades. The Contractor shall be responsible for maintaining benchmarks and other survey marks and shall replace any benchmarks or survey marks that may have become disturbed or destroyed. The Contractor shall verify the materials shown on the Drawings before laying out the Work and shall be responsible for any error resulting from its failure to exercise this precaution.

H. Unless otherwise required by the Plans and Specifications, or directed in writing by the DCR, Work shall be performed during regular Working Hours. However, if the Contractor desires to carry on the Work outside of regular working hours or on Saturdays, Sundays, or Massachusetts or federal holidays, then the Contractor shall allow ample time to allow satisfactory arrangements to be made for inspecting Work in progress and shall bear the costs of such inspection. The DCR shall bill the Contractor directly for such costs.

I. Work performed outside of regular Working Hours without the consent or knowledge of the DCR shall be subject to additional inspection and testing as directed by the DCR. The cost of this inspection and testing shall be borne by the Contractor whether the Work is found to be acceptable or not. The DCR at its election shall be entitled either to issue a credit Change Order to cover such cost or to withhold such cost from any further payments due the Contractor and/or to receive a payment from the Contractor of the amount of such cost.

3. Superintendent.

A. The Contractor shall employ a Superintendent whose appointment shall be subject to the Approval of the DCR. The Superintendent shall be in attendance at the Site full-time during the performance of the Work. The Superintendent shall represent the Contractor. Communications given to and from the Superintendent shall be deemed given to and from the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed upon written request in each case. The Superintendent shall attend each job meeting. The Superintendent shall be responsible for coordinating all of the Work of the Contractor and the Subcontractors.

B. The Superintendent shall be a competent employee regularly employed by the Contractor. The Superintendent shall be licensed in accordance with the Building Code, if applicable, and shall have satisfactorily performed similar duties on previous construction projects similar in type, complexity, and scale to the Project. The Superintendent's resume shall be submitted to the DCR prior to commencement of construction together with such other information as the DCR may reasonably require in order to determine whether or not to Approve of his or her appointment. Any change in the Superintendent shall require the prior consent of the DCR. The Contractor shall establish an emergency telephone line by which the DCR or its agents may contact the Superintendent during non-working hours.

4. Labor.

A. The Contractor shall employ only competent workers. The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. Whenever the DCR shall notify the Contractor in writing that any worker is, in the DCR's opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the Work and shall not again be employed on the Project except with the consent of the DCR.

B. The Contractor shall employ a sufficient number of workers to carry on the Work with all proper speed in accordance with Laws, the requirements of the Contract Documents, and the Progress Schedule.

C. The Contractor shall procure materials from such sources and shall manage its own forces and the forces of its Subcontractors and any sub-subcontractors in such a manner as will result in harmonious labor relations on the Project Site. If union and nonunion workers are employed to perform any part of the Work, the Contractor shall establish and maintain separate entrances to the Site for the use of union and nonunion workers. The Contractor shall cause persons to be employed in the Work who will work in harmony with others so employed. Should the Work be stopped or materially delayed in the DCR's reasonable judgment due to a labor dispute, the DCR shall have the right to require the Contractor to employ substitutes acceptable to the DCR.

D. The Contractor shall bear the entire expense, and no separate or direct payment shall be made by the DCR, as a result of extra work which may be necessary because of inferior workmanship, or for specific items of work which are normally considered a part of good workmanship in completing any particular phase of the work.

5. Notices and Permits.

A. The Contractor at its sole cost shall take out and pay for all approvals, permits, certificates and licenses required by Laws, pay all charges and fees, and pay for (or cause the appropriate Subcontractor to pay for) all utilities required for the proper execution of the Work. All permits secured by the Contractor, complete with the application and orders of conditions, shall be kept on file in the Contractor's office and field office with copies submitted to the Project Engineer.

B. The Contractor shall comply with all Laws and shall give all notices required thereby.

C. Except as otherwise specified in this Contract, it is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable Laws. However, if the Contractor observes that portions of the Contract Documents are at variance with the requirements of Laws, the Contractor shall promptly notify the DCR in writing, and necessary changes shall be accomplished by an appropriate Contract Modification.

D. If the Contractor performs work knowing it to be contrary to Laws without giving such notice to the DCR, the Contractor shall bear full responsibility for such Work and all costs attributable thereto, including, without limitation, corrections to the Work.

6. Lines, Marks etc.

The Contractor shall furnish batter boards and stakes and shall cause to be placed and maintained thereon so as to be easily read, such lines, marks and directions relating to the Work as the Project Engineer shall from time to time direct. The Project Engineer shall establish base lines and benchmarks on the Drawings for the locations of the Work but all other lines and grades in the field shall be determined by the Contractor.

7. Excavation.

The Contractor shall prevent by sheeting and shoring or bracing, if necessary, any caving or bulging of the sides of any excavation made by the Contractor, leaving sheeting, and shoring in place, or if any is removed, filling solid the spaces left thereby.

8. Dewatering/Hoisting/Staging.

The Contractor shall provide pumping, drainage, and disposal of all water and other flows so that no puddle, nuisance, or damage will be caused by water or flooding. If pumping results in contaminated water the Contractor shall take appropriate measures to treat this water prior to discharge and shall seek appropriate permits for discharge of water. The Contractor shall provide all hoisting equipment and machinery required for the proper execution of the Work. The Contractor shall provide all exterior and interior staging required to be over eight feet in height, except as may be otherwise provided in the Contract Documents.

9. Corrections to the Work; Inspection No Bar to Subsequent Corrections.

The DCR's inspection of the Work shall not relieve the Contractor of its responsibilities to fulfill the Contract obligations. Defective work may be rejected by the DCR whether or not such work and/or materials have been previously overlooked or misjudged by the Resident Engineer or Project Engineer and accepted for payment. If the Work or any part thereof shall be found defective at any time before the Final Acceptance of the whole Work, the Contractor shall forthwith cease the performance of any defective work in progress and, whether or not such work is still in progress, shall forthwith correct such defect in a manner satisfactory to the Project Engineer. If any material brought upon the Site for use in the Work, or selected for the same, shall be rejected by the Project Engineer as unsuitable or not in conformity with the Contract Documents, or as damaged by casualty or deteriorated due to improper storage at the Site or to any other factor, the Contractor shall forthwith remove such materials from the Site. The Contractor shall pay for the cost of making good all work or property of other contractors, the Owner or of the Department of Conservation and Recreation destroyed or damaged by such removal or replacement; repair any injury, defect, omission, or mistake in the Work as soon as it is discovered; finish and immediately make good any defect, omission, or mistake in the Work; and complete and leave the Work in perfect condition.

10. Sanitary Facilities.

The Contractor shall provide and maintain sanitary facilities for all persons employed on the Work, beginning with the first worker at the Site. Said facilities shall meet the following requirements unless otherwise specified in the Special Conditions or Specifications.

A. There shall be no fewer facilities than the number required by applicable Laws.

B. Facilities shall be always kept in a clean sanitary condition and shall be adequately screened to be inaccessible to flies. (**Note:** If existing sanitary facilities at the Site are to be used by the Contractor, this requirement will be modified accordingly in the Special Conditions or Specifications.)

11. Temporary Offices.

A. Contractor's Field office. The Contractor shall erect a temporary field office at or near the Site of the Work at which the Contractor's authorized representative shall be always present while the Work is in progress. Instructions, notices, and other communications delivered there by the DCR shall be deemed delivered to the Contractor. The Contractor shall adequately furnish and maintain this office in a clean, orderly condition.

B. Resident Engineer's Office. The Contractor shall erect an Office for the Resident Engineer if, and as required by the Special Conditions or Specifications of the Contract.

12. Telephones.

A. The Contractor shall provide and maintain telephone service in the Contractor's field office. The Contractor shall pay for all calls and costs relating to this service. The DCR and its employees and authorized agents shall always be allowed the use of this telephone service without charge. Telephone service and equipment shall meet the requirements, if any, of the Special Conditions or Specifications.

B. The Contractor shall also provide and maintain telephone service in the Resident Engineer's Office, when the Contractor is required to erect such office, for the use of the DCR and its employees and authorized agents. The Contractor shall pay for all calls and costs relating to this service. Telephone service and equipment shall meet the requirements, if any, of the Special Conditions or Specifications.

13. Project Sign.

A. The Contractor shall furnish and erect at a suitable location, Approved by the Project Engineer, at the start of the work, a sign having dimensions of at least eight (8) feet long by four (4) feet high, bearing the words: Massachusetts Department of Conservation and Recreation. Also included may be the project title, expected completion date, and facility name.

B. The Contractor shall submit the design of the sign to the Project Engineer for review and approval prior to posting.

14. Contract Documents and Samples at the Site.

The Contractor shall maintain at the Site for the use and information of the DCR one record copy of the Drawings, Specifications, Addenda, Change Orders, Approved Shop Drawings, Product Data, Samples, updated Progress Schedule, and all other submittals, all in good order and marked currently to record changes and selections made during construction. These shall be available to the DCR and shall be delivered to the DCR upon completion of the Work.

15. Safety Laws, Regulations, and Practices.

A. The Contractor shall comply with all health and safety Laws applicable to the Work. Without limitation,

(1) If the Contractor uses or stores toxic or hazardous substances it shall comply with M.G.L. c. 111F, sec. 2, the "Right to Know" law and regulations promulgated by the Department of Public Health, 105 CMR 670, the Department of Environmental Protection, 310 CMR 33, and the Department of Labor and Workforce Development, 441 CMR 21; and shall post a Workplace Notice obtainable from the Department of Labor and Workforce Development.

(2) The Contractor shall comply with the Federal Resource Conservation and Recovery Act, the Federal Comprehensive Environmental Response, Compensation and Liability Act, M.G.L. c. 21C, M.G. L. c. 21E, and any other Laws affecting toxic or hazardous materials, solid, special, or hazardous waste (collectively "Hazardous Materials Laws"). Should the Contractor discover unforeseen materials subject to Hazardous Materials Laws at the Site, the Contractor shall immediately notify the DCR of such discovery.

(3) The Contractor shall be responsible for the location of all utilities in connection with the Work. Without limiting the foregoing, the Contractor shall comply with Dig Safe Laws. Dig Safe is the Utility Underground Plant Damage Prevention System established pursuant to M.G.L. c. 164, sec. 76D. This System is operated by Dig Safe Systems, Inc., located at 331 Montvale Avenue, Woburn, MA 01801, whose toll-free telephone number is 1-888-DIG-SAFE (1-888-344-7233). The Contractor shall notify Dig Safe of contemplated excavation, demolition, or explosive work in public or private ways, and in any utility company right of way or easement, by certified mail, with a copy to Department of Environmental Protection (DEP). This notice shall be given at least 72 hours prior to the work, but not more than sixty days before the work is to be done. Such notice shall state the name of the street or the route number of the way and shall include an accurate description of the location and nature of the proposed work. Dig-Safe is required to respond to the notice within 72 hours of receipt by designating the location of pipes, mains, wires, or conduits at the Site. The Contractor shall not commence work until Dig-Safe has responded. The work shall be performed in such manner and with reasonable precautions taken to avoid damage to utilities under the surface at the work location. The Contractor shall provide the Superintendent with current Dig-Safe regulations, and a copy of M.G.L. c. 82, sec. 40. Any costs related to the services performed by Dig-Safe shall be borne by the Contractor.

(4) The Contractor shall comply with Public Law 92-596, "Occupational Safety and Health Act of 1970" (OSHA), with respect to all rules and regulations pertaining to construction, U.S. Code Title 29, sections 651 et seq. including Volume 36, numbers 75 and 105 of the Federal Register as amended, and as published by the U.S. Department of Labor.

(5) The Contractor shall comply with M.G.L. c. 149, sec. 129A, relative to shoring and bracing of trenches.

B. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to persons (whether under his management, DCR staff, or the general public) or property. Nothing herein shall relieve Subcontractors of their responsibility for the safety of persons and property, and for compliance with all Laws applicable to the Work and their activities in connection therewith. Without limitation, the Contractor shall take all reasonable precautions for the safety of, and the prevention of injury or damage to (1) all agents and employees and contractors on the Work and all other persons who may be affected thereby including the general public, (2) all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the Site, under the care custody or control of the Contractor or any of its Subcontractors or any contractors directly or indirectly contracting through any of them, and (3) other property at the Site or adjacent thereto, including but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of the Work. The Contractor shall promptly remedy all damage or loss to any such property caused in whole or in part by the Contractor, any Subcontractor, or anyone directly or indirectly contracted or employed by any of them or by anyone for whose acts any of them may be liable. Without limiting the foregoing, the Contractor shall:

(1) post and maintain adequate danger signs and other warnings against hazards.

(2) promulgate safety regulations and give appropriate notices to the DCR and users of adjacent utilities and property.

- (3) ensure the adequate strength and safety of all scaffolding, staging and hoisting equipment, temporary shoring, bracing, and tying.
- (4) protect adjoining private or public property.
- (5) provide barricades, temporary fences, and covered walkways required by prudent construction practices, Laws and/or the Contract Documents.
- (6) furnish approved hard hats and other personal protective equipment, furnish approved first aid supplies, furnish the name of the first aid attendant, and maintain a posted list of emergency facilities.
- (7) provide proper means of access to property where the existing access is cut off by the Contractor, including maintaining traffic over, through or around the Work included in this contract, with the maximum safety, and practicable convenience to such traffic suspended temporarily.
- (8) maintain from the beginning of any darkness or twilight through the whole of every night sufficient lights on or near any obstruction to guard or protect travelers from injury from such obstruction.
- (9) maintain adequate security at the Site so as not to expose the Work, the materials to be incorporated in the Work, DCR's materials stored or otherwise located upon the Site, and surrounding property to vandalism or malicious mischief.
- (10) provide adequate fire protection procedures during the use of cutting torches, welding equipment, plumbers' torches and other flame and spark producing apparatus.
- (11) take prompt action to correct any dangerous or hazardous conditions.

C. Use of Explosives: The use of explosives will not be permitted in the Work unless specifically authorized in the technical Specifications, Special Conditions and/or Drawings or approved by the DCR in writing. If such approval is given, the Contractor shall comply with all Laws and obtain all permits, approvals, and certificates required in connection with the same and shall exercise best efforts, including but not limited to the employment and supervision of properly qualified personnel, to prevent damage, injuries, and accidents involving said explosives.

D. Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of public or private utilities of his/her intention to commence operations affecting such utilities at least seventy-two (72) hours exclusive of Saturdays, Sundays, and legal Holidays in advance of the start of such operations, and the Contractor shall at the same time file a copy of said notice with the DCR.

E. When necessary, the Contractor shall cooperate with representatives of public service companies to avoid damage to their structures by furnishing and erecting suitable supports, props, shoring or other means of protection. Fire hydrants adjacent to the work always shall be readily accessible to fire apparatus and no materials or other obstructions shall be placed within a radius of 10 feet of a fire hydrant.

F. Although the drawings may indicate the approximate location of existing subsurface utilities in the vicinity of the work, the accuracy and completeness of the information is not guaranteed by the DCR. Before commencing any work, or operations which may endanger or damage any subsurface structures, the Contractor shall carefully locate all such structures and conduct his/her operations in such manner as to avoid damage thereto. He/she shall not interrupt live services until new services have been provided. All abandoned services shall be plugged or otherwise made secure.

G. If the Contractor wishes to have any utilities temporarily relocated for his/her convenience, other than those specified by DCR, he/she shall submit such a request in writing to the Project Engineer. If the DCR approves this request, the Contractor shall pay for the cost of the relocation at his/her sole expense.

H. Land monuments and property markers shall be carefully protected. If is necessary to remove land monuments and/or property markers to perform the contract Work, the Contractor shall do so only at the DCR's direction and after an authorized agent of the DCR has referenced their location.

I. The Contractor shall not injure or remove trees or shrubs without authorization from the DCR.

J. Disturbance or damage to any above- or below-ground structures, conduits, cables, or the like, caused by any act of omission, neglect or misconduct in the execution or non-execution of work thereof by the Contractor shall be repaired, and/or replaced by the Contractor to the satisfaction of the DCR and at no additional expense to the DCR.

K. Disturbance or damage to any structure shall be replaced or repaired by the Contractor to the satisfaction of the DCR and at no additional expense to the DCR.

L. The Contractor shall receive no extra compensation for protection and restoration of property unless said compensation is authorized in writing by the DCR, as specified under Article VI I of the Contract General Conditions.

M. The Contractor shall not permit cutting or welding in or immediately adjacent to existing property of the Department of Conservation and Recreation or of anyone else without the DCR's prior approval in each instance.

N. The Contractor shall designate by notice to the DCR a responsible member of its organization at the Site whose duties shall include preventing accidents.

O. The Contractor shall submit to the DCR without delay verbal and written reports of all accidents involving bodily injury or property damage arising in connection with the Work.

P. In any emergency affecting the safety of persons or property the Contractor shall immediately act in the exercise of reasonable judgment to prevent threatened damage, injury, or loss. The Contractor shall immediately notify the DCR of such emergency.

16. Environmental Protection

A. The DCR shall secure the required environmental permits required under M.G.L. Chapters 131 and 91, including the National Pollutant Discharges Elimination System (NPDES) Construction General Permit and those issued by the Army Corps of Engineers under Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). The Contractor is obligated to conform to all the requirements of the permits and subsequent requirements issued by the governing agencies.

B. Contractors operating under a DEP permit shall post on the Site a sign in a format consistent with that enclosed.

C. Prevention of Water Pollution:

1. The Contractor shall take such precautions in the conduct of the Work as may be necessary to avoid contaminating water in adjacent watercourses, water resources or wetlands. All earthwork, moving of equipment, water control for excavation or foundation areas, and other operations likely to create silting shall be conducted to avoid pollution of watercourses, water resources and wetlands.

2. Erosion Control: The Contractor shall utilize such methods as may be necessary to effectively prevent erosion and sediment from entering nearby waterways.

3. Control of Surface Water Runoff: The Contractor shall keep the rate of runoff from the Site at a minimum, and control it by constructing diversion ditches, trenches, and berms, and taking any other necessary action to retard and divert runoff to protect watercourses. The Contractor shall inspect said Site controls regularly, after significant storm events (greater than one-half inch over a 24-hour period) and in accordance with a site-specific storm water pollution prevention plan (SWPPP) prepared by the Contractor. The Contractor shall repair any damage to Site controls to prevent discharge of sediments or pollutants.

4. The Contractor shall construct silt retention basins in areas of the Work adjacent to streams, or rivers, as directed by the DCR. These basins shall be removed upon completion of the Work. Water used during the Work which has become contaminated with oil, bitumen, harmful or objectionable chemicals, sewage or other pollutants shall be discharged in accordance with all Laws to avoid affecting nearby waters.

5. Under no circumstances shall the Contractor discharge pollutants into any watercourse, water resource, or wetland. When water from adjacent natural sources is used in the contract work, intake methods shall be such as to avoid contaminating the source of supply.

D. Protection of Land Resources

1. Prevention of Landscape Defacement: The Contractor shall not deface, injure, remove, cut, or destroy trees or shrubs, without authority from the DCR. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically approved by the DCR. Where such activity is permitted, the Contractor shall adequately wrap the tree with burlap or rags over which softwood slats shall be tied. The Contractor shall be responsible for any damage resulting from such use. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by equipment, dumping, or other operations, the Contractor shall protect such trees by placing boards, planks or approved protective fencing around them.

2. Restoration of Landscape Damage: Any trees or other landscape feature scarred or damaged by equipment or operations shall be restored as nearly as possible to the original condition, as approved by DCR. All trimming or pruning shall be performed in an approved manner by licensed arborists with saws or pruning shears. Trimming with axes will not be permitted.

3. Plant Pest Control: If the Work under this contract requires the use of soil moving equipment in an area with plant infestation, the Contractor shall be subject to applicable plant quarantine regulations. In general, these regulations require the thorough cleaning of soil from equipment before such equipment is moved from regulated areas to area's noninfected

E. Noise Control: The Contractor shall use every effort and every means possible to minimize noise caused by his/her operations which the DCR may consider objectionable. Each Contractor shall provide working machinery and equipment designed to operate with the least possible noise, and when gearing is used, such gearing shall be of a type designed to reduce noise to a minimum. Compressors shall be equipped with silencers on intake lines. All gas or oil operated equipment shall be equipped with silencers or mufflers on intake and exhaust lines. Electricity shall be used for power to reduce noise. Dumping bins, hoppers and trucks used for disposal of excavated materials shall be lined with wood or other sound-deadening material if required. Where required by agencies having jurisdiction, certain noise-producing work may have to be performed during specified periods only.

E. Air Pollution Control: The Contractor shall conduct his/her operations to comply with all Laws pertaining to air pollution, including Section 142B of Chapter 111 of the Massachusetts General Laws.

1. Diesel Equipment Emission Controls

a.) All motor vehicles and construction equipment shall comply with all pertinent local, state, and federal regulations covering exhaust emission controls and safety.

b.) All Contractor and Sub-Contractor diesel-powered non-road construction equipment with engine horsepower (HP) ratings of 50 and above, which are used on the Project Site for a period in excess of 30 calendar days over the course of the construction period on the Project Site, shall be retrofitted with Emission Control Devices to reduce diesel emissions.

c.) The reduction of emissions of volatile organic compounds (VOCs); carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment shall be accomplished by installing Retrofit Emission Control Devices.

d.) Acceptable Retrofit Emission Control Devices for the Project shall consist of oxidation catalysts that are (1) included on the US Environmental Protection Agency (EPA) *Verified Retrofit Technology List* and/or the California Air Resources Board (CARB) *Currently Verified Technologies List*; and (2) are verified by EPA, CARB, or certified by the manufacturer to provide a minimum emissions reduction of 50 percent for VOCs, 40 percent for CO and 20 percent for PM. Attainment of the required reduction in PM emissions can also be accomplished by using less polluting Clean Fuels. Verified technologies can be identified on the following websites:

EPA: <http://www.epa.gov/otaq/retrofit/retroverifiedlist.htm>

CARB: <http://www.arb.ca.gov/diesel/verdev/verifiedtechnologies/cvt.htm>

e.) The emission control equipment can be procured through the Statewide Contract #VEH71 that has fixed costs associated with retrofitting of diesel emission control devices.

f.) Construction shall not proceed until the Contractor has submitted a certified list of the non-road diesel-powered construction equipment subject to this provision which either are or will be retrofitted with emission control devices. The list shall include (1) the equipment number, type, make, and Contractor/Sub-Contractor name; and the emission control device make, model, and EPA verification number. Contractors shall also submit a receipt or other documentation from a manufacturer or installer that verifies that appropriate equipment has been installed. The Contractor shall also identify any vehicles that will use Clean Fuels. Equipment that has been retrofitted with an emission control device shall be stenciled or otherwise clearly marked as "Low Emission Equipment".

g.) The Contractor shall submit monthly reports, updating the same information stated in Paragraph f above, including the quantity of Clean Fuel utilized. The addition or deletion of non-road diesel equipment shall be indicated in the report.

h.) The Contractor shall use methods to control nuisance odors associated with diesel emissions from construction equipment including but not limited to the following: (1) turning off diesel combustion engines on construction equipment not in active use and on trucks that are idling for five minutes or more; and (2) locating diesel equipment away from the general public and sensitive receptors.

i.) All costs associated with implementation of the diesel equipment emissions control shall be borne by the respective Contractor or subcontractor and included in their cost for performing the work of the Contract.

2. Dust Control.

A. The Contractor is placed on notice that blowing dust from un-stabilized earth areas of the work under his/her control will be considered a nuisance. He/she shall, by spraying with water or by other approved means, dampen the soil to hold down the dust. The use of calcium chloride as a wetting agent will not be permitted. During working hours and before leaving the work for the evening, for weekends, or for a more extended period, the Contractor shall assess the moisture content of the soil and dampen it to the extent necessary to hold down the dust. While work is suspended, he/she shall return to work, if so, directed by the DCR, to maintain the dust control.

17. Debris, Excavated Material and Chemical Waste.

A. The Contractor shall not permit the accumulation of interior or exterior debris. The Contractor shall always keep the Work area clean. Without limitation, garbage shall be removed daily. Where no disposal area is shown on the Drawings, the Contractor shall remove and legally dispose of all materials off land owned by the Commonwealth to a location approved by the DCR. Documentation certifying proper disposal shall be submitted to the DCR.

B. The Contractor shall, at his/her own expense, and in accordance with all Laws, arrange for the waste of materials from excavations that are unacceptable for use in the refill or that are more than the refill materials required, in spoil banks off the lands owned by the Commonwealth of Massachusetts. Materials, if any, which cannot be placed at once in permanent positions may be deposited in storage piles at locations designated, but materials re-excavated from such storage piles shall not again be paid for as excavation.

C. The Contractor shall properly classify and remove debris and waste from the Site and transport and dispose of it, all in accordance with Laws, employing a qualified and properly licensed transporter, at any landfill, disposal or recycling facility licensed under applicable Laws, including without limitation, hazardous materials laws. The Contractor shall make all arrangements and give and obtain all notices, communications, documentation, permits, certificates, and approvals necessary for said disposal from the owner or officials in charge of such landfills, disposal, or recycling facilities. The Contractor shall bear all fees and costs in connection with such classification, removal, transportation, disposal, and storage, except as otherwise specifically provided or required by the Special Conditions or other Contract Document. The Contractor shall not permit any storage of debris or waste except in accordance with Laws.

D. The Contractor shall not permit any open fire on the Site.

E. Chemical Waste: Chemical waste shall be identified and labeled properly, stored in appropriate Department of Transportation approved containers in a secure location, removed from the Site, and disposed of not less frequently than monthly unless more frequently required by Laws, including without limitation hazardous materials laws, or by the Special Conditions or Specifications. Disposal of chemical waste shall be performed in accordance with requirements of the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP). Stockpiles of contaminated soils will be placed on a protective surface and covered to prevent migration or erosive loss by wind or water. Fueling and lubricating of vehicles and equipment shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants shall be disposed of in accordance with procedures meeting all applicable Laws. The Contractor shall immediately notify the DCR of any hazardous materials release large enough to require reporting under applicable Laws. The Contractor shall be responsible for immediately containing and cleaning up in accordance with Laws any oil or hazardous materials releases resulting from his/her operations. Any costs incurred in cleaning up any such releases shall be borne by the Contractor.

18. Nuisances.

The Contractor shall strictly prohibit and take all necessary measures to prevent the committing of nuisances on the land of the Commonwealth and adjacent properties.

19. Weather Protection (M.G.L. c. 149, sec. 44G and 44F(1)).

A. For all building projects, the Contractor shall furnish and install "weather protection," which means temporary protection of that Work adversely affected by moisture, wind and cold. Weather protection shall be achieved by covering, enclosing and/or heating working areas such that a minimum temperature of 40 degrees Fahrenheit is maintained at the working surface during the months of November through March to permit construction to be carried on during such period in accordance with the Progress Schedule. After the building or portion thereof is completely enclosed by either permanent construction or substantial temporary materials having a resistance comparable to the specified permanent construction, the Contractor shall provide heat therein of not less than 55 degrees Fahrenheit nor more than 75 degrees Fahrenheit. The foregoing provisions do not supersede any specific requirements for methods of construction, curing of materials and the like. Concrete, masonry, plaster, and all other materials that require special considerations in temperatures below 40 degrees Fahrenheit shall be installed, applied, and cured in accordance with the specific requirements for cold weather protection as defined in the project specifications.

B. The general contractor may, with the approval of the Engineer, elect to utilize the permanent heating system for temporary heat after the building is enclosed and after it has been tested and ready to operate. It shall, however, be his responsibility to thoroughly clean and restore to first-class condition any portion of the permanent heating system used for heating during construction to the satisfaction of the Engineer.

C. The Contractor shall furnish and install one thermometer for every 2,000 square feet of floor space or fraction thereof.

D. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate fire protection devices. Approved methods of heating should also provide for adequate ventilation to prevent exposing people and materials to carbon monoxide, carbon dioxide and other noxious fumes.

E. Within 30 calendar days after the award of this contract, the general contractor shall submit in writing to the Engineer three (3) copies of his proposed methods for "Weather Protection" for approval.

F. The Contractor shall give adequate notification to the Engineer and all subcontractors prior to the erection and removal of temporary protective enclosures.

G. Such weather protection shall be consistent with the Progress Schedule, shall permit the continuous progress of the Work necessary to maintain an orderly and efficient sequence of construction operations and shall meet such additional requirements as may be specified by the Special Conditions or Specifications.

20. Furnishings and Equipment.

When, in the opinion of the DCR, any portion of the Work is in a reasonable condition to receive fittings, furniture, or other property of the Department of Conservation and Recreation not covered by this Contract, the Contractor shall allow the DCR to bring such fittings, furniture, and/or other property into such portions of the Work and shall provide all reasonable facilities and protection thereof. No such occupancy shall be construed as interfering with the provisions relating to time of completion, or as constituting an acceptance of the whole or any part of the Work. Any furniture or fittings so installed shall be placed in the Work at the risk of the DCR except that the Contractor shall be liable for damages or losses to such furniture or fittings to the extent such damages or losses arise in whole or in part from the negligence or intentional misconduct of Contractor, Subcontractors, their agents and/or employees, or anyone for whose acts the Contractor is responsible.

21. Form for Sub-contract.

The Contractor when subcontracting with sub-bidders filed pursuant to M.G.L. c. 149, sec. 44F shall use the form for sub-Contract in M.G.L. c. 149, sec. 44F(4)(c). The Contractor shall not interpret paragraph 3 of the statutory form of Subcontract to require such sub-bidders to provide insurance with limits higher than the limits that are required by the Contract Documents, assuming that the term "Contractor" refers to the sub-bidder and that the term "Contract Price" refers to the sub-bidder's price stated in paragraph 1 of the statutory form of Subcontract.

22. Sales Tax Exemption and Other Taxes.

All building materials and supplies as well as the rental charges for construction vehicles, equipment and machinery rented exclusively for use on the Site, or while being used exclusively for the transportation of materials for the Work are entitled to an exemption from sales taxes under M.G.L. c. 64H, sec. 6(f). The Contractor shall take all action required to obtain the benefit of such sales tax exemption. The Contractor shall bear the cost of any sales taxes that the Contractor incurs in connection with the Work and the DCR shall not reimburse the Contractor for any such taxes. The exemption number assigned to the Contractor as an exempt purchaser shall be provided to the Contractor by the DCR upon the written request of the Contractor.

23. Final Cleaning.

At the completion of the Work, the Contractor shall remove all waste materials, rubbish, tools, equipment, machinery, and surplus materials, and professionally clean all sight-exposed surfaces so that the Work is clean and ready for occupancy and/or use. Subsequent to installation of DCR furniture, telephones, and equipment, the Contractor shall provide such additional cleaning as may be necessary to remove any soil resulting from installation of such furniture, telephones, and equipment. The costs of the required cleaning are included in the Contract price.

All permanent drainage structures such as catch basins, permanent detention or retention basins, drainage conveyances, piping, sumps, and particle separators will be cleaned of sediments and debris prior to acceptance of the Work. Any sediments or debris accumulated during construction shall be removed and disposed in accordance with local and state requirements.

24. Maintenance Data.

Subject to such additional requirements as may be provided in the Special Conditions or Specifications, the Contractor shall compile 3 complete and identical binders of operating and maintenance data for the entire Work. The Contractor shall submit record maintenance data to the DCR for approval and shall instruct and train the DCR's personnel in proper inspection and maintenance procedures.

25. Drainage Specifications.

Subject to such additional requirements as may be provided in the Special Conditions or Specifications, where construction involves replacement or construction of new storm water drainage systems including but not limited to catch basins, roof drains, recharge to groundwater systems and outfall structures, the Contractor shall provide drawings and electronic records in a form acceptable to the DCR that provides specifications and a site plan that identifies locations of the drainage system components and cleanout, if applicable.

26. Closeout Procedures.

The Contractor shall take all actions and submit all items required for Final Acceptance as specified in the Contract Documents.

27. Risk of Loss.

The Contractor shall bear all risk of loss to the Work during the term of the Contract except for any portion of the Work as to which the DCR has given final acceptance. Nothing herein shall limit the Contractor's responsibilities under Article IX or XV of these General Conditions of the Contract.

28. Photographs.

A. At the request of the DCR, the Contractor shall furnish the DCR suitable 4" X 6" color photographs and/or digital image files of the construction area, and any related work areas.

B. If the DCR requires the Contractor to provide photographs of the Work, the areas to be photographed and the locational reference point from which they are to be taken will be designated by the DCR, and shall be taken according to the following schedule:

- a. Before construction operations have been started.
- b. Each month during the performance of the Work.
- c. After construction has been completed.

C. Each photograph shall have permanently written on its face a legible description or title indicating date, location, direction from which taken, project title and item of work photographed.

D. Upon completion of all work under this contract, the Contractor shall deliver all negatives, clearly identified, to the DCR. Photographs will be placed in acetate sleeves and bound in three booklet form.

E. The cost of furnishing photographs shall be included in the prices bid for the various items scheduled in the Proposal.

ARTICLE V: MATERIALS AND EQUIPMENT

1. Materials Generally.

A. Unless otherwise specifically provided in the Contract Documents, the Contractor shall provide and pay for materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether incorporated or to be incorporated in the Work.

B. Materials and equipment to be installed as part of the Work (both or either of which are hereinafter referred to as "materials") shall be new, unused, of recent manufacture, assembled, and used in accordance with the best construction practices. The Contractor shall inform himself/herself as to, and shall comply with, the provisions of M.G.L. c. 7, sec. 23A, as amended, and shall abide by the same and all applicable rules, regulations, and orders made thereunder in relation to the purchase of supplies and materials in the execution of the Work, including the provisions of M.G.L. c. 7, sec. 22, paragraph 17, which provides that there be *"a preference in the purchase of supplies and materials, other considerations being equal, in favor, first, of supplies and materials manufactured and sold within the Commonwealth, and, second, of supplies and materials manufactured and sold elsewhere within the United States."*

C. All materials furnished by the DCR to the Contractor for installation in the work will be delivered by freight train, truck, or other means of common carrier to the nearest convenient public railroad siding, freight station, trucking terminal or such other designated delivery point of which he will receive due notification. The Contractor, at his/her own expense, shall do all handling and conveying of such materials at and from the noted deliver site. He shall unload and remove them promptly from the cars, trucks, or terminals upon notification of their arrival and he shall be responsible for any demurrage, delay charges, damage done or loss of materials from the time of delivery to the final acceptance of the work. Materials previously delivered shall be turned over to the Contractor as soon as possible after the date ordered to begin work. He shall make a complete inventory with the Resident Engineer as to content and condition; thereafter he shall be responsible for the care, custody, and handling until the final acceptance of the work.

2. Shop Drawings, Product Data, and Samples.

A. The Contractor shall furnish to the Project Engineer all samples of the materials to be used in the execution of the Work as required by the Contract Documents. The Contractor shall furnish to the DCR in a timely manner all coordination Drawings, shop details, Shop Drawings, and setting diagrams which may be necessary for acquiring and installing materials. These shall be reviewed as required by the DCR. A minimum of six (6) copies shall be submitted for final approval, one of which shall be returned to the Contractor, one given to the Resident Engineer, and four maintained by the DCR. The inspection and approval by the DCR of Shop Drawings, etc. shall be general and shall in no way relieve the Contractor from responsibility for proper fitting, coordinating, construction, and construction sequencing. The Contractor shall furnish to the DCR such information and vouchers relative to the Work, the materials therefore, and the persons employed thereon, as the DCR shall from time-to-time request.

B. Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. The purpose of their submission is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

C. The Contractor shall review, approve, and submit to the DCR, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the DCR or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents, or which do not comply with the Contract Documents may be returned without action. The Contractor's attention is directed to the provisions of Section 4 of this Article V and to the Specifications.

D. The Contractor shall prepare and keep current for the DCR's approval a schedule of submittals which is coordinated with the Progress Schedule and allows the DCR reasonable time to review submittals.

E. The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples, or similar submittals until the respective submittal has been approved by the DCR. Such Work shall be in accordance with Approved submittals.

F. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements, and field construction criteria related thereto and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

G. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the DCR's approval of Shop Drawings, Product Data, Samples, or similar submittals unless the Contractor has specifically informed the DCR in writing of such deviation at the time of submittal and the DCR has given explicit written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the DCR's actions.

H. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the DCR on previous submittals.

I. Informational submittals upon which the DCR is not expected to take responsive action may be so identified in the Contract Documents.

J. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, such certification must be stamped by a registered Massachusetts professional in the discipline required. The DCR shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

K. Materials furnished or used or employed under the Contract must be equal in quality to the samples furnished and be satisfactory to the DCR.

3. Tests.

A. Any material to be used in the Work may be tested or inspected at any time, on or off Site, by or under direction of the DCR, and may be rejected if it fails to comply with specified tests. The Contractor shall test all materials unless specified otherwise in the Special Conditions or Specifications. The Contractor shall also pay for all testing of specified material unless specified otherwise in the Special Conditions or Specifications. If the Contractor requests permission to use a material that was not specified, then the Contractor in all cases shall pay for such testing. The cost of testing of materials that fail the testing criteria shall be borne by the Contractor

B. The Contractor shall notify the DCR of the proposed sources of materials in time to permit all required testing and inspection before the material is needed for incorporation into the Work. The Contractor shall have no claim arising from the Contractor's failure to designate the proposed source or to order the material in time for adequate testing and inspection. Necessary arrangements shall be made to permit the DCR to make factory, shop or other inspection of materials or equipment ordered for the Work in the process of manufacture or fabrication, as required by the Contract Documents. The DCR will not assume any obligation for the sampling and testing of materials other than on the Site, unless so required by the Specifications.

C. Where tests of materials will be made by the DCR or under its direction, the Contractor or his/her suppliers shall furnish such facilities as the DCR may require for collecting and forwarding samples and shall not make use of, nor incorporate into the Work, any material represented by the samples until the required tests have been made and the material accepted, unless otherwise directed. The Contractor in all cases shall furnish the required samples without charge. In the event of failure of materials to meet the Contract Documents, any retesting of new materials or of the same materials after reworking, shall be paid for by the Contractor.

D. The testing of the Work shall not relieve the Contractor of any of his/her obligations to fulfill the terms of the Contract as herein prescribed by the Contract Documents. Failure to reject any defective work or materials shall in no way prevent later rejection when such defect is discovered, notwithstanding that such defective work or materials had been previously overlooked or misjudged by the DCR and accepted or estimated for payment, nor shall such obligate the DCR to make final acceptance thereof. If sampling and testing reveal that the material is unsatisfactory, it will then be the responsibility of the Contractor to remove it from the Work, replace it, or blend it with such other material so that an acceptable material will be produced. The removal, replacement and blending of such material shall be done by the Contractor without additional compensation.

4. "Or Equal" Submissions.

A. Where products or materials are prescribed by manufacturer name, trade name, or catalog reference, the words "or Approved equal" shall be understood to follow. An item shall be considered equal to the item so named or described if in the opinion of the DCR (a) it is at least equal in quality, durability, appearance, strength, and design, (b) it performs at least equally the function imposed in the general design for the Work, and (c) it conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the Specifications. Any structural or mechanical changes made necessary to accommodate products or materials substituted as an "or equal" shall be at the expense of the Contractor. If the cost of the material substituted as an "or equal" is less than the cost of the material specified, such savings in cost shall be credited to the DCR and deducted from the price. "Approved equal" shall mean an item with respect to which the DCR shall have issued a written statement to the Contractor to the effect that the item is, in the DCR's opinion, equal within the meaning of this paragraph to that prescribed in the Contract Documents.

B. The Contractor shall be responsible for providing the DCR with any information and test results that the DCR reasonably requires to determine whether a material is equal to a material named or described in the Contract Documents.

C. The Contractor shall make all requests for substitution of a material named or described in the Contract Documents in writing, and at least thirty (30) days prior to the date the materials will be used in the Work, or immediately upon becoming aware of the following exigencies: (1) the non-availability of the specified material, (2) delay of the delivery of the specified material that will preclude the completion of the Work or any part thereof within the time specified in the Contract or (3) unforeseen field conditions that necessitate the substitution of the specified material. In no event shall the Contractor maintain a claim for delays based upon the DCR's review of such substituted materials if the Contractor failed to submit a written request for such substitution in accordance with the provisions of this paragraph. A written request for a material substitution due to an exigency set forth above shall be accompanied with documentation of the exigency, including but not limited to, a photocopy of a letter from the supplier or manufacturer stating that he/she is unable to furnish the specified materials and the reasons that he/she is unable to furnish the materials, as required by the DCR. If the Contractor's proposed substitution due to an exigency is declined, the DCR shall, at its discretion, specify an "or equal" substitution.

D. The Contractor shall have the burden of proof with respect to any claimed increases in the Contract Price resulting from the improper rejection by the DCR of any material proposed by the Contractor as an equal. No increase in the Contract Price shall be permitted unless the Contractor submits documentary evidence sufficient to prove to the reasonable satisfaction of the DCR that the rejection increased the Contractor's costs over the costs provided for in the Bid pricing documents, net of all savings the Contractor obtained by substituting other "or equal" items. The Contractor shall submit copies of all pricing materials, calculations, plans, Specifications, Drawings, and other design documents that the DCR deems necessary or desirable to evidence such increased costs. In calculating the Contractor's increased costs, a deduction shall be made for the amount of all costs that the Contractor would have incurred making structural or mechanical changes to include within the Work the item later found to have been improperly rejected.

5. Delivery and Storage of Materials: Inspection.

A. Materials and equipment shall be progressively delivered to the Site so that there will be neither delay in the progress of the Work nor an undue accumulation of materials that are not to be used within a reasonable time, and stored so that their security, quality, and fitness of the materials for the Work is preserved.

B. Vehicle Weight Limits

1. The Contractor's attention is directed to Chapter 90, Section 19A of the General Laws as amended concerning the weight limits for construction type motor vehicles.
2. No materials supplied for the project shall be accepted in vehicles whose gross weight exceed the legal load limits as determined by the regulatory agencies of the Commonwealth and Federal Government
3. Weight slips that indicate the load exceeding the legal load limit will not be countersigned by the DCR.

C. If the Engineer so requests, the Contractor, at any time before final acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed, will be at the Contractor's expense.

D. Necessary arrangements shall be made to permit the DCR to perform all required inspection and testing of materials or equipment ordered for the Work at the factory or shop during the process of manufacture or fabrication, or in storage on or off Site. The Contractor shall have no claims because of his/her failure to designate the proposed source of the material in time for adequate testing and inspection.

E. Materials stored off Site shall be insured and stored at the expense of the Contractor so as to guarantee the preservation of their security, quality, and fitness for the Work. Without derogating from the Contractor's responsibilities in the previous sentence, when necessary to avoid deterioration or damage, material (on or off Site) shall be placed on wooden platforms or other hard clean surfaces and not on the ground and shall be properly protected.

F. Expenses for inspection of material by DCR personnel including travel, quarters, and subsistence shall be borne by the Contractor requesting the inspection of material stored outside the Commonwealth of Massachusetts as part of the Contract Price. The policy of the DCR precludes the payment for material stored outside the boundaries of Massachusetts except in extremely limited circumstances with the express written consent of the DCR. If the Contractor requests an inspection of material stored outside the Commonwealth of Massachusetts, the DCR will initially pay for all expenses of inspecting the material incurred by DCR's personnel including travel, quarters, and subsistence. The DCR will then give Contractor an invoice for those costs and the Contractor shall submit a credit Change Order for the amount of those expenses.

G. Stored materials either at the Site or at some other location agreed upon in writing shall be so located as to facilitate prompt inspection and even though approved before storage, may again be inspected prior to their use in the Work.

H. Where no inspection of materials is arranged by the DCR and before such materials are incorporated into the work, the Contractor shall be required to submit to the DCR for approval, three copies of the Manufacturer's or Supplier's statement for each kind of material furnished, which shall contain the following information:

1. Work for which the material is consigned.
2. Name of the Contractor to which the material is supplied.
3. Description of material supplied.
4. Quantity of material supplied.
5. Means of identifying the consignment, such as label, marking, seal number, etc.
6. Date and method of shipment.
7. Statement to the effect that the material has been tested and found in conformance with the Contract Documents.
8. Results of all required tests, or in lieu of said results, the Manufacturer's, or Supplier's guarantee that he/she shall maintain said results, and make them available to the DCR for a period of not less than three years from the date of final acceptance of final payment by the Commonwealth.
9. Signature of a person duly authorized to bind the Manufacturer or Supplier.

I. All storage sites shall be restored to their original condition by the Contractor at the Contractor's expense. This shall not apply to the stripping and storing of topsoil, or to other materials salvaged from the work.

J. The Contractor shall take charge of and be liable for any loss of or injury to the materials for his/her use delivered to or in the vicinity of the place where the Work is being done, whether furnished by the DCR or otherwise. The Contractor shall notify the DCR as soon as any such materials are so delivered, allow them to be examined by the DCR, and furnish workers to assist therewith.

K. Private property shall not be used for storage purpose without the written permission of the property owner, and if requested by the DCR copies of such written permission shall be furnished by the Contractor.

6. Defective, Damaged, or Deteriorated Materials and Rejection Thereof.

The DCR may reject materials if the DCR reasonably determines that such materials do not conform to the Contract Documents in any manner, including but not limited to materials that have become damaged or deteriorated from improper storage whether or not such materials have previously been accepted. The Contractor at its own expense shall remove rejected materials from the Work. No rejected material, the defects of which have been subsequently corrected, shall be used except with the written permission of the DCR. Should the Contractor fail to remove rejected material within a reasonable time, the DCR may, in addition to any other available remedies, remove and/or replace the rejected material, and deduct the cost of such removal and/or replacement from any moneys due or to become due the Contractor. No extra time shall be allowed for completion of Work by reason of such rejection. The inspection of the Work shall not relieve the Contractor of any of its obligations herein prescribed, and any defective Work shall be corrected. Work not conforming to the Contract Documents may be rejected notwithstanding that such Work and materials have been previously overlooked or misjudged by the DCR and accepted for payment. If the Work or any part thereof shall be found defective at any time before Final Acceptance of the whole Work, the Contractor shall forthwith make good such defect in a manner satisfactory to the DCR. Nothing in the Contract shall be construed as vesting in the Contractor any property rights in the materials used after they have been attached or affixed to the Work or the Site; but all such materials shall upon being so attached or affixed become a property of the DCR.

7. Measurement

A. The method of measurement for materials necessary for the proper execution of the Work is set forth at the end of each Section of these Specifications. The computations to be used in determination of quantities of material furnished and of work performed under the Contract shall be selected by the DCR.

B. For the estimating of quantities in which the computations or areas by analytic and geometric methods would be comparatively laborious, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such area.

C. To aid the Resident Engineer in determining the quantities and weights of cement and other materials to be paid for, the Contractor shall, whenever so required, give him access to the proper invoices, bills of lading, etc., and shall provide scales and assistance for weighing, or assistance for measuring, any of the materials.

D. All measurements shall be confirmed by the DCR as they are made to determine the quantities of the various items of work performed. All measurements shall be made according to the United States Standard Units of Measurement.

E. Unless otherwise specified, longitudinal measurements for area computations will be made horizontally. Unless otherwise specified transverse measures for area computations will be the dimensions shown on the Drawings or in writing by the DCR.

F. All items which are measured by the linear foot, including, but not limited to pipe, culverts, guardrail, curbing, will be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the Drawings.

G. In computing volumes of excavation, the average end area method, or other methods acceptable to the DCR will be used.

H. A sworn weigher shall weigh all materials required to be weighed. The weighing of such materials may be witnessed by the DCR.

I. If materials are shipped by rail or trucks, the car weights or quarry weights may be accepted. Weight slips shall be provided for each shipment of material weighed. Each weight slip shall be signed by the sworn weigher, and countersigned, on delivery, by the DCR. Material listed on weight slips that are not countersigned by the DCR shall not be included for payment under the Contract.

J. When requested by the Contractor and approved by the DCR in writing, material specified to be measured in weight may be weighed and converted to volume measurement for payment purposes.

ARTICLE VI: PROSECUTION AND PROGRESS

1. Beginning, Progress Schedule, and Completion of Work.

A. The Contract time shall commence the work upon the date specified in the Notice to Proceed. The Contractor shall begin Work at the Site within ten (10) days of said date unless otherwise ordered in writing by the DCR.

B. Within seven (7) days after the issuance of the Notice to Proceed, Saturdays, Sundays and legal holidays excluded, the Contractor shall submit to the DCR a progress schedule for the term of the Contract as required by the Contract Documents, showing in detail his/her proposed progress for the construction of the various parts of the Work and the proposed times for receiving required materials. Upon approval by the DCR, said schedule shall constitute the Progress Schedule. The Contractor shall at the end of each month, or more often if required, furnish to the DCR a schedule meeting the requirements of the Specifications showing the actual progress of the parts of the Work in comparison with the Progress Schedule.

C. Time is of the essence of this Contract. The Work shall be completed within the time specified in Article 2 of the Department of Conservation and Recreation - Contractor Agreement. Should the Contractor require additional time to complete the Work, the Contractor shall document the reasons therefor and submit a written request for an extension of time within 20 days of the occurrence of the event alleged to be the cause of the delay, as provided in this Article and in Article VII of these General Conditions of the Contract. Failure to submit said written request within the time required by the preceding sentence shall preclude the Contractor from subsequently claiming any time extension due to said delay.

D. If, in the opinion of the DCR, the Contractor fails to comply with the construction schedule as set forth in the Contractor's bid or the Project specifications, the DCR may give the Contractor a notice specifying the time limits and performance standards that the Contractor is failing to meet whereupon (1) the Contractor shall, if the notice requires, discontinue all or any portion of the Work (which discontinuance shall neither terminate the Contract nor give the Contractor any claim for an increase in the Contract Price, damages, or an extension of any completion deadlines); or (2) at Contractor's sole cost increase the work force, equipment and plant, or any of them, employed on the whole or any part of the Work, to the extent required by such notice, and employ the same from day to day until the completion of the Work or such part thereof, or until the failure regarding the rate of progress, in the opinion of the DCR, shall have been sufficiently corrected.

E. If, in the opinion of the DCR, the Contractor fails to comply with the construction schedule, and whether or not the DCR shall have given the Contractor a notice described in D above, the DCR may (but shall not be required to) give the Contractor notice of such failure and five (5) days to cure the same. Unless the Contractor shall within that five days take all necessary steps to do so (including, if the DCR requires, increasing its forces, equipment and plant) and continue to do so until in the opinion of the DCR the failure is corrected, the DCR may at the Contractor's expense and without terminating this Contract take exclusive or joint possession of all or a portion of the Site and employ and direct the labors of existing or such additional forces, equipment and plant as may in the DCR's opinion be necessary to insure the completion of the Work or such part thereof within the time specified in the Contract Documents or at the earliest possible date thereafter. The DCR may exercise its rights under this Article at any time and from time to time without waiving any of its rights under this Contract, at law or in equity, including, without limitation, the right to deem this Contract terminated or to order the Contractor to discontinue the Work at any time thereafter. The Contractor shall continue to perform the remaining Work under this Contract even if the DCR elects to have another contractor perform a portion of the Work under this Article.

F. The DCR shall deduct the cost of any actions the DCR takes under this Article from any amount then due or which might have become due to the Contractor under this Contract had the Contractor performed as required. On demand, the Contractor shall pay the DCR any amount by which the cost of completing all or any portion of the Work exceeds the amount attributable to that Work under the Contract Documents. The DCR's sole goal will be to complete the Work that it elects to complete within the time limits stated in the Contract or at the earliest possible date thereafter. Consequently, the DCR shall have no obligation to obtain competitive bids or the lowest cost for completing the Work or any part thereof, except when it is required by law. The DCR's election to complete all or part of the Work shall not release the Contractor from any liability for failure to complete the Work as the Contract Documents require and shall not entitle the Contractor to a claim for an increase in the Contract Price or an extension of the time for completing the Work. If the cost that the DCR incurs in completing all or any portion of the Work is less than the amount that the Contract Documents attribute to that Work, the DCR will pay or credit the difference to the Contractor, less any other costs and expenses that the DCR incurs, including the cost of supervision, and attorneys' fees and costs.

2. Failure to Complete Work on Time - Liquidated Damages.

A. If liquidated damages are specified in the Department of Conservation and Recreation - Contractor Agreement, the DCR has determined that its damages as a result of Contractor's failure to complete the Work fully within the time specified will be difficult or impracticable to ascertain. Accordingly, if the Work is not completed to such point by the date specified in this Contract, the Contractor shall pay to the DCR the sum designated as liquidated damages in the Contract for each and every calendar day that the Contractor is in default in completing the Work to such point. Such moneys shall be paid as liquidated damages, not as a penalty, to cover losses and expenses to the DCR resulting solely from the fact that the Work is not completed on time.

B. Similarly, if the Contract states that by a specified date a designated portion of the Work shall be fully completed, and if such portion has not been prosecuted to such point by said date, the Contractor shall pay to the DCR the sum designated in the Contract for each calendar day that the Contractor is in default in completing such portion of the Work to such point. Such moneys shall also be paid as liquidated damages, not as a penalty, to cover losses and expenses to the Department of Conservation and Recreation resulting solely from the fact that the Work is not completed on time.

C. The DCR may recover such liquidated damages by deducting the amount thereof from any moneys due or that might become due the Contractor, and if such moneys shall be insufficient to cover the liquidated damages, then the Contractor or the Surety shall pay to the DCR the amount due.

D. Permitting the Contractor to continue and finish the Work or any portion of it after the time fixed in the Contract for its completion shall not be deemed as a waiver of any of the DCR's rights hereunder, at law or in equity.

E. Liquidated damages or a portion thereof may be waived by the DCR if the Contractor submits evidence satisfactory to the DCR that the delay was caused solely by conditions beyond the control of the Contractor and that the DCR has not suffered any damages as a result of said delay.

F. Failure by the DCR to specify a sum as liquidated damages in the Department of Conservation and Recreation - Contractor Agreement, or the insertion of "N/A" or "none" in the space provided therein for liquidated damages, shall not be deemed a waiver of the DCR's right to recover actual damages arising from the Contractor's failure to complete the Work on time.

3. Delays: Statutory Provisions (M.G.L. c. 30, sec. 39O).

A. Notwithstanding any provision of this Contract to the contrary, except as otherwise provided by law as set forth in paragraph B below, the Contractor shall not be entitled to increase the Contract Price or to receive damages on account of any hindrances or delays, avoidable or unavoidable; but if any delay is caused in the opinion of the DCR, the Contractor shall be entitled to an extension of time. The length of the extension shall be sufficient in the opinion of the DCR for the Contractor to complete the Work. Although no delay shall increase the Contract Price, the DCR may require that any change in the date by which the Contractor must complete all or any part of the Work be processed on a Change Order form.

B. If a suspension, delay, interruption or failure to act of the DCR increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the Contractor with respect to such increase as the Contractor shall have against the DCR by virtue of (a) and (b) of M.G.L. c. 30, s. 39O set forth below, but nothing in provisions (a) and (b) shall alter any other rights which the Contractor or the subcontractor may have against each other. As used in the statutory language of (a) and (b) below, "contract" means this Contract, "general contractor" means the Contractor and "awarding authority" means the DCR:

"(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided, however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim."

4. Occupancy and/or Use of Project Prior to Final Acceptance.

A. The Contractor agrees to the occupancy and/or use of the Project or any portion thereof before Final Acceptance of the Work by the DCR.

B. The DCR will cooperate with the Contractor with respect to the completion of the Work by taking such reasonable steps as may be possible to avoid interference with the Contractor's Work provided that they do not interfere with the proper functioning of the facility.

C. The Contractor shall not be responsible for wear and tear or damage resulting solely from temporary occupancy.

D. Occupancy and/or use of any part of the Work prior to Final Acceptance by the DCR shall not relieve the Contractor from maintaining the required payment and performance bonds and insurance (to the extent that insurance is required to be maintained after Substantial Completion) required by this Contract.

5. Substantial Completion – Punch List.

A. When the Work, or portion thereof which the DCR agrees to accept separately has reached the state of Substantial Completion as shown on an Approved payment request, the Contractor shall develop, with the participation of the DCR, the Punch List identifying those items of unfinished or unacceptable Work that remain to be performed or corrected under the Contract.

B. Before the Work shall be deemed completed to the point where it is ready for the issuance of Final Acceptance, the Contractor shall:

- (1) Provide Contractor's proposed Punch List containing a statement of the reason for each item listed thereon.
- (2) Advise the DCR of proposed changes in insurance in accordance with the provisions of this Contract, and provide to the DCR evidence of the Contractor's Completed Operations insurance coverage to the extent required by the Contract Documents.
- (3) Execute and submit a notarized warranty on a form provided by the DCR meeting the requirements of Article IX of these General Conditions of the Contract, to commence upon the date of the Certificate of Final Acceptance, unless otherwise provided in the Certificate of Final Acceptance.
- (4) Submit signed special warranties and warranties of longer than one year as required by the Contract Documents.
- (5) Submit signed maintenance agreements for all portions of the Work specified to receive maintenance after the issuance of the Certificate of Final Acceptance.
- (6) Submit all preliminary record Drawings to the DCR and documents and framed data in the forms required by the Contract Documents.
- (7) Complete all items required to be completed by the Department of Public Safety and obtain a Certificate of Occupancy from the Department of Public Safety and similar releases which permit the full and unrestricted use of the areas claimed to be ready for occupancy.
- (8) Deliver specified maintenance stocks of materials, required spare parts, and all special tools furnished by manufacturers to persons designated by the DCR and obtain written receipts for same.
- (9) Make final changes of lock cylinders or cores and advise the DCR of the change of project security responsibility.
- (10) Complete start-up of systems, and instruct DCR personnel on proper operation and routine maintenance of all systems and equipment.
- (11) Remove all remaining temporary facilities that are no longer needed, surplus materials, and debris; (the Contractor shall not remove construction offices and trailers without the prior Approval of the DCR).
- (12) Submit final utility meter readings and similar information and advise the DCR of the change of responsibility for utility charges and payments upon occupancy and/or use,
- (13) Complete final clean-up of all Work, restoration of damaged land and property, including finishes, and replacement of all damaged and broken glass not listed on the Contractor's Punch List.
- (14) Complete such other items as may be called for in the Special Conditions, if any, or Specifications.

C. After completing the items specified in subsection A above, the Contractor shall make a written request for the DCR's inspection for a Certificate of Final Acceptance in accordance with the Contract Documents. The DCR shall review the submittals and the Work and shall either 1) sign a Certificate of Final Acceptance or 2) notify the Contractor of incomplete and/or incorrect Work that must be completed and corrected prior to the issuance of the Certificate of Final Acceptance. The DCR shall notify the Contractor of any additions to the Punch List. In connection with the execution of the Certificate of Final Acceptance, the DCR shall assign dollar values to each item on the Punch List. Failure to include any incomplete or defective item on the Punch List shall not relieve the Contractor of the obligation to complete all Work in accordance with the Contract Documents.

6. Final Acceptance of the Work.

A. Prerequisites for Final Acceptance. After the Contractor has completed all of the Work required by this Contract, including Change Orders and Punch List Items, the Contractor shall submit the following completed items to the DCR together with such additional items as may be specified in the Contract Documents:

- (1) A final request for payment showing a final accounting of all changes in the Work.
- (2) Certification and satisfactory evidence that all taxes, fees, and similar obligations have been paid.
- (3) Consent of the Surety to Final Payment executed by applicable bonding companies.
- (4) Certified copy of the Punch List stating that the Contractor has completed or corrected every item listed.
- (5) Evidence of the Contractor's continuing Completed Operations Insurance coverage to the extent required by the Contract Documents.
- (6) All final record Drawings and documents in the forms specified by the Contract Documents.
- (7) A notarized certification that all purchases made under the tax exemption certificate were legitimate and entitled to exemption.
- (8) Written certifications from the Department of Public Safety and/or the DCR, where required, to the effect that: a) the Work has been inspected for compliance with the Contract Documents and has satisfied the Department of Public Safety; b) all equipment and systems included in the Work have been tested in the presence of the DCR and are operational and satisfactory; c) the Work is completed and ready for final inspection.
- (9) Such other items as may be required by the Contract Documents.

B. Reinspection; Final Acceptance. After notification from the Contractor that all remaining contract exceptions, omissions, and incompletions have been completed (with the exception of the Contractor's continuing warranty, insurance, indemnification, and such other obligations as are intended by the terms of the Contract Documents to extend beyond the date of Final Acceptance), the DCR shall inspect the Work to verify the completion of the same. If the Work is satisfactory, the DCR shall prepare a Certificate of Final Acceptance or shall notify Contractor of items which remain to be completed prior to Final Acceptance.

7. One-Year Warranty Repair List and Inspection.

Approximately 30 days prior to the expiration of the comprehensive one-year warranty period, the Contractor shall schedule an appointment with the DCR for a re-inspection of the Work with the DCR and shall thereafter inspect the Work at the time scheduled. Based on this inspection and on prior inspections, the DCR shall issue a "Warranty Repair List" of items to be corrected by the Contractor. The Contractor shall make the repairs and/or replacements listed within 30 days of the issuance of the Warranty Repair List unless otherwise agreed by the DCR in writing.

ARTICLE VII: CHANGES IN THE WORK

1. Change Orders Generally.

A. The DCR may, pursuant to the provisions of M.G.L. c. 30, sec. 39K, authorize in writing, alterations in the line, grade, plans, form, dimensions or materials of the work, or any part thereof, either before, or after the commencement of construction. If such alterations diminish or increase the quantity included to be done and paid for at a unit price, or work substituted for the work specified is of a different cost and quality, the parties shall be governed by the aforesaid provisions of Law. No changes in the Work shall be made in absence of a Change Order defined in Article I of these General Conditions of the Contract, directing the Contractor to perform such changes. A request for a change in the provisions of this Contract may be submitted to the DCR by the Contractor, Project Engineer or Resident Engineer. The request must be made in writing and in accordance with the provisions of this Contract, Laws, and the procedures of the DCR. The DCR reserves the right to increase or decrease quantities, to eliminate portions of the work or add work of similar nature, and to direct the commencement and order of prosecution of various portions of the work.

B. A Change Order may be issued by the DCR for changes in the Work within the scope of the Contract, including but not limited to, changes in: (1) the Plans and Specifications; (2) the method or manner of performance of the Work; (3) the DCR-furnished facilities, equipment, materials, services, or Site; (4) the schedule for performance of the Work.

C. The Contractor shall immediately perform any Change Order work that is ordered by the DCR.

D. Whenever a Change Order is issued and said Change Order will cause a change in the Contractor's cost, the Contractor or the DCR may request an equitable adjustment in the Contract Price. A request for such an adjustment shall be in writing and shall be submitted by the party making such claim to the other party before commencement of the pertinent work or as soon thereafter as possible.

E. The DCR and the Contractor shall negotiate in good faith an agreement on an equitable adjustment in the Contract Price, and/or time if appropriate, before commencement of the pertinent work or as soon thereafter as is possible. In the absence of an agreement for an equitable adjustment, the DCR shall unilaterally determine the costs attributable to the change and provide the Contractor with a written notice to that effect. The determination of the DCR shall be final as to all questions of the amount and value of extra work, where the Contractor does not appeal said decision pursuant to the process set forth in this paragraph. The Contractor may appeal the decision of the DCR within thirty days of receipt of said notice, to the Commissioner of the DCR or his designee. The Contractor shall have the right to such further appeal as is provided in M.G.L. c. 30, sec. 39Q set forth in Section 4.D of this Article VII. However, if the Contractor shall exercise its rights to appeal the decision of the DCR as aforesaid, the Contractor shall be required to engage in the mediation procedures set forth in Section 5 of this Article VII, should the DCR require such mediation.

F. During the negotiation of an equitable adjustment in the Contract Price, the Contractor shall, if requested, provide the DCR with all cost and pricing data used by him in computing the amount of the equitable adjustment, and the Contractor shall certify that the pricing data used was accurate, complete, and current. If the DCR subsequently determines that the data submitted by the Contractor was incomplete, incorrect, or not current, the DCR may exclude such data from consideration under the equitable adjustment request.

2. Methods of Computing Equitable Adjustments.

A. Equitable adjustments in the Contract Price shall be determined according to one of the following methods, or a combination thereof, as determined by the DCR: (1) fixed price basis, provided that the fixed price shall be inclusive of items (a) through (e) below and shall be computed in accordance with those provisions; (2) estimated lump sum basis to be adjusted in accordance with Contract unit prices or other agreed upon unit prices provided that the unit prices shall be inclusive of all costs related to such equitable adjustment; (3) time and materials basis to be subsequently adjusted on the basis of actual costs (but subject to a predetermined "not to exceed limit") calculated as follows:

(a) the direct cost (or credit) for labor at the minimum wage rates established for this Contract pursuant to M.G.L. c. 149, sections 26-27H, and the direct cost for material and use of equipment.

(b) plus (or minus) the cost of Workmen's Compensation Insurance, Liability Insurance, Federal Social Security and Massachusetts Unemployment Compensation, or as an alternative the Contractor may elect to use a flat 30% of the total labor rate computed in accordance with subparagraph (a) above.

(c) plus, an allowance equal to 20% of the amount of (a) above for overhead, superintendence, and profit; (In the case of Item 1 work, which is the work of the Contractor and all his non-filed Subcontractors, said 20% allowance shall be paid to the Contractor and the Contractor and said non-filed Subcontractors shall agree upon the distribution of this amount as a matter of contract between them. In the case of Item 2 work, which is work performed by a Subcontractor filed pursuant to M.G.L. c. 149, sec. 44F, said 20% allowance shall be paid to the filed Subcontractor, it being understood that this provision does not apply to other Subcontractors including sub-Subcontractors listed under paragraph E of the form for sub-Bid).

(d) plus, for work performed by a Subcontractor filed pursuant to M.G.L. c. 149, sec. 44F, an additional allowance equal to 7% of the sum of (a) through (c) above as full compensation to the Contractor for processing forms and assuming full responsibility for the faithful performance of such work by said filed Subcontractor(s).

(e) plus (or minus) the actual direct additional premium costs and expenses incurred as a result of collective bargaining agreements or other agreements between organized labor and employers, and plus (or minus) the actual direct premium cost of payment and performance bonds required of the Contractor and filed Subcontractors for this Contract.

B. If the net change is an addition to the Contract Price, it shall include the Contractor's overhead, superintendence, and profit. On any change that involves a net credit, no allowance for overhead, superintendence and profits shall be included. For any change that does not include labor performed or materials installed in the Project, there will be no markup for the Contractor's overhead, superintendence, and profit, even though there may be a net increase in the Contract Price. Charges for small tools known as "tools of the trade" are not to be computed in the amount of any change in the Contract Price.

C. Statutory Contract adjustments made under the provisions of M.G.L. c. 149, sec. 44F shall not be considered Change Orders and shall not entitle the Contractor to any adjustments for overhead, profit, and superintendence, although the DCR may require that such Contract adjustments be processed on standard Change Order and equitable adjustment forms.

3. Work Performed Under Protest.

The Contractor agrees to perform all Work as directed by the DCR, and if the Project Engineer determines that certain Work that the Contractor believes to be or to warrant a Change Order under this Article does not represent a change in the Work, the Contractor shall perform said Work. The Contractor shall be deemed to have concurred with the Project Engineer's determination as aforesaid unless the Contractor shall perform Work under protest in compliance with the following sub-paragraphs (1) and (2) below:

(1) If the Contractor claims compensation for a change in the Work that is not deemed by the Project Engineer to be a change or to warrant additional compensation as claimed by the Contractor, the Contractor shall within one week after the commencement of any such work or the sustaining of any such damage submit to the Resident Engineer a written statement of the nature of such work or claim. The Contractor shall not be entitled to additional compensation for any work performed or damage sustained for which written notice is not given within the time limit specified in the preceding sentence, even though similar in character to work or damage with respect to which notice is timely given.

(2) On or before the fifteenth day of the month succeeding that in which any such extra work shall have been done or any such damage shall have been sustained, the Contractor shall file to the extent possible with the Resident Engineer, itemized statements of the details and costs of such work performed, or damage sustained. If the Contractor shall fail to make such statement to the extent possible, then the Contractor shall not be entitled to additional compensation for any such work or damages.

4. False Claims. Statutory Provisions Regarding Changes.

A. Criminal Penalties: The Contractor's attention is directed to M.G.L. c. 30, sec. 39I which provides criminal penalties for unauthorized deviations from the Plans and Specifications, and to M.G.L. c. 30, sec. 39J, and if performing work on a capital facility project, M.G.L. c. 7, sec. 42E-42I. The Contractor's attention is also directed to M.G.L. c. 266, sec. 67B which provides criminal penalties for false claims by Contractor under this Contract: *"Whoever makes or presents to any employee, department, agency or public instrumentality of the commonwealth, or of any political subdivision thereof, any claim upon or against any department, agency, or public instrumentality of the commonwealth, or any political subdivision thereof, knowing such claim to be false, fictitious, or fraudulent, shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than five years, or in the house of correction for not more than two and one-half years, or both."*

B. Differing Site Conditions (M.G.L. c. 30, sec. 39N): *"If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the Site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing Site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly."*

C. Timely Decision by Awarding Authority. (M.G.L. c. 30, sec. 39P): *"Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made."*

D. Change Order / Contract Interpretation Appeal Procedure (M.G.L. c. 30, sec. 39Q): The following provisions apply to every contract awarded by any state agency as defined by M.G.L. c. 7, sec. 39A for the construction, reconstruction, alteration, remodeling, repair, or demolition of any capital facility as defined by the aforesaid section 39A:

"(a) Disputes regarding changes in and interpretations of the terms or scope of the contract and denials of or failures to act upon claims for payment for extra work or materials shall be resolved according to the following procedures, which shall constitute the exclusive method for resolving such disputes. Written notice of the matter in dispute shall be submitted promptly by the claimant to the chief executive official of the state agency which awarded the contract or his designee. No person or business entity having a contract with a state agency shall delay, suspend, or curtail performance under that contract as a result of any dispute subject to this section. Any disputed order, decision or action by the agency or its authorized representative shall be fully performed or complied with pending resolution of the dispute.

"(b) Within thirty days of submission of the dispute to the chief executive official of the state agency or his designee, he shall issue a written decision stating the reasons therefore, and shall notify the parties of their right of appeal under this section. If the official or his designee is unable to issue a decision within thirty days, he shall notify the parties to the dispute in writing of the reasons why a decision cannot be issued within thirty days and of the date by which the decision shall issue. Failure to issue a decision within the thirty-day period or within the additional time period specified in such written notice shall be deemed to constitute a denial of the claim and shall authorize resort to the appeal procedure described below. The decision of the chief executive official or his/her designee shall be final and conclusive unless an appeal is taken as provided below.

"(c) Within twenty-one calendar days of the receipt of a written decision or of the failure to issue a decision as stated in the preceding subparagraph, any aggrieved party may file a notice of claim for an adjudicatory hearing with the division of hearing officers or the aggrieved party may file an action directly in a court of competent jurisdiction and shall serve copies thereof upon all other parties in the form and manner prescribed by the rules governing the conduct of adjudicatory proceedings of the division of hearing officers. In the event an aggrieved party exercises his option to file an action directly in court as provided in the previous sentence, the twenty-one-day period shall not apply to such filing and the period of filing such action shall be the same period otherwise applicable for filing a civil action in superior court. The appeal shall be referred to a hearing officer experienced in construction law and shall be prosecuted in accordance with the formal rules of procedure for the conduct of adjudicatory hearings of the division of hearing officers, except as provided below. The hearing officer shall issue a final decision as expeditiously as possible, but in no event more than one hundred and twenty calendar days after conclusion of the adjudicatory hearing, unless the decision is delayed by a request for extension of time for filing post-hearing briefs or other submissions assented to by all parties. Whenever, because an extension of time has been granted, the hearing officer is unable to issue a decision within one hundred and twenty days, he shall notify all parties of the reasons for the delay and the date when the decision will issue. Failure to issue a decision within the one-hundred-and-twenty-day period or within the additional period specified in such written notice shall give the petitioner the right to pursue any legal remedies available to him without further delay.

"(d) When the amount in dispute is less than ten thousand dollars, a contractor who is party to the dispute may elect to submit the appeal to a hearing officer experienced in construction law for expedited hearing in accordance with the informal rules of practice and procedure of the division of hearing officers. An expedited hearing under this subparagraph shall be available at the sole option of the contractor. The hearing officer shall issue a decision no later than sixty days following the conclusion of any hearing conducted pursuant to this subparagraph. The hearing officer's decision shall be final and conclusive and shall not be set aside except in cases of fraud."

5. Mediation.

In the case of every dispute where the dollar amount in dispute (or the estimated dollar value of the extension of time in dispute) is \$50,000 or more and the Contractor appeals the decision of the DCR or his designee described in Section 4.B above, the DCR shall retain the option at its sole discretion of initiating a process whereby the DCR and the Contractor shall engage in good faith in a non-binding mediation process, which process shall be concluded within sixty days from the date that the Contractor files an appeal from said decision as provided in Section 4.B above.

ARTICLE VIII: PAYMENT PROVISIONS

1. Schedule of Values.

Before the first application for payment the Contractor shall submit to the DCR a schedule of values allocated to various portions of the Work in sufficient detail to reflect the various major components of each trade (with filed Subcontractors as well as MBE/WBE noted), including quantities when requested, aggregating the total Contract Price, and divided so as to facilitate payments for work under each section of the Specifications. The schedule shall be prepared in such form and supported by such data to substantiate its accuracy as the DCR may require. Each item in the schedule shall include its proper share of overhead and profit. When approved by the DCR, it shall constitute the Schedule of Values and shall be used only as a basis for the Contractor's requests for payments.

2. Payment Liabilities of Contractor.

A. The Contractor shall pay to the DCR all expenses, losses, and damages, as determined by the DCR, incurred in consequence of any default, defect, omission or mistake of the Contractor or his/her employees or Subcontractors or the making good thereof.

B. If the Work (or a portion thereof) is not completed to Substantial Completion and the Contractor has not fully completed the Work by the date specified in Article 2 of the Department of Conservation and Recreation - Contractor Agreement, the Contractor shall pay to the DCR liquidated damages as provided in Article VI, Section 2 of these General Conditions of the Contract.

3. Retention of Moneys by the DCR.

A. The DCR may keep any moneys which would otherwise be payable at any time hereunder, and apply the same, or so much as may be necessary therefor, to (1) the DCR's expenditures for the Contractor's account, (2) to secure the DCR's remedies against the Contractor for the Contractor's breach of its obligations under this Contract or the breach of any person performing any part of the Work and (3) the payment of any expenses, losses or damages incurred by the DCR as a result of the failure of the Contractor to perform its obligations hereunder. The DCR may retain, until all claims are settled, such moneys as the DCR estimates to be the fair value of the DCR's claims against the Contractor, and of all claims for labor performed or furnished and for materials used or employed in or in connection with the Work and for the rental of vehicles, appliances and equipment employed and for the employment of substitute contractors and labor in connection with the Work, in accordance with M.G.L. c. 30, sections 39A and 39F. The DCR may make such settlements and apply thereto any moneys retained under this Contract.

B. The Contractor shall each week examine all claims so filed, and if the same are in any respect incorrect or do not correctly show the amount due from the Contractor to the claimant for such labor and materials, the Contractor shall forthwith file with the DCR a separate written statement of all inaccuracies in each claim and of the correct amount due from the Contractor to each claimant therefor, and shall immediately file a statement of all payments thereafter made to such claimants. Each such statement shall be sworn to and contain a detailed breakdown as required by M.G.L. c. 30 s. 39F(d). Unless such statements are so filed by the Contractor the amount shown by the claims filed shall at the option of the DCR be conclusively deemed to be the accurate amount due from the Contractor therefor in all accounting with the DCR. If the moneys retained under this Contract are insufficient to pay the sums found by the DCR to be due under the claims for labor and materials filed as aforesaid, the DCR may, at its discretion, pay the same, and the Contractor shall repay to the DCR all sums paid out. The DCR may also at its discretion use any moneys retained, due or to become due under this Contract, for the purpose of paying for both labor and materials used or employed in the Work for which claims have not been filed with the DCR.

C. No moneys retained under the provisions of this Article shall be held to be statutory security for the payment of claims filed in accordance with the provisions of M.G.L. c. 149, sec. 29, as amended, for which security is provided by bond.

4. Applications for Payment.

A. The Contractor shall, once in each month on the day of the month corresponding to the day of the month specified in the Notice to Proceed referenced in Article 2 of the Department of Conservation and Recreation - Contractor Agreement, in writing and in the manner prescribed by the DCR, submit to the Resident Engineer a statement showing the total amount of Work done to the time of such estimate and the value thereof as approved by the Resident Engineer and the Project Engineer. It shall be the sole responsibility of the Contractor to deliver or cause to be delivered to the Resident Engineer said periodic estimate in proper form, approved as provided above and arithmetically correct. All periodic estimates shall contain such certifications and other evidence supporting the Contractor's right to payment as the DCR may require, including without limitation, lien waivers and other evidence, on such forms as the DCR may require, establishing that title to the equipment or materials is unencumbered and has been transferred to the Department of Conservation and Recreation. If there is no Resident Engineer assigned to the Contract, the DCR shall designate a person at the project field office or alternatively the home office of the DCR. The Contractor shall include in such periodic estimate only such materials as are incorporated in the Work, except as provided in paragraph C below. The DCR shall retain no more than five percent of such estimated value as part security for the completion of the Work and shall pay to the Contractor while carrying on the Work the balance not retained as aforesaid, subject to the approval of the DCR after deducting therefrom all previous payments and all sums to be kept under the provisions of this Contract.

B. Each periodic estimate shall constitute the Contractor's representation that (1) the payment then requested to be disbursed has been incurred by the Contractor on account of the Work and is justly due to Subcontractors or, to the Contractor in the case of other Work performed by the Contractor on account thereof, (2) the materials, supplies and equipment for which Application for Payment is being submitted have been installed or incorporated into the Work or have been stored at the Site or at such off Site storage locations as the DCR shall have Approved, (3) the materials, supplies and equipment are insured in accordance with the provisions of this Contract, (4) the materials, supplies and equipment are owned by the Department of Conservation and Recreation and are not subject to any liens or encumbrances, (5) the Work which is the subject of such periodic estimate has been performed in accordance with the Contract Documents and (6) that all due and payable bills with respect to the Work have been paid to date or shall be paid from the proceeds of such periodic estimate. The Contractor's attention is directed to the criminal penalties for false claims referenced in paragraph A above.

C. The Contractor may include in a periodic estimate the value of materials or equipment delivered at the Site (or at some location agreed to in writing) only upon delivery to the DCR of: (1) an acceptable transfer of title on the form provided by the DCR; (2) written certification by the Contractor (or applicable subcontractor) on the form provided by the DCR that the Contractor (or the Subcontractor which executed the transfer of title) is the lawful owner and that the materials or equipment are free from all encumbrances, accompanied by receipted invoices or other acceptable proof of encumbrance-free ownership if such proof is deemed necessary by the DCR; (3) a stored materials insurance binder that covers the materials for which payment is requested, that names the Department of Conservation and Recreation as an insured party should the stored materials be subjected to any casualty, loss, or theft prior to their inclusion in the Work. The material(s) or equipment must, in the judgment of the DCR (1) meet the requirements of the Contract, including prior drawing, product data, and sample approval, (2) be ready for use, and (3) be properly stored by the Contractor and be adequately protected until incorporated into the Work. See also Article V.5.C of these General Conditions of the Contract concerning the cost of inspections.

D. The DCR may make changes in any periodic estimate submitted by the Contractor in accordance with M.G.L. c. 30, sec. 39K for building projects (see below), and in accordance with M.G.L. c. 30, sec. 39G for public works projects (see below), and the payment due shall be computed in accordance with the changes so made. The provisions of said section 39K shall govern payments for building projects on which the DCR has made changes, and the provisions of said section 39G shall govern payments for public works projects on which the DCR has made changes.

E. No certificate for payment and no progress payment shall constitute acceptance of Work that is not in accordance with the Contract Documents.

F. The Contractor and all Subcontractors furnishing labor on this Contract agree to furnish certified payroll reports if requested to do so, at no additional expense to the DCR. The DCR may at all reasonable times audit such reports.

5. Periodic Payments (M.G.L. c. 30, sec. 39K) for Building Projects.

For building contracts, the DCR shall make payment to the Contractor in accordance with M.G.L. c. 30, sec. 39K, which provides as follows:

" Within fifteen days (30 days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority upon certification by the contractor that he is the lawful awarding authority and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five percent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one percent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the Contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such period estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the change so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair, or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed sub-trade and each sub-sub-trade listed in sub-bid form as required by specifications and column listing the amount paid to each filed subcontractor as of the date of the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149."

6. Payment of Subcontractors (M.G.L. c. 30, sec. 39F).

The Contractor shall make payments to Subcontractors in accordance with the provisions of M.G.L. c. 30, sec. 39F, which is quoted in this section below, where applicable. (M.G.L. c. 30, sec. 39F requires that subparagraphs (a) through (h) be set forth in contracts awarded under M.G.L. c. 30, sec. 39M and M.G.L. c. 149, sections 44A-44H; said statute requires that subparagraph (i) be set forth in contracts awarded under M.G.L. c. 149, sections 44A-44H).

"1(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general Contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the Plans and Specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (1) and (2) the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deduction from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (5) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demand for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (6) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the General contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a General contractor amounts which, together with the deposits in interest bearing accounts pursuant to subparagraph (6) are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (1) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (1), the subcontractor may demand direct payment by following the procedure in subparagraph (4) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority, or which are on deposit pursuant to subparagraph (6) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "subcontractor" as used in this section (l) for contracts awarded as provided in sections forty-four A to forty-four L, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and received a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (1) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in sections forty-four A to forty-four L, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposit as provided in subparagraph (6) by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (6) by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general Contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (5) and in subparagraph (6).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (5) and in subparagraph (6) any amount held under a trustee writ or pursuant to a restraining order or injunction."

7. Contracts for Public Works Governed by M.G.L. c. 30, sec. 39G:

The following statutory provision applies only to contracts for public works governed by M.G.L. c. 30, sec. 39G: *"Upon substantial completion of the work required by a Contract with the Owner, or any agency or political subdivision thereof, for the construction, reconstruction, alteration, remodeling, repair or improvement of public ways, including bridges, and other highway structures, sewers and water mains, airports and other public works, the contractor shall present in writing to the awarding authority its certification that the work has been substantially completed. Within twenty-one days thereafter, the awarding authority shall present to the contractor either a written declaration that the work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the Contract sufficient to demonstrate that the work has not been substantially completed. The awarding authority may include with such a list a notice setting forth a reasonable time, which shall not in any event be prior to the Contract completion date, within which the contractor must achieve substantial completion of the work. In the event that the awarding authority fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the contractor's certification within the twenty-one-day period, the contractor's certification shall take effect as the awarding authority's declaration that the work has been substantially completed.*

Within sixty-five days after the effective date of a declaration of a substantial completion, the awarding authority shall prepare and forthwith send to the contractor for acceptance a substantial completion estimate for the quantity and price of the work done and all but one percent retainage of that undisputed part of each work item and extra work item in dispute but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory work items and less the total periodic payments made to date for the work. The awarding authority also shall deduct from the substantial completion estimate an amount equal to the sum of all demands for direct payments filed by subcontractors and not yet paid to subcontractors or deposited in joint accounts pursuant to section thirty-nine F, but no Contract subject to said section thirty-nine F shall contain any other provision authorizing the awarding authority to deduct any amount by virtue of claims asserted against the Contract by subcontractors, material suppliers or others.

If the awarding authority fails to prepare and send to the contractor any substantial completion estimate required by this section on or before the date herein above set forth, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such substantial completion estimate at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the awarding authority sends that substantial completion estimate to the contractor for acceptance or to the date of payment therefor, whichever occurs first. The awarding authority shall include the amount of such interest in the substantial completion estimate.

Within fifteen days after the effective date of the declaration of substantial completion, the awarding authority shall send to the contractor by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory work items, and, unless delayed by causes beyond his control, the contractor shall complete all such work items within forty-five days after the receipt of such list or before the then Contract completion date, whichever is later. If the contractor fails to complete such work within such time, the awarding authority may, subsequent to seven days' written notice to the contractor by certified mail, return receipt requested, terminate the Contract, and complete the incomplete or unsatisfactory work items and charge the cost of same to the contractor.

Within thirty days after receipt by the awarding authority of a notice from the contractor stating that all of the work required by the Contract has been completed, the awarding authority shall prepare and forthwith send to the contractor for acceptance a final estimate for the quantity and price of the work done and all retainage on that work less all payments made to date, unless the awarding authority's inspection shows that work items required by the Contract remain incomplete or unsatisfactory, or that documentation required by the Contract has not been completed. If the awarding authority fails to prepare and send to the contractor the final estimate within thirty days after receipt of notice of completion, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such final estimate at the rate hereinabove provided from the thirtieth day after such completion until the date on which the awarding authority sends the final estimate to the contractor for acceptance or the date of payment therefore, whichever occurs first, provided that the awarding authority's inspection shows that no work items required by the Contract remain incomplete or unsatisfactory. Interest shall not be paid hereunder on amounts for which interest is required to be paid in connection with the substantial completion estimate as hereinabove provided. The awarding authority shall include the amount of the interest required to be paid hereunder in the final estimate.

The awarding authority shall pay the amount due pursuant to any substantial completion or final estimate within thirty-five days after receipt of written acceptance for such estimate from the contractor and shall pay interest on the amount due pursuant to such estimate at the rate hereinabove provided from that thirty-fifth day to the date of payment. Within 15 days, 30 days in the case of the commonwealth, after receipt from the contractor, at the place designated by the awarding authority, if such place is designated, of a periodic estimate requesting payment of the amount due for the preceding periodic estimate period, the awarding authority shall make a periodic payment to the contractor for the work performed during the preceding periodic estimate period and for the materials not incorporated in the work but delivered and suitably stored at the Site, or at some location agreed upon in writing, to which the contractor has title or to which a subcontractor has title and authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances. The awarding authority shall include with each such payment interest on the amount due pursuant to such periodic estimate at the rate herein above provided from the due date. In the case of periodic payments, the contracting authority may deduct from its payment a retention based on the estimate of the fair value of its claims against the contractor, a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and a retention to secure satisfactory performance of the contractual work not exceeding five per cent of the approved amount of any periodic payment, and the same right to retention shall apply to bonded subcontractors entitled to direct payment under section thirty-nine F of chapter thirty; provided that a five per cent value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.

No periodic, substantial completion or final estimate or acceptance or payment thereof shall bar a contractor from reserving all rights to dispute the quantity and amount of, or the failure of the awarding authority to approve a quantity and amount of, all or part of any work item or extra work item.

Substantial completion, for the purposes of this section, shall mean either that the work required by the Contract has been completed except for work having a Contract Price of less than one percent of the then adjusted total Contract Price, or substantially all of the work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the work required by the contract”

8. Liens

Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, delivers to the DCR a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as he/she has knowledge or information, the releases and receipts include all labor and material for which a lien could be filed; but the Contractor may, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the DCR, to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the DCR, all moneys that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

9. Final Payment: Release of Claims by Contractor.

Upon Final Acceptance of the Work the Contractor shall be entitled to payment of the balance of the Contract Price. Final payment shall be as provided in this Article above and in accordance with any process set forth in the Special Conditions. The Contractor agrees to execute a Certificate of Final Inspection, Release (with Contractor's own exceptions listed thereon) and Acceptance as a condition precedent to Final Payment. The acceptance by the Contractor of the Final Payment made as aforesaid, or the execution of the Certificate of Final Acceptance by the Contractor, shall constitute a release of the Department of Conservation and Recreation, and every member and agent of it, from all claims of and liability to the Contractor for anything done or furnished for or relating to the Work, or for any act or neglect of the Department of Conservation and Recreation, or of any person relating to or affecting the Work, except the claim against the Department of Conservation and Recreation for the remainder, if any there be, of the amounts set forth by the Contractor in the Certificate of Final Inspection, Release and Acceptance. Final Acceptance shall not relieve the Contractor of the requirements of Articles IX, XIV, and XV of these General Conditions of the Contract, or of other provisions of this Contract, to the extent that the same are intended to survive Final Acceptance.

ARTICLE IX. GUARANTEES AND WARRANTIES

1. General Warranty.

If at any time during the period of one (1) year from the date of Final Acceptance, any part of such Work shall in the reasonable opinion of the DCR be defective or require replacing or repairing, or damage to other property of the DCR is caused by any defect in the Work, the DCR shall notify the Contractor in writing to make the required repairs or replacements and repair such damage. If the Contractor shall neglect to commence such repairs or replacements to the satisfaction of the DCR within ten (10) days from the date of the giving of such notice, then the DCR may employ other persons to make the same. The Contractor agrees, upon demand, to pay to the DCR all amounts which it expends for such repairs, replacements, and/or damages. During this one-year guarantee period any corrective work shall be performed under all the applicable terms of this Contract, and if Change Orders are issued in accordance with the terms of this Contract, the Contractor shall be entitled to compensation for special insurance, as required. This one-year guarantee shall not limit any express guaranty or warranty provided elsewhere in the Contract.

2. Special Guarantees and Warrantees.

A. The Contractor's obligation to correct Work as set forth in paragraph 1 above is in addition to, and not in substitution of, such guarantees or warranties as may be required in the various sections of the Specifications.

B. Guarantees and warranties required in the various sections of the Specifications must be delivered to the DCR before final payment to the Contractor may be made, or in the case of guarantees and warranties which originate with a subcontractor's section of the Work, before final payment for the amount of that sub-trade or for the phase of Work to which the guarantee or warranty relates.

C. The failure to deliver a required guarantee or warranty shall constitute a failure to fully complete the Work in accordance with the Contract Documents.

ARTICLE X: MISCELLANEOUS LEGAL REQUIREMENTS.

1. Contractor to be Informed.

The Contractor shall inform itself of all existing and future Laws in any manner affecting those engaged or employed in the Work, or the materials used or employed in the Work, or in any way affecting the conduct of the Work, and of all orders and decrees of bodies or tribunals having any applicable jurisdiction or authority over the Work.

2. Compliance with all Laws.

The Contractor shall cause all persons employed in the performance of the Work to comply with all existing and future Laws, including but not limited to those set forth below:

A. Corporate Disclosures. The Contractor if a foreign corporation, shall comply with M.G.L. c. 30, sec. 39L.

B. Veterans Preference. In the employment of mechanics and apprentices, teamsters, chauffeurs, and laborers in the performance of Work in the Commonwealth, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for at least six months at the commencement of their employment and who are veterans as defined M.G.L. c. 4, sec. 7(43), and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States.

C. Prevailing Wages. The Contractor shall comply with M.G.L. c. 149, sections 26- 27H. The prevailing wage schedule is found in Exhibit A to the Instructions to Bidders, listing the prevailing minimum wage rates that must be paid to all workers employed in the Work. The DCR is not responsible for any errors, omissions, or misprints in said schedule. Such Schedule shall continue to be the minimum rate of wages payable to workers employed in the Work throughout the term of this Contract, subject to the exceptions provided in M.G.L. c. 149, sections 26-27H. The Contractor shall not have any claim for extra compensation from the Department of Conservation and Recreation if the actual wages paid to workers employed in the Work exceeds the rates listed on the schedule or as otherwise provided by law. The Contractor shall cause a copy of said Schedule to be kept in a conspicuous place at the Site during the term of the Contract. If reserve police officers are employed by the Contractor, they shall be paid the prevailing wage of regular police officers. (See M.G.L. c.149, sec. 34B).

D. Payroll Records and Statement of Compliance. The Contractor shall comply and shall cause its Subcontractors to comply with Massachusetts General Law c. 149, sec. 27B, which requires that a true and accurate record be kept of all persons employed on a project for which the prevailing wage rates have been provided. The Contractor and all Subcontractors shall keep these records and preserve them for a period of three years from the date of completion of the Contract. Such records shall be open to inspection by any authorized representative of the Department of Conservation and Recreation at any reasonable time, and as often as may be necessary. The Contractor shall, and shall cause its subcontractors to, submit weekly copies of their weekly payroll records to the DCR. In addition, the Contractor and each Subcontractor shall furnish to the Executive Department of Labor within fifteen days after completion of its portion of the Work a signed statement in the form required by the DCR.

E. Vehicle operators. If the Director of the Department of Labor and Workforce Development has established a Schedule of wage rates to be paid to the operators of trucks, vehicles or equipment for the Work, the Contractor shall be obligated to pay such operators at least the minimum wage rate contained on such Schedule. (See M.G.L. c.149, sections 26-27H).

F. Eight Hour Day. The Contractor shall comply with M.G.L. c. 149, sections 30 and 34, which provide that no laborer, workman, mechanic, foreman or inspector working within the Commonwealth in the employ of the Contractor, subcontractor or other person doing or contracting to do the whole or part of the Work shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of extraordinary emergency.

G. Timely Payment of Wages. The Contractor shall comply with and shall cause its Subcontractors to comply with M.G.L. c. 149, sec. 148 which requires the weekly or biweekly payment of employees within six days of the end of the pay period during which wages were earned if employed for five or six days of a calendar week, and within other periods of time under certain circumstances as set forth therein.

H. Lodging, etc. The Contractor shall comply with, and shall cause its Subcontractors to comply with, M.G.L. c. 149, sec. 25 which provides that every employee under this Contract shall lodge, board, and trade where and with whom he elects, and neither the Contractor nor his agents or employees shall, either directly or indirectly, require as a condition of the employment of any person that the employee shall lodge, board, or trade at a particular place or with a particular person.

I. Truck Rates. The use by the Contractor of trucks or other motor vehicles hired from either common or contract motor carriers in the course of performance of this Contract is subject to such minimum rates and charges, and rules and regulations as may from time to time be promulgated by the Department of Public Utilities of the Commonwealth of Massachusetts or other agency of the State or Federal government which may be authorized by law to set rates or otherwise regulate the use of such vehicles. The Contractor expressly assumes the risk of any additional expense that may arise by reason of any change in such minimum rates and charges, and rules and regulations, and shall be entitled to no additional compensation or reimbursement by reason thereof.

J. Anti-Boycott Covenant (Executive Order #130). The Contractor warrants, represents and agrees that during the time this Contract is in effect, neither it nor any affiliated company, as hereafter defined, participates in or cooperates with an international boycott, as defined in Section 999(b) (3) and (4) of the Internal Revenue Code of 1954, as amended, or engages in conduct declared to be unlawful by M.G.L. c. 151E, sec. 2. If there shall be a breach in the warranty, representation or agreement contained in this paragraph, then without limiting such other rights as it may have the DCR shall be entitled to rescind this contract. As used herein, an affiliated company shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by the Contractor or by a person or persons or business entity or entities directly or indirectly owning at least 51% of the ownership interests of the Contractor; or which directly or indirectly owns at least 51% of the ownership interests of the Contractor.

K. Contractor's Agreements with Suppliers--Anti-Boycott and Anti-Discrimination Provisions.

(1) The Contractor shall not purchase or rent any materials, equipment, machinery, vehicles or supplies for or in connection with the Work from any person or entity who does not sign, under pains and penalties of perjury, a certificate that recites: "the undersigned warrants, represents and agrees that during the time its agreement with (insert contractor's name) is in effect for materials, supplies or equipment to be used in connection with the Department of Conservation and Recreation Contract No. (insert contract number), neither the undersigned or any affiliated company, as hereafter defined, participates in or cooperates with an international boycott, as defined in Section 999(b)(3) and (4) of the Internal Revenue Code of 1954, as amended, or engages in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws. As used herein, an affiliated company shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by the undersigned or by a person or persons or business entity or entities directly or indirectly owning at least 51% of the ownership interests of the undersigned; or which directly or indirectly owns at least 51% of the ownership interests of the undersigned."

(2) The DCR shall not be obligated to pay the Contractor for the cost of any materials, supplies, or equipment purchased or rented from any individual or entity from whom the Contractor has not previously obtained and delivered to the DCR the certificate that the previous paragraph requires. The Contractor will immediately terminate its contract with any supplier who breaches the warranty, representation and agreement contained in the previous paragraph.

(3) The Contractor shall include in the Contractor's agreement with any person or entity from whom the Contractor intends to purchase or rent any materials, equipment, machinery, vehicles or supplies for or in connection with the Work, (a) a notice that this Contract obligates the Contractor to terminate the supply contract upon discovery of such breach of the sworn certificate delivered under subparagraph (1) and such termination shall be without liability to the Contractor or the DCR and (b) a provision which states: "The Governor or his designee, the secretary of administration and finance, and the state auditor or his designee shall have the right at reasonable times and upon reasonable notice to examine the books, records and other compilations of the undersigned vendor which pertain to the performance and requirements of this agreement to provide materials of any nature to the undersigned contractor in connection with DCR Contract No. (insert contract number)."

L. Access to Contractor's Records (Executive Order #195). The Governor or his/her designee, the secretary of administration and finance, and the state auditor or his/her designee shall have the right at reasonable times and upon reasonable notice to examine the books, records, and other compilations of data of the Contractor which pertain to the performance and requirements of this Contract.

ARTICLE XI: CONTRACTOR'S ACCOUNTING METHOD REQUIREMENTS (M.G.L. c. 30, sec. 39R)

1. Definitions.

The words defined herein shall have the meaning stated below whenever they appear in this Article XI:

--"Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a Contract pursuant to M.G.L. c. 30, sec. 39M, and M.G.L. c. 149, sections 44A-H.

--"Contract" means any Contract awarded or executed pursuant to M.G.L. c. 30, sec. 39M, M.G.L. c. 149, sections 44A-H.

--"Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.

--"Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

--"Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

2. Record Keeping.

A. The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts that in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

B. Until the expiration of six years after final payment, the Inspector General and the DCR shall have the right to examine any books, documents, papers or records of the Contractor and Subcontractors that directly pertain to, and involve transactions relating to the Contractor and Subcontractors.

C. The Contractor shall describe any change in the method of maintaining records or recording transactions which materially affects any statements filed with the DCR including the date of the change and reasons therefor and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes.

D. The Contractor represents that it has, prior to the execution of the Contract, filed a statement of management on internal accounting controls as set forth in Section 3 below.

E. The Contractor represents that it has, prior to the execution of the Contract, filed an audited financial statement for the most recent completed fiscal year as set forth in section 4 below and will continue to file such statement annually during the term of the Contract.

3. Statement of Management Controls.

A. The Contractor shall file with the DCR a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

- (1) transactions are executed in accordance with management's general and specific authorization.
- (2) transactions are recorded as necessary: (a) to permit preparation of financial statements in conformity with generally accepted accounting principles, and (b) to maintain accountability for assets.
- (3) access to assets is permitted only in accordance with management's general or specific authorization; and
- (4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

B. The Contractor shall file with the DCR a statement prepared and signed by an independent certified public accountant, stating that the accountant has examined the statement of management on internal accounting controls, and expressing an opinion as to:

- (1) whether the representations of management in response to subparagraph 3 above are consistent with the results of management's evaluation of the system of internal accounting controls; and
- (2) whether such representations of management are reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statement.

4. Annual Financial Statement.

A. Every Contractor awarded a contract under M.G.L. c. 30, sec. 39M or M.G.L. c. 149, sections 44A-44H shall annually file with the Commissioner of the Division of Capital Asset Management and Maintenance during the term of the Contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the DCR upon request.

B. The office of Inspector General and the DCR shall have the right to enforce the provisions of this Article. A Contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to M.G.L. c. 149, sec. 44C.

5. Bid Pricing Materials.

The Contractor shall save the written calculations, pricing information, and other data that the Contractor used to calculate the bid that induced the DCR to enter into this Contract (the "Bid Pricing Materials") for at least six years after the DCR makes final payment under this Contract.

ARTICLE XII: EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION, AND AFFIRMATIVE ACTION PROGRAM.

This Contract includes the provisions of the DCR's "Equal Employment Opportunity, Non-Discrimination, and Affirmative Action Program," attached as Appendix A to these General Conditions of the Contract and incorporated herein by reference.

ARTICLE XIII: GOALS FOR PARTICIPATION BY MINORITY BUSINESS ENTERPRISES AND WOMEN BUSINESS ENTERPRISES

This Contract includes the provisions of the DCR's "Goals for Participation by Minority Business Enterprises and Women Business Enterprises (Executive Order 390), attached as Appendix B to these General Conditions, and as set forth in Section 8 of the Instructions to Bidders, and incorporates same herein by reference.

ARTICLE XIV: INSURANCE REQUIREMENTS

The Contractor shall carry insurance, in the amounts and types specified in Section 7 of the Instructions for Bidders for this Contract and shall comply with all provisions relating to insurance set forth in said Section 7.

ARTICLE XV: INDEMNIFICATION

1. Generally.

To the fullest extent permitted by law, the Contractor shall indemnify, defend (with counsel subject to the supervision of the Attorney General of the Commonwealth of Massachusetts as required by M.G.L. c. 12, sec. 3) and hold harmless the Commonwealth of Massachusetts, its Department of Conservation and Recreation, and its officers, agents, divisions, employees, representatives, successors and assigns from and against all claims, damages, losses and expenses, including but not limited to court costs and attorneys' fees, arising out of or resulting from the performance of the Work, including but not limited to those arising or resulting from:

- labor performed or furnished and/or materials used or employed in the performance of the Work.
- violations by the Contractor, any subcontractor, or by any person directly or indirectly employed or used by any of them in the performance of the Work or anyone for whose acts any of them may be liable (Contractor, subcontractor and all such persons herein collectively called "Contractor's Personnel") of any Laws.
- violations of any provision of this Contract by any of Contractor's Personnel.
- injuries to any persons or damage to any property in connection with the Work.
- any act, omission, or neglect of Contractor's Personnel.

The Contractor shall be obligated as provided above, regardless of whether or not such claims, damages, losses and/or expenses are caused in whole or in part by the actions or inactions of a party indemnified hereunder. In any and all claims by Contractor's Personnel against parties indemnified hereunder, the Contractor's indemnification obligation set forth above shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Article XV.

2. DCR's Actions.

The obligations of the Contractor under Section 1 above shall not extend to the liability of the DCR, its agents or employees, arising out of (i) the preparation or approval of maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications by the DCR, or (ii) the giving of or the failure to give directions or instructions by the DCR, its agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

3. Survival.

The provisions of this Article XV are intended to survive Final Acceptance and/or any termination of this Contract.

ARTICLE XVI: PERFORMANCE AND PAYMENT BONDS

1. Contractor Bonds.

A. The Contractor shall provide performance and payment (labor and materials) bonds in the form provided by the DCR, executed by a surety licensed by the Commonwealth of Massachusetts Division of Insurance. Each such bond shall be in the amount of the Contract Price.

B. If at any time prior to final payment to the Contractor, the Surety:

- is adjudged bankrupt or has made a general assignment for the benefit of its creditors.
- has liquidated all assets and/or has made a general assignment for the benefit of its creditors.
- is placed in receivership.
- otherwise petitions a state or federal court for protection from its creditors; or
- allows its license to do business in Massachusetts to lapse or be revoked.

then the Contractor shall, within 21 days of any such action listed above, provide the DCR with new performance and payment bonds as described in Paragraph A above. Such bonds shall be provided solely at the Contractor's expense.

2. Subcontractor Bonds.

The Contractor is responsible for the costs of the payment and performance bonds of the sub-contractors for the full amount of their respective Subcontracts.

ARTICLE XVII: TERMINATION OF CONTRACT

1. Termination for Cause.

A. The DCR may without prejudice to any other right or remedy deem this Contract terminated for cause if any of the following defaults shall occur and not be cured within five days (5) days after the giving of notice thereof by the DCR to the Contractor and any surety that has given bonds in connection with this Contract:

- (1) The Contractor has filed a petition, or a petition has been filed against the Contractor with its consent, under any federal or state law concerning bankruptcy, reorganization, insolvency or relief from creditors, or if such a petition is filed against the Contractor without its consent and is not dismissed within sixty (60) days; or if the Contractor is generally not paying its debts as they become due; or if the Contractor becomes insolvent; or if the Contractor consents to the appointment of a receiver, trustee, liquidate, custodian or the like of the Contractor or of all or any substantial portion of its assets and such appointment or possession is not terminated within sixty (60) days; or if the Contractor makes an assignment for the benefit of creditors;
- (2) The Contractor refuses or fails, except in cases for which extension of time is provided under this Contract's express terms, to supply enough properly skilled workers or proper materials to perform its obligations under this Contract, or the DCR has determined that the rate of progress required for the timely completion of the Work is not being met.
- (3) The Contractor fails to make prompt payment to Subcontractors or for materials, equipment, or labor.
- (4) All or a part of the Work has been abandoned.
- (5) The Contractor has sublet or assigned all or any portion of the Work, the Contract, or claims thereunder, without the prior written consent of the Department of Conservation and Recreation, except as expressly permitted in this Contract.
- (6) The Contractor has failed to comply with Laws.
- (7) The Contractor fails to maintain, or provide to the DCR evidence of the insurance or bonds required by this Contract, or
- (8) The Contractor has failed to prosecute the Work or any portion thereof to the standards required under this Contract or has otherwise breached any material provision of this Contract.

B. The DCR shall give the Contractor and any surety notice of such termination for cause, but the giving of notice of such termination shall not be a condition precedent or subsequent to the termination's effectiveness. In the event of such termination, and without limiting any other available remedies, the DCR may, at its option:

- (1) hold the Contractor and its sureties liable in damages for a breach of Contract.
- (2) notify the Contractor to discontinue all work, or any part thereof, and the Contractor shall discontinue all work, or any part thereof, as the Department of Conservation and Recreation may designate.
- (3) complete the Work, or any part thereof, and charge the expense of completing the Work or part thereof, to the Contractor.

(4) require the surety or sureties to complete the Work and perform all of the Contractor's obligations under this Contract.

If the DCR elects to complete all or any portion of the Work as specified in (3) above, it may take possession of all materials, equipment, tools, machinery, implements owned by the Contractor at or near the Site and finish the Work at the Contractor's expense by whatever means the DCR may deem expedient; and the Contractor shall cooperate at its expense in the orderly transfer of the same to a new contractor or to the DCR as directed by the DCR. In such case the DCR shall not make any further payments to the Contractor until the Work is completely finished. The Department of Conservation and Recreation shall not be liable for any depreciation, loss, or damage to said materials, machinery, implements or tools during said use and the Contractor shall be solely responsible for their removal from the Site after the Department of Conservation and Recreation has no further use for them. Unless so removed within fifteen days after notice to the Contractor to do so, they may be sold at public auction, after publication of notice thereof at least twice in any newspaper published in the county where the Work is being performed, and the proceeds credited to the Contractor's account; or they may, at the option of the DCR, be stored at the Contractor's expense subject to a lien for the storage charges.

C. Damages and expenses incurred under paragraph B above shall include, but not be limited to, costs for the DCR's extra services and Project representative services required, in the opinion of the DCR, to successfully inspect and administer the construction contract through final completion of the Work.

D. Expenses charged under paragraph B above may be deducted and paid by the DCR out of any moneys then due or to become due the Contractor under this Contract.

E. All sums, damages, and expenses incurred by the Department of Conservation and Recreation to complete the Work shall be charged to the Contractor. In case the damages and expenses charged are less than the sum that would have been payable under this Contract if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference. In case such expenses shall exceed the said sum, the Contractor shall pay the amount of the excess to the Department of Conservation and Recreation.

2. Termination For Convenience.

A. The DCR may terminate this Contract for convenience even though the Contractor is not in default by giving notice to the Contractor specifying in said notice the date of termination.

B. In case of such termination without cause, the Contractor shall be paid:
(1) all sums due and owing under this Contract through the date of termination, including any retainage withheld to the date of termination, less any amount which the DCR determines is necessary to correct or complete the Work performed to the date of termination; plus (2) a reasonable sum to cover the expenses which the Contractor would not have incurred but for the early termination of the Contract, such as demobilization of the work force, restocking charges, and termination fees payable to Subcontractors.

C. The payment provided in paragraph B above shall be considered to fully compensate the Contractor, and any consultants, Subcontractors, and suppliers, for all claims and expenses directly or indirectly attributable to the termination, including any claims for lost profits.

3. Contractor's Duties Upon Termination for Convenience.

Upon termination of this Contract for convenience as provided in Section 2 of this Article, the Contractor shall: (1) stop the Work; (2) stop placing orders and Subcontracts in connection with this Contract; (3) cancel all existing orders and Subcontracts; (4) surrender the Site to the DCR in a safe condition; (5) transfer to the DCR all materials, supplies, work in process, appliances, facilities, equipment and machinery of this Contract, and all plans, Drawings, Specifications and other information and documents used in connection with this Contract.

ARTICLE XVIII: MISCELLANEOUS PROVISIONS

1. No Assignment by Contractor.

The Contractor shall not assign by power of attorney or otherwise, or sublet or subcontract, the Work, or any part thereof, without the previous written consent of the DCR and shall not, either legally or equitably, assign any of the moneys payable under this Contract, or Contractor's claims hereunder, unless with the like consent of the DCR, whether said assignment is made before, at the time of, or after the execution of the Contract. The Contractor shall remain responsible for satisfactory performance of all Work sublet or assigned. Consent of the DCR shall not be deemed to constitute a representation or waiver of any right hereunder by the DCR as to the qualifications or the responsibility of the Contractor or Subcontractor(s).

2. Non-Appropriation.

The Commonwealth certifies that at the time of the execution of this Contract, sufficient appropriations exist and shall be encumbered to fund the Contract Price. Payments are subject to appropriation and shall be made only for work performed in accordance with the terms of this Contract. The Contractor shall not be obligated to perform, and shall not perform, work outside the scope of this Contract without an appropriate amendment to this Contract, and a sufficient appropriation(s) to support such additional work. The Commonwealth may immediately terminate or suspend this Contract in the event that the appropriation(s) funding this Contract is eliminated or reduced to an amount which will be insufficient to support anticipated future obligations under this Contract. Such termination shall be deemed a termination for convenience subject to the provisions of paragraph 2 of Article XVII of this Contract.

3. Claims by Others Not Valid.

No person other than the Contractor and the surety on any bond given pursuant to the terms of this Contract shall acquire any interest in this Contract or any claim against the DCR hereunder, and no claim by any other person shall be valid except as provided in M.G.L. c. 30, sec. 39F of the General Laws.

4. No Personal Liability of Public Officials.

No public official, employee, or agent of the DCR shall have any personal liability for the obligations of the DCR set forth in this Contract.

5. Severability.

The provisions of this Contract are severable, and if any of these provisions shall be held unconstitutional or unenforceable by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the other provisions of this Contract.

6. Choice of Laws.

This Contract shall be governed by the laws of the Commonwealth of Massachusetts for all purposes, without regard to its laws on choice of law. All proceedings under this Contract or related to the Project shall be brought in the courts of the Commonwealth of Massachusetts.

7. Standard Forms.

Unless directed otherwise in writing by the DCR, the Contractor shall use the standard forms in use by the Department of Conservation and Recreation.

8. No Waiver of Subsequent Breach.

No waiver of any breach or obligation of this Contract shall constitute a waiver of any other or subsequent breach or obligation.

9. Remedies Cumulative.

All remedies of the DCR provided in this Contract shall be construed as cumulative and may be exercised simultaneously or in any order as determined by the DCR in its sole discretion. The DCR shall also be entitled as of right to specific performance and equitable relief including the right to an injunction against any breach of any of the provisions of this Contract

10. Notices.

Notices to the Contractor shall be deemed given when hand delivered to the Contractor's temporary field office at or near the Site, or when deposited in the U.S. mail addressed to the Contractor at the Contractor's address specified in the Department of Conservation and Recreation - Contractor Agreement, or when delivered by courier to either location. Unless otherwise specified in writing by the DCR, notices and deliveries to the DCR shall be effective only when delivered to the DCR at the address specified in the Department of Conservation and Recreation - Contractor Agreement and date-stamped at the reception desk or for which a receipt has been signed by the agent or employee designated by the DCR to receive official notices.

APPENDIX A to General Conditions of the Contract

The following provisions from Article XII of the General Conditions of the Contract where DCR is the Awarding Authority.

EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION, AND AFFIRMATIVE ACTION PROGRAM.

1. Compliance Generally.

For purpose of this Article, “minority” refers to Asians, Blacks, Western Hemisphere Hispanics, Native Americans, and Cape Verdeans; “Commission” refers to the Massachusetts Commission Against Discrimination. During the performance of this Contract, the Contractor and all of its Subcontractors (hereinafter collectively referred to as the Contractor) shall comply with all applicable equal employment opportunity, non-discrimination and affirmative action requirements, including but not limited to the following:

2. Non-Discrimination and Affirmative Action.

A. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, handicap, sexual orientation, or sex. The aforesaid provision shall include, but not be limited to, the following: employment rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship. The Contractor shall comply with the provisions of MGL, c. 151B and all other applicable anti-discrimination and equal opportunity laws.

B. The Contractor shall comply with the provisions of Executive Order No. 478 entitled Revoking and Superseding Executive Orders Numbers 253 and 452, with respect to affirmative action programs for handicapped individuals, which is herein incorporated by reference and made a part of this Contract.

C. In connection with the performance of the Work, the Contractor shall undertake in good faith affirmative action measures designed to eliminate any discriminatory religious creed, national origin, age, sexual orientation, or sex and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age, sexual orientation, or sex. A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for future public construction projects.

D. If the Contractor shall use any subcontractor on any work performed under this Contract, the Contractor shall take affirmative steps to negotiate with qualified minority and women subcontractors. These affirmative steps shall cover both pre-bid and post-bid periods. It shall include notification to the State Office of Minority and Women Business Assistance or its designee, while bids are in preparation, of all products, work, or services for which the Contractor intends to negotiate bids. In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor’s obligations under this Contract relative to non-discrimination and affirmative action.

E. As part of its obligation of remedial action under this Article, the Contractor shall maintain on this project not less than the percent ratio set forth in the Owner – Contractor Agreement of minority employee worker hours to total worker hours in each job category including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those “classes of work” enumerated in MGL, c. 149, Sec. 44F.

F. In the hiring of minority journeypersons, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the Commission, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the Liaison Committee or the Awarding Authority.

3. Liaison Committee, Reports and Records.

A. At the option of the Awarding Authority, there may be established for the term of this Contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the Awarding Authority, the Commission and such other representatives as may be designated by the Commission in conjunction with the Awarding Authority. The Contractor (or his agent, if any, designated by him as the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

B. The Contractor shall prepare projected staffing tables on a quarterly basis. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also when updated, to the Awarding Authority and Liaison Committee. The Contractor shall prepare weekly reports in a form approved by the Awarding Authority of hours worked in each trade by each employee, identified as minority or non-minority. Copies of these shall be provided at the end of each such week to the Awarding Authority and to the Liaison Committee.

C. Records of employment referral orders, prepared by the Contractor, shall be made available to the Awarding Authority and to the Liaison Committee on request.

D. A designee of the Awarding Authority and a designee of the Liaison Committee shall each have right to access to the Site.

E. The Contractor shall comply with the provisions of MGL, c. 151B as amended, of the Massachusetts General Laws, both of which are herein incorporated by reference and made a part of this Contract.

F. The Contractor shall provide all information and reports required by the Awarding Authority or the Commission on forms and in accordance with instructions issued by either of them and will permit access to its facilities and any books, records, accounts, and other sources of information which may be determined by the Awarding Authority or the Commission to affect the employment of personnel. This provision shall apply only to information pertinent to the Owner's supplementary affirmative action Contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Awarding Authority or the Commission as appropriate and shall set forth what efforts he has made to obtain the information.

4. Sanctions.

A. Whenever the Awarding Authority, the Commission, or the Liaison Committee believes the Contractor, or any Subcontractor may not be operating in compliance with the terms of this Article, the Commission shall directly, or through its designated agent, conduct an appropriate investigation, and may confer with the parties to determine if such Contractor is operating in compliance with the terms of this Article. If the Commission or its agent finds the Contractor or any Subcontractor not in compliance, it may make a preliminary report on non-compliance, and notify such Contractor in writing of such steps as will in the judgment of the Commission or its agent bring such Contractor into compliance. In the event that such Contractor fails or refuses to fully perform such steps, the Commission may make a final report of non-compliance, and recommend to the Awarding Authority the imposition of one or more of the sanctions listed below. If, however, the Commission believes the Contractor or any Subcontractor has taken or is taking every possible measure to achieve compliance, it shall not make a final report of non-compliance. Within fourteen days of the receipt of the recommendations of the Commission, the Awarding Authority shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

(1) The recovery by the Awarding Authority from the Contractor of 1/100 of 1% of the Contract award price or \$1,000 whichever sum is greater, in the nature of liquidated damages or, if a Subcontractor is in non-compliance, the recovery by the Awarding Authority from the Contractor, to be assessed by the Contractor as a back charge against the subcontractor, of 1/10 of 1% of the sub-contract price, or \$400 whichever sum is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply.

(2) The suspension of any payment or part thereof due under the Contract until such time as the Contractor or any subcontractor is able to demonstrate his compliance with the terms of the Contract.

(3) The termination, or cancellation, of the Contract, in whole or in part, unless the Contractor or any Subcontractor is able to demonstrate within a specified times his compliance with the terms of the contract.

(4) The denial to the Contractor or any subcontractor of the right to participate in any future contracts awarded by the Awarding Authority for a period of up to three years.

B. If any time after the imposition of one or more of the above sanctions a Contractor is able to demonstrate that it is in compliance with this Article, the Contractor may request the Awarding Authority, in consultation with the Commission, to suspend the sanctions conditionally, pending a final determination by the Commission as to whether the Contractor is in compliance. Upon final determination of the Commission, the Awarding Authority, based on the recommendation of the Commission, shall either lift the sanctions or reimpose them.

C. Sanctions recommended by the Commission and enumerated under Section 4 above shall not be imposed by the Awarding Authority except after an adjudicatory proceeding, as that term is used in MGL, c. 30A, has been conducted. No investigation by the Commission or its agent shall be initiated without prior notice to the Contractor.

D. Notwithstanding the provisions of 4A-4C above, if the Awarding Authority determines after investigation that the Contractor or any Subcontractor is not in compliance with the terms of this Article, it may suspend any payment or portion thereof due under the Contract until the contractor demonstrates to the satisfaction of the Awarding Authority compliance with the terms of this Article. This temporary suspension of payments by the Awarding Authority is separate from the sanctions set forth in Section 4A-4C of this Article above, which are determined by MCAD and recommend to the Awarding Authority. Payment may be suspended only after the Contractor and any other interested party shall have been given the opportunity to present evidence in support of its position at an informal hearing held by the Awarding Authority, and the Awarding Authority has concluded upon review of all the evidence that such penalty is justified. Payment shall not be suspended if the Awarding Authority finds that the Contractor made its best efforts to comply with this Article, or that some other justifiable reason exists for waiving the provisions of this Article in whole or in part.

APPENDIX B to General Conditions of the Contract

The following provisions from Article XIII of the General Conditions of the Contract where DCR is the Awarding Authority.

GOALS FOR PARTICIPATION BY MINORITY BUSINESS ENTERPRISES AND WOMEN BUSINESS ENTERPRISES (EXECUTIVE ORDER 390, MGL, c. 7, s. 40N)

1. Goals.

A. The goals for minority business enterprise and women business enterprise participation established for this Contracts are as set forth in the Owner – Contractor Agreement.

B. The Contractor and all Subcontractors, sub-subcontractors, and materials suppliers shall comply with all of the terms and conditions of this Article, which include the provisions pertaining to M/WBE participation set forth in the Owner – Contractor Agreement in order to meet the M/WBE participation goals established for this Contract.

2. M/WBE Participation Credit.

A. If the Contractor is itself an MBE or WBE, M/WBE participation credit will be given in an amount equal to the entire Contract Price. If the Contractor is not an MBE or WBE then M/WBE participation credit will be given for the value of the Work that is actually performed by each MBE or WBE subcontractor or sub-subcontractor.

B. If the Contractor is a joint venture with one or more M/WBE joint venturers, M/WBE participation credit shall be given to the joint venture as follows:

(1) If the joint venture is certified by SOMBWA as an MBE or WBE, M/WBE participation credit shall be given in an amount equal to the Contract Price.

(2) If the joint venture is not certified as an MBE or WBE by SOMWBA, M/WBE participation credit shall be given to the joint venture for the value of the Work that is performed by the M/WBE joint ventures(s), and for the value of the Work that is actually performed by each MBE or WBE subcontractor or sub-subcontractor.

C. MBE participation credit shall be given for the work performed by MBEs only, and WBE participation credit shall be given for the work performed by WBEs only. MBE participation may not be substituted for WBE participation, nor may WBE participation be substituted for MBE participation.

3. Establishing M/WBE Status.

A. A minority-owned business shall be considered an MBE only if it has been certified as a minority business enterprise by the State Office of Minority and Women Business Assistance (“SOMWBE”).

B. A woman-owned business shall be considered a WBE only if it has been certified as a woman business enterprise by SOMWBA.

C. Certification as a disadvantaged business enterprise (“DBE”), certification as an M/WBE by any agency other than SOMWBA, or submission of an application to SOMWBA for certification as an M/WBE shall not confer M/WBE status on a firm for the purposes of this Contract.

4. Subcontracts with M/WBEs.

Within thirty (30) days after the award of this Contract, the Contractor shall (i) execute a subcontract with each M/WBE Subcontractor which has executed a Letter of Intent approved by the Awarding Authority, (ii) cause its Subcontractors to execute a sub-subcontract with each M/WBE sub-subcontractor, and (iii) furnish the Awarding Authority with a signed copy of each such subcontract and sub-subcontract.

5. Performance of Contract Work by M/WBEs.

A. The Contractor shall not perform with its own organization or subcontract or assign to any other firm work designated to be performed by any W/MBE in the Letters of Intent or Schedule of M/WBE Participation without the prior Approval of the Awarding Authority, nor shall any M/WBE assign or subcontract to any other firm, or permit any other firm to perform any of its M/WBE Work without the prior Approval of the Awarding Authority. Any such unapproved assignment, subcontracting, sub-subcontracting, or performances of M/WBE Work by others shall be a change in the M/WBE Work for the purposes of this Contract. The Awarding Authority WILL NOT APPLY TO THE M/WBE PARTICIPATION GOALS(S) ANY SUMS ATTRIBUTABLE TO SUCH UNAPPROVED ASSIGNMENTS, SUB-CONTRACTS, SUB-SUBCONTRACTS, OR PERFORMANCE OF M/WBE WORK BY OTHERS.

B. The Contractor shall be responsible for monitoring the performance of M/WBE Work to ensure that each scheduled M/WBE performs its own M/WBE Work with its own workforce.

C. The Contractor and each M/WBE shall provide the Awarding Authority with all information and documentation that the Awarding Authority determines is necessary to ascertain whether or not an M/WBE has performed its own M/WBE Work. At the discretion of the Awarding Authority, failure to submit such documentation to the Awarding Authority shall establish conclusively for the purpose of giving M/WBE participation credit under this Contract that such M/WBE did not perform such work.

6. Notification of Changes in M/WBE Work.

A. If any time during the performance of the Contract the Contractor determines or has reason to believe that a scheduled M/WMBE is unable to unwilling to perform its M/WBE Work, or that there has been or will be a change in any M/WMBE Work, or that the Contractor will be unable to meet the M/WBE participation goal(s) for this Contract for any reason, the Contractor shall immediately notify the Awarding Authority Contract Compliance Office in writing of such circumstances.

B. Any notice of a change in M/WBE Work pursuant to subparagraph "A: above shall include a revised Schedule of M/WBE Participation, and additional or amended Letters of Intent and subcontracts, as the case may be.

7. Actions Required if there is a Reduction in M/WBE Participation.

A. In the event there is a change or reduction in any M/WBE Work which will result in the Contractor failing to meet the M/WBE participation goal(s) for this Contract, other than a reduction in M/WBE Work resulting from a Change Order initiated by the Awarding Authority, then the Contractor shall immediately undertake a diligent, good faith effort to make up the shortfall in M/WBE participation as follows:

(1) The Contractor shall identify all items of the Work remaining to be performed under the Contract that may be made available for subcontracting to W/MBEs. The Contractor shall send a list of such items of work to the Awarding Authority, together with a list of the remaining items of the Work that was not made available to M/WBEs and the reason for not making such work available for subcontracting to M/WBEs.

(2) The Contractor shall send written notices soliciting proposals to perform the items of the Work that may be made available for subcontracting to W/MBEs to all W/MBEs qualified to perform such work. The Contractor shall advise the Awarding Authority of (i) each W/MBE solicited, and (ii) each W/MBE listed in the SOMWBA directory under the applicable trade category who was not solicited and the reasons, therefore. The Contractor shall also advise the Awarding Authority of the dates notices were mailed and provide a copy of the written notice(s) sent.

(3) The Contractor shall make reasonable efforts to follow up the written notices sent to M/WBEs with telephone calls or personal visits in order to determine with certainty whether the M/WBEs were interested in performing the work. Phone logs or other documentation must be submitted to the Awarding Authority evidencing this effort.

(4) The Contractor shall make reasonable efforts to assist M/WBEs that need assistance in obtaining insurance, bonds, or lines of credit in order to perform work under the Contract and shall provide the Awarding Authority with evidence that such efforts were made.

(5) The Contractor shall provide the Awarding Authority with a statement of the response received from each M/WBE solicited, including the reason for rejecting any M/WBE who submitted a proposal.

(6) The Contractor shall take any additional measures reasonably requested by the Awarding Authority to meet the M/WBE participation goal(s) established for this Contract, including, without limitation, placing advertisements in appropriate media and trade association publications announcing the Contractor's interest in obtaining proposals from M/WBEs, and/or sending written notification to M/WBE economic development assistance agencies, trade groups and other organizations notifying them of the project and of the work available to be subcontracted by the Contractor to M/WBEs.

B. If the Contractor is unable to meet the M/WBE participation goals for this Contract after complying fully with each of the requirements of paragraph "A" above, and the Contractor is otherwise in full compliance with the terms of this Article, the Awarding Authority may reduce the M/WBE participation goals for this Contract to the extent that such goals cannot be achieved.

8. Suspension of Payment and/or Performance for Noncompliance.

A. If at any time during the performance of this Contract, the Awarding Authority determines or has reason to believe that (1) there has been a change or reduction in any M/WBE Work which will result in the Contractor failing to meet the M/WBE participation goal(s) for this Contract, other than a reduction in M/WBE Work resulting from a change in the Contract work ordered by the Awarding Authority, and (2) the Contractor has failed to comply fully with all of the terms and conditions of paragraphs 1 through 7 above, the Awarding Authority may:

(1) suspend payment to the Contractor of an amount equal to the value of the work which was to have been performed by an M/WBE pursuant to the Contractor's Schedule of M/WBE Participation, but which was not so

performed, in order to ensure that sufficient Contract funds will be available if liquidated damages are assessed pursuant to paragraph 9 and/or

(2) suspend the Contractor's performance of this Contract in whole or in part.

B. The Awarding Authority shall give the Contractor prompt written notice of any action taken pursuant to paragraph A above and shall give the Contractor and any other interested party, including any M/WBEs, an opportunity to present evidence to the Awarding Authority that the Contractor is in compliance with the requirements of this Article, or that there is some justifiable reason for waiving the requirements of this Article in whole, or in part. The Awarding Authority may invite SOMWBA and the Massachusetts Commission Against Discrimination to participate in any proceedings undertaken pursuant to this paragraph.

C. Upon a showing that the Contractor is in full compliance with the requirements of this Article, or that the Contractor has met or will meet the M/WBE participation goals for this Contract, the Awarding Authority shall release any funds withheld pursuant to clause A(1) above and lift any suspension of the Contractor's performance under clause A(2) above.

9. Liquidated Damages: Termination.

A. If payment by the Awarding Authority or performance by the Contractor is suspended by the Awarding Authority as provided in paragraph 8 above, the Awarding Authority shall have the following rights and remedies if the Contractor thereafter fails to take all action necessary to bring the Contractor into full compliance with the requirements of this Article, or if full compliance is no longer possible because the default of the Contractor is no longer susceptible to cure, if the Contractor fails to take such other action as may be required by the Awarding Authority to meet the M/WBE participation goals set forth in this Contract:

(1) the Awarding Authority may terminate this Contract, and/or

(2) the Awarding Authority may retain from final payment to the Contractor, as liquidated damages, an amount equal to the difference between (x) the total of the M/WBE participation goals set forth in this Contract, and (y) the amount of M/WBE participation credit earned by the Contractor for M/WBE Work performed under this Contract as determined by the Awarding Authority, the parties agreeing that the damages for failure to meet the M/WBE participation goals are difficult to determine and that the foregoing amount to be retained by the Awarding Authority represents the parties' best estimate of such damages. Any liquidated damages will be assessed separately for MBE and WBE participation.

B. Before exercising its rights and remedies hereunder, the Awarding Authority may, but the Awarding Authority shall not be obligated to, give the Contractor and any other interested party another opportunity to present evidence to the Awarding Authority that the Contractor is in compliance with the requirements of this Article or that there is some justifiable reason for waiving the requirements of this Article in whole or in part. The Awarding Authority may invite SOMWBA and the Massachusetts Commission Against Discrimination to participate in any proceedings undertaken hereunder.

10. Reporting Requirements.

The Contractor shall submit to the Awarding Authority all information or documentation that is necessary in the judgment of the Awarding Authority to ascertain whether or not the Contractor has complied with any of the provisions of this Article.

11. Awarding Authority's Right to Waive Provisions of this Article in Whole or in Part.

The Awarding Authority reserves the right to waive any provision or requirement of this Article if the Awarding Authority determines that such waiver is justified and in the public interest. No such waiver shall be effective unless in writing and signed by a representative of the Awarding Authority's Compliance Office or the office of its General Counsel. No other action or inaction by the Awarding Authority shall be construed as a waiver of any provision of this Article.

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION**

**SPECIAL GOOD FAITH REQUIREMENTS FOR PARTICIPATION BY VETERAN OWNED
BUSINESS ENTERPRISES**

**(Implementing Executive Order No. 546, Establishing the Veteran Owned Business
Enterprise Program).**

BIDDER'S INSTRUCTIONS

THE APPARENT LOW BIDDER'S COMPLIANCE WITH THE REQUIREMENTS OF THIS SECTION IS A PREREQUISITE FOR RECEIVING THE AWARD OF THE CONTRACT.

1) Participation Goals and Program Operation

In order to be an eligible VOB for the participation goals of this Contract, the business enterprise must be listed as a veteran-owned business within the VetBiz database, located at www.VetBiz.gov, at the time of the bid submission deadline. Only a VOB identified as a veteran-owned small business via the VetBiz database shall count towards meeting the Program participation goal.

The Contractor must demonstrate that VOBs are eligible for the following participation goals via its listing as a veteran-owned small business within the VetBiz database, located at www.VetBiz.gov, at the time said VOB seeks to participate in business provided under this Contract; provided, that it shall also be the responsibility of the Awarding Authority to verify the status of the SDVOB via said VetBiz database prior to the awarding of the Contract.

a) Design Services Contracts – In furtherance of the goals and objectives of the program, commencing July 1, 2013 until such time as the Secretary for Administration and Finance has adopted a new participation goal, the participation goal, which shall be expressed in the form of a benchmark for each design services contract, shall be three (3) percent; provided, that said participation goal may be met by the veteran-owned business enterprise performing as either a general or prime contractor, a subcontractor, or both; provided further, that the awarding agency shall verify the status of business enterprise participation on a design services contract.

b) Public Construction Contracts – In furtherance of the goals and objectives of the Program, commencing July 1, 2013 until such time as the Secretary of Administration and Finance has adopted a new participation goal, the participation goal, which shall be expressed in the form of a benchmark for each public construction contract, shall be three (3) percent; provided, that said participation goal may be met by the veteran-owned business enterprise performing as either a general or prime contractor, a subcontractor, or both; provided further, that the awarding agency shall verify the status of a service veteran-owned business enterprise prior to said business enterprise participation on a public construction contract.

2) Goal Reduction/Waiver

- A) The Awarding Authority reserves the right to reduce or waive the SDVOBE participation goals established for this Contract upon written request made by a Bidder using the VOB E Waiver Request Form provided by the Awarding Authority.
- B) If filed Sub-Bids are solicited for this Contract, requests from prospective general Bidders to reduce or waive the VOB E participation goals for this Contract should be received by the Awarding Authority no later than four (4) working days after the list of filed Sub- Bidders is mailed by the Awarding Authority to persons who have taken out plans for the Contract, using the VOB E Waiver Request Form provided by the Awarding Authority.
- C) If there are no filed sub-Bids solicited for this Contract, requests to reduce or waive the SDVOBE participation goals for this Contract should be received by the Awarding Authority no later than five (5) working days before the date set for the receipt of general Bids. **THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY REQUEST TO REDUCE OR WAIVE THE VOB E PARTICIPATION GOALS FOR THIS CONTRACT THAT IS RECEIVED AFTER THESE DEADLINES.** Such written request must demonstrate to the satisfaction of the Awarding Authority that it is not feasible for a non- VOB E or non- VOB E general Bidder to meet the goals established for this Contract based upon any or all of the following:
- a) actual VOB E availability.
 - b) the geographic location of the project to the extent related to SDVOBE availability.
 - c) the scope of the work.
 - d) the percentage of work available for subcontracting to VOB Es; and/or
 - e) other relevant factors, including a **documented** inability by the prospective Bidder to obtain commitments from VOB E subcontractors sufficient to meet the VOB E goals after having made a diligent, good faith effort to do so. All of the foregoing documentation shall accompany the completed Waiver Request Form. Such documentation shall include, at a minimum, the following:
 - A list of all items of work under the Contract that the Bidder made available for subcontracting to VOB Es. The Bidder shall identify all items of work, other than work to be performed by filed sub-Bidders, that the Bidder did not make so available and shall state the reasons for not making such work available for subcontracting to VOB Es. The Bidder shall also demonstrate that, where commercially reasonable, subcontracts were divided into units capable of being performed by VOB Es.
 - Evidence that the Bidder sent written notices soliciting Bids or proposals to perform the items of work made available by the Bidder for subcontracting to all available VOB Es qualified to perform such work. The Bidder shall identify each VOB E solicited, state the dates that notices were mailed, provide a copy of the written notice(s) sent, and provide a copy of any statement or response received from each VOB E solicited, including the reason for rejecting and VOB E who submitted a bid or proposal.
 - Evidence that the Bidder made reasonable efforts to follow up on the written notices sent to VOB Es with telephone calls or personal visits in order to determine with certainty whether the VOB Es were interested in performing the work. Phone logs or other documentation must be submitted.

- Evidence of efforts made to assist VOBES that needed assistance in obtaining bonding or insurance, or lines of credit with suppliers if the inability of SDVOBE to obtain bonding, insurance, or lines of credit is the reason given for the Bidder's inability to meet the VOBES goals.

- D) The Bidder may also submit any other information supporting its request for a waiver or reduction in the VOBES participation goals, including without limitation evidence that the Bidder placed advertisements in appropriate media and trade association publications announcing the Bidder's interest in obtaining bids or proposals from VOBES, and/or sent written notification to VOBES economic development assistance agencies, trade groups and other organizations notifying them of the Contract and the work to be subcontracted by the Bidder to VOBES. The Bidder shall also submit any other information reasonably requested by the Awarding Authority to show that the Bidder has taken all actions that could reasonably be expected to achieve the VOBES participation goals.
- 3) No later than five (5) working days after the opening of general Bids, the apparent low Bidder shall submit the following documents to the Awarding Authority's Contract Officer:
 - (i) a completed Schedule for Participation by VOBES ("Schedule for Participation") in the form provided by the Awarding Authority showing VOBES participation in amounts equal to or exceeding the VOBES participation goals for this Contract; and
 - (ii) a completed Letter of Intent in the form provided by the Awarding Authority for each SDVOBE listed in the Schedule for Participation.
 - 4) Each Letter of Intent shall identify and describe the work to be performed by the named VOBES (the "VOBES Work") with enough specificity to permit the Awarding Authority to identify the particular items of contract work that the VOBES will perform for VOBES participation credit. The Awarding Authority reserves the right to reject any Letter of Intent if the price to be paid for the VOBES Work does not bear a reasonable relationship to the value of such work under the Contract as determined by the Awarding Authority.
 - 5) Within five (5) working days after receipt of the Schedule for VOBES Participation and Letters of Intent, the Awarding Authority shall review and either approve or disapprove the apparent low Bidder's submissions. If the apparent low Bidder has not submitted an appropriate Schedule for VOBES Participation and appropriate Letters of Intent establishing that the VOBES participation goal for the project will be met, the apparent low Bidder will be considered ineligible for Award of the Contract and the Awarding Authority will Award the Contract to the second lowest Bidder, subject to said Bidder's compliance with these conditions.
 - 6) The Contractor is required to submit to the Awarding Authority signed subcontracts with all subcontractors prior to the commencement of work to be performed under these contracts, and/or a purchase order or invoice from each material supplier and/or manufacturer listed on the Schedule for VOBES Participation within thirty (30) days of the issuance of the Notice to Proceed by the Awarding Authority.
 - 7) A filed Sub-Bidder is not required to submit a Schedule for VOBES Participation with its Bid. A filed Sub-Bidder may, at its option, submit a Letter of Intent with its Bid if it is a VOBES. If a filed sub-Bidder intends to sub-subcontract work to a VOBES, and the filed sub-Bidder wishes that sub-subcontract to be credited toward the participation goals for this Contract, the filed sub-Bidder should submit a Letter of Intent from that VOBES with its Bid. A filed sub-Bidder can subcontract out up to 20% of its work to VOBES, unless such work is designated as sub-subcontract Paragraph E work in the Bid Documents, in which case the 20% cap does not apply.

This is a:

- Design Contract**
- Construction contract**

The goal for this contract is Three (3 %) percent of the value of the contract unless waived in part or whole by DCR in writing.

APPENDIX C to the General Conditions of the Contract

INDEX OF THE COMMONLY USED FORMS

(Forms used during bidding are located in Attachment B to the Instructions to Bidders)

Contractor's Weekly Workforce Report

Minorities/Women in Contractor's Weekly Workforce Report

Weekly Payroll Report Form and Statement of Compliance

Certification of Payment by Contractor to MBE/WBE and Instructions

Certificate of Completion by Minority/Women Business Enterprise

Certificate of Final Inspection, Release and Acceptance – E-2

CONTRACTOR'S WEEKLY WORKFORCE REPORT
 THE COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF CONSERVATION AND RECREATION

DCR Project No. _____ Project Name _____ Project Location _____

Name of General Contractor _____ Minority Goal % _____ Women Goal %

Name of Contractor Filing Report _____ Address _____

Week Ending _____ Report No. _____ Date Work Began _____ Date work completed _____

NOTE: **Min. = Minority** **Wom. = Women** Check here if this is a final report

Job Category	Number of Employees	Number of Employees Who Are		Total Weekly Workforce Hours	Total Weekly Workforce Hours		Weekly % Workforce Hours		Total Workforce Hours To Date	Total Workforce Hours to Date		% Of Workforce Hours to Date	
		Min.	Wom.		Min.	Wom.	Min.	Wom.		Min.	Wom.	Min.	Wom.
TOTALS:													

Mail with Weekly Payroll report to the assigned Project Manager at: Department of Conservation & Recreation
Project Manager Name
 10 Park Plaza
 Boston, MA 02116

The undersigned hereby certifies under pains and penalties of perjury that the above information is true and accurate.

Authorized Signature _____ Date _____

Print Name _____ Title _____

Telephone No. _____ FAX No. _____

WEEKLY PAYROLL REPORT FORM
 THE COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF CONSERVATION AND RECREATION

DCR Project No. _____ Project Name _____

Project Location _____

Name of General Contractor _____

Name of Contractor Filing Report _____

Address _____

Week Ending _____ Date Work Began _____ Date work completed _____

Report No. _____ Check here if this is a final report

Employee Name & Address	Work Classification	Hours Worked							(A)	(B)	Employer Contributions			(F)	(G)
		S	M	T	W	T	F	S	Total Hours	Hourly Base Wage	(C) Health & Welfare	(D) Pension	(E) Supp. unemplo yed	[B+C+D+E] Hourly Total Wage (prev.	[A*F] Weekly Total Amount

NOTE: Every contractor and subcontractor are required to submit a copy of their weekly payroll records to DCR. The undersigned states under the pains & penalties of perjury that the above provided and attached information is a true and accurate record of each person employed on the project and the hours worked and wages paid to each such employee, including payments to the referenced benefits. M.G.L. c. 149 §27B.

Authorized signature _____ Print Name _____

Print Title _____

Mail to: Department of Conservation and Recreation
 Project Manager Name
 10 Park Plaza
 Suite 6620
 Boston, MA 02116

**WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE**

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works construction project for which the enclosed rates have been provided. The **Weekly Payroll Report Form** includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the project.

In addition, every contractor and subcontractor are required to submit a copy of their weekly payroll records to the awarding authority. This is required to be done on a weekly basis. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor, or public body shall furnish to the **Executive Office of Labor**, within fifteen days after completion of its portion of the work, a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

Date: _____/_____/_____

I, _____, _____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____
(Contractor, subcontractor, or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs, and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty-nine of the General Laws.

Signature _____

Title _____

CERTIFICATE OF PAYMENT
 BY CONTRACTOR/DESIGNER TO MINORITY, WOMEN BUSINESS
 & VETERAN OWNED BUSINESS ENTERPRISES

TO: Supplier Diversity Reports
 Department of Conservation and
 Recreation ,10 Park Plaza
 Suite 6620,Boston,MA 02116

Reporting Period: Fiscal Year 20__

RE: Project:
 Project Number:

Contract Start Date:

The undersigned hereby certifies under the pains and penalties of perjury that the vendor named below has made the following payments to the named Minority, Women Business and Veteran Owned Enterprises for work performed on the above project:

Firm Name of General Contractor:

Authorized Signature

Date

Print Name

Print Title

Phone Number

Email address

Work performed/payments made (use additional pages if needed):

	Firm Name	Work Performed	Subcontract Amount	Payments This Quarter	FY Payments to date (This fiscal year)	Cumulative Payments (Total payments over the life of the contract)
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOBE			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOBE			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOBE			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOBE			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOBE			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOBE			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOBE			\$	\$	\$	\$

* MBE, WBE and VOBE payment reports are required for each quarter of the fiscal year for each of your DCR projects. Reports are to cover the following three-month periods: 1st quarter, July 1st – September 30th; 2nd quarter, October 1st – December 31st; 3rd quarter, January 1st – March 31st; 4th quarter, April 1st – June 30th. Reports must be submitted within 10 business days of your receipt of this form.

NOTICE: *Intentionally submitting false information in this document may subject the contractor/ designer to criminal prosecution and/ or debarment from public contracting.*

INSTRUCTIONS FOR COMPLETING CERTIFICATE OF PAYMENT

As part of its effort to ensure reliable, up-to-date information concerning the actual payments made to certified MBE, WBE and VOB E subcontractors on all DCR projects, we have prepared these instructions to assist you in completing the enclosed form. **PLEASE READ THESE INSTRUCTIONS CAREFULLY. DCR WILL RETURN ANY CERTIFICATION OF PAYMENT THAT IS INCOMPLETE OR INACCURATE.**

PLEASE NOTE: IF THIS PROJECT IS COMPLETE, ON HOLD, OR YOUR FIRM PREVIOUSLY SUBMITTED A **FINAL** CERTIFICATION OF M/WBE/VOBE PAYMENT FOR THIS PROJECT, PLEASE SO, INDICATE ON THE FORM AND RETURN IT TO: SUPPLIER DIVERSITY REPORTS, DEPARTMENT OF CONSERVATION AND RECREATION, 10 Park Plaza, Suite 6620 Boston, MA 02116

PLEASE INCLUDE THE FOLLOWING INFORMATION IN THE DESIGNATED SECTIONS OF THE FORM:

FIRM NAME: Include the M/WBE/VOBEs listed on the project's approved Schedule for Participation and any additional M/WBE/VOBEs that worked on the project. Be sure to check M/WBE/VOBE category for which they are certified. Note that any change in M/WBE/VOBEs participation used to meet the project goals must be pre-approved by the Project Manager or Engineer responsible for this project and a revised M/WBE/VOBE Schedule of Participation will be required. Contact the DCR Supplier Diversity coordinator immediately if you anticipate or have any changes in M/WBE/VOBE participation on this project.

WORK PERFORMED: Include a brief description of the work performed by each subcontractor listed. The description should match the M/WBE/VOBE Letter of Intent and approved Schedule of Participation. M/WBE/VOBEs must be certified in the category of work performed on this project for firms used to meet the project M/WBE/VOBE goals.

SUBCONTRACT AMOUNT: Include the contract or subcontract amounts listed on the M/WBE/VOBE Letters of Intent and approved Schedule of Participation. If the value of an MBE/WBE/VOBE contract or subcontract has decreased or increased for any reason, you must contact the Project Manager or Engineer responsible for this project immediately. If additional M/WBE/VOBE firms not listed on the Schedule for Participation worked on this project list the amount of their subcontracts.

PAYMENTS THIS QUARTER: Include the amount you paid the M/WBE/VOBE subcontractor, either directly or indirectly, for work performed on this project during the three-month period covered by this Certification of Payment. If the amount paid was zero, please indicate that. Do not include payments from previous periods or estimated future payments in this column. Please note that you may be required to submit copies of cancelled checks to verify the amounts reported for firms used to meet the project's M/WBE/VOBE goals.

FY PAYMENTS TO DATE: Include the total amount you paid the M/WBE/VOBE subcontractor, either directly or indirectly, for work performed on this project for all quarters in **this fiscal year.** To ensure accurate reporting, please review the prior Certifications of Payments previously submitted for this project. Where necessary, correct any earlier mathematical or reporting errors and submit revised Certifications of Payment.

CUMULATIVE PAYMENTS: Include the total amount you paid the M/WBE/VOBE subcontractor, either directly or indirectly, for work performed over the entire life of this project (all quarters).

IF YOU HAVE ANY QUESTIONS CONTACT DCR Supplier Diversity coordinator at 617.626.4925

CERTIFICATE OF COMPLETION
BY MINORITY/WOMEN BUSINESS/VETERAN OWNED BUSINESS ENTERPRISE
DEPARTMENT OF CONSERVATION AND RECREATION

TO: Supplier Diversity Reports
 Department of Conservation and
 Recreation 10 Park Plaza
 Suite 6620, Boston, MA 02116

Reporting Period: Fiscal Year

RE: Project:
 Project Number:
 General Contractor:

Contract Start Date:

The undersigned hereby certifies under the pains and penalties of perjury that the vendor named below has received the payments to the named Minority, Women Business and Veteran Owned Enterprises for work performed on the above project:

Firm Name of Subcontractor:

Print Name	Print Title
Phone Number	Email address

DESCRIPTION OF WORK (AS SHOWN IN LETTER OF INTENT)

BRIEF DESCRIPTION OF ACTIVITY: (Note "Labor Only," "Material Only," "Material and Labor," "Complete")

Original Subcontract Amount	\$ _____
Adjusted Subcontract Amount (Change Orders, etc.)	\$ _____
Total Payments Received to Date from Prime Contractor	\$ _____
Balance Due from Prime Contractor	\$ _____

If the completed activity is different from that listed on the Letter of Intent, please explain: _____

(If more space is needed, continue on back of sheet)

The individuals signing below hereby certify under the pains and penalties of perjury that all work listed on the Contract Letter of Intent (or approved changes thereto as explained above) was completed by the MBE/WBE/VOBE firm on _____, 20____ and the above amounts listed for these services are true and accurate.

FOR CONTRACTOR

FOR MBE/WBE/VOBE FIRM

 Authorized Signature

 Print Name

 Authorized Signature

 Print Name

NOTE: To be submitted to the DCR Compliance Office within ten (10) days after completion of work by MBE/WBE/VOBE.

**E-2 Final Acceptance
Certificate of Final Inspection, Release and Acceptance**

Title: _____

Location: _____

Contractor: _____

This is to certify that a complete inspection of the above-referenced project was made on _____ by the undersigned, and that the entire work was completed in accordance with the plans and specifications. The undersigned recommends acceptance of the project.

_____ by: _____ Title: _____ Date: _____
 _____ Designer Authorized
 Signature

Resident Engineer	Date	Project Manager	Date
Project Engineer	Date		

CERTIFICATE OF RELEASE

1.) The undersigned hereby certifies that all work has been completed in accordance with the plans, specifications, and contract documents and that all change orders have been supported pursuant to Article VII of the General Conditions of the Contract.

2.) Contract Award Price: \$	Adjusted Contract Price: \$
Authorized Additions: \$	Paid to Date:\$
Authorized Deductions:\$	Balance Due: \$

3.) The undersigned further certifies that in addition to the amount set forth above, there are outstanding and unsettled the following change orders as submitted to the DCR.

Request No.	Date:	Amount:
Request No.	Date:	Amount:
Request No.	Date:	Amount:

Subject to satisfactory disposition of change orders listed in Item 3 above, the undersigned releases the Commonwealth of Massachusetts from all further claims for wages or payments to subcontractors or suppliers except: (list on attached sheet).

_____ by: _____
 Contractor Authorized Signature

The above-referenced project is accepted as of _____
 Date

Deputy Commissioner, Engineering
 Deputy Director
 Project Manager
 Resident Engineer
 Office of Contract Administration
 Contractor



BID PACKAGE

PART IV

SPECIAL CONDITIONS OF THE CONTRACT

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GENERAL INFORMATION AND SPECIAL PROVISIONS

Scope of Work

Work under this Contract consists of undertaking scheduled and emergency bridge repairs to bridges statewide. The intention of this Contract is for the majority of work order assignments to be scheduled in order to provide some flexibility in providing these services. However there is the possibility that an emergency situation may materialize that needs immediate response, and the Contractor shall be required to mobilize and respond to the work order within 4 hours of notification. Some work assignments may be required to be performed at night time to minimize the impact to the traveling public.

Work order assignments will typically consist of furnishing equipment, materials, engineering and labor to undertake bridge repairs and maintenance, including furnishing traffic management set-ups to support worksite access and coordinating Traffic Police Details.

Work shall include, but is not limited; to steel repairs; concrete superstructure and substructure repairs: replacing excavated, spalled, delaminated, or deteriorated concrete; replacing missing or deteriorated reinforcing steel, repairing concrete cracks, coring and grouting dowels; bridge railings repairs; replacing bridge railing anchor bolts; replacing bridge deck joint seals; bridge drainage cleaning and repairs; application of elastomeric protective coatings; application of concrete deck antiskid waterproofing; replacement of caulking; repair and/or removal and replacement of timber decking, curbing and bridge railings; repairs to stone masonry abutments and walls; cleaning of bridge decks, beam seats and bearings.

Standard Specifications

The words "Standard Specifications" as used in these Specifications refer to the "Standard Specifications for Highways and Bridges, 1988 Edition," including all supplemental specifications and addenda thereto. (The Massachusetts Highway Department, MassHighway, or MHD, is now known as the Massachusetts Department of Transportation, or MassDOT). These Standard Specifications are herein incorporated by reference for materials and/or procedures, unless superseded, altered, or amended by these Specifications. Also incorporated by reference herein are the "Construction and Traffic Standard Details" of the same state agency.

The Standard Specifications, and/or other referenced standards, are referenced for materials, testing, and/or procedures only. Payments will be as specified under "Basis of Payment" as determined under "Method of Measurement" of the appropriate items included in the Technical Specifications of Part V of this contract.

Correspondence

All correspondence shall be delivered to the Resident Engineer for distribution and addressed to the Chief Engineer with copies to the Resident Engineer, Project Engineer and the Project Manager/ District Supervisor of Construction.

Quantities of Work

The quantities of the various classes of work to be done and materials to be furnished under this

contract, as given on the bid sheets, are approximate and only for the purpose of comparing on a uniform basis the bids for this contract; and the DCR is not to be held responsible if any of the said estimated quantities shall be found to be not even approximately correct; and the Contractor shall make no claim for damages or for anticipated profits or for loss of profits because of a difference between the estimated quantities and the materials actually delivered.

Non-Response Penalties

Work assigned under this contract will either be emergency or scheduled. The Engineer will make the designation which of the two categories shall apply. Scheduled work will be assigned and shall be undertaken using an agreed-upon time frame. Emergency work shall be undertaken as quickly as possible.

To ensure prompt response to emergency work orders, the Contractor is hereby notified that we expect a response within a **four (4)** hour time frame. When following notification by the Engineer, the Contractor fails to meet the four (4) hour time limit associated with the emergency response, the Contractor shall be assessed a penalty of \$2,000.00 per each hour there is a delay.

When scheduled work is assigned and the schedule has been established for undertaking such work, a non-response penalty shall be assessed in the amount of \$1000.00 each day or portion of a day that the scheduled work is delayed. Saturdays, Sundays, and Holidays shall be excluded unless the work was scheduled to be performed on those days.

It is the intent of this provision to ensure prompt response to work orders. The non-response penalties for emergency and scheduled work may be waived at the discretion of the Engineer when it is determined that (1) the Contractor acted in good faith, (2) the Contractor fully intended to commence the required work as specified in the proposal, and (3) the Contractor makes verbal contact with the Engineer, that he or she is unable to meet the time frame specified within this proposal followed by written approval by the Engineer.

Visits to the Site

When a non-emergency/scheduled work order assignment is issued to the Contractor, the Contractor shall visit and examine the site before submitting his proposal.

For Emergency Response events, the Contractor shall meet with the DCR Project Engineer, Resident Engineer or other DCR representative in charge at the time of the declaration of emergency, to determine the appropriate scope of work to be performed.

Bid Item Work Orders

The Contractor may be directed to do work associated with the Items of this Contract at various locations throughout the Department of Conservation and Recreation (DCR) Division State and Urban Parks and Recreation areas, and the quantities of those relevant Items, whether small or large, shall not serve as a basis for additional compensation to the Contractor. All work associated with the Bid Items of this Contract done under this Contract shall be paid for using the Contractor's bid prices of those Items. These bid prices shall be full compensation for all materials, transportation, tools, equipment, labor, superintendence, engineering, overhead and profit

necessary for the completion of the work to the satisfaction of the Engineer covered under each bid item.

Non-bid Item Work Orders

For work not covered by the various items in this contract, it is the intent to pay for such related work on a time and materials basis, as directed by the Engineer. Where the scope of a repair task can be adequately determined and described, the Contractor, when directed by the Engineer, shall be required to submit a Cost Estimate for the repair task.

Each Cost Estimate, submitted in writing, shall include an itemized scope of work, a working schedule (including the number of working days and hours to be worked each day, by each category of artisan), work procedures and a NOT-TO-EXCEED cost breakdown itemized by the following: the number and type of workers, the number and type of equipment, materials, specialty trade artisans, engineering services, traffic controls and Police Details. The Cost Estimate submittal must also state if roadway closures and/ or bridge closures will be required.

The Engineer will approve each Cost Estimate submittal in writing. A submittal does not guarantee the Contractor will be assigned the work. Payment will be based on actual hours worked at the contractual rates as outlined in ITEM 5: BASE LABOR RATE, up to the maximum task amount. Completion of the task is the sole responsibility of the Contractor once the not-to-exceed amount has been reached. Should unforeseen problems develop during the course of the task completion; the Contractor will submit to the Engineer a revised scope of work with a comparison to the original scope of work along with a breakdown of the additional costs for approval by the Engineer. Approval for any increases to the agreed upon not-to-exceed cost will be dependent upon the justification of the additional work.

If the Contractor performs work which is not provided for in this Contract, or which was not authorized in writing by the Engineer, said Contractor shall receive no compensation for such work.

Payment will be made for time performing the work order assignment and shall not include travel time to and from the Contractor's place of business and it shall not include time for investigative field trips to find out how much material, equipment, tools, etc., may be needed for the work.

The payment for Non-bid Item Work Orders is outlined in the following sections: Payment for Labor Costs, Payment for Rental Equipment, Payment for Specialty Trade Artisans, Payment for Non-bid Item Materials and Payment for Engineering Services.

The Contractor shall be required to furnish certified paid receipts for Sub-Contractor Specialty Trade Artisans, Equipment Rentals, Non-Bid Item Materials and Engineering/Consultant Services utilized to perform Non-Bid Item Work Orders prior to payment by the DCR.

ITEM 5: BASE LABOR RATE (PAYMENT FOR LABOR COSTS):

The Contractor will be compensated for associated labor costs through ITEM 5: BASE LABOR RATE as specified under Part V Technical Specifications of this contract.

ITEM 5a: PAYMENT FOR RENTAL EQUIPMENT:

The Contractor will be paid the actual cost for rental equipment and its operator (if included as part of the rental cost) that may be required to perform certain repair work, plus ten (10) percent. The rental equipment shall not be part of the tradesman basic tool kit as mentioned under ITEM 5: BASE LABOR RATE specified under Part V Technical Specifications of this contract. The Contractor must get the authorization of the Engineer before any equipment is rented and competitive prices may be required if the Engineer so directs.

Contractor-owned equipment required with the exception of equipment listed under the various artisan descriptions in ITEM 5: BASE LABOR RATE will be reimbursed based upon the Contractor's actual equipment ownership costs (to include overhead and profit) or other equipment rate books or guides to determine a fair and reasonable rate for compensation.

Rental Equipment will not carry any overtime premium rate after being in full operation for more than 8 hours in a day.

Compensation for Rental Equipment (or Contractor-owned equipment) shall be paid through ITEM 6: RENTAL EQUIPMENT (Non-Bid Item Work).

Unless the rented equipment cost includes the operator, the Contractor will receive compensation for the operator of the rental equipment used for Non-bid Item work as specified in ITEM 5: BASE LABOR RATE.

All rental equipment and tools shall be in excellent working condition. The Contractor shall not be paid for equipment down time at the discretion of the Engineer.

All rental equipment and tools which are necessary to prosecute the work under the various contract bid items shall be incidental to those Items at no additional compensation.

ITEM 7: PAYMENT FOR SPECIALTY TRADE ARTISANS:

For Non-bid Item Work Orders, the Contractor will be paid for any specialty trade artisans to perform work required to repair or maintain the bridge.

If requested by the Engineer, the Contractor shall submit all the documentation and licenses to the Engineer to demonstrate work force abilities to perform the specialty trade.

When specialty trades are required to complete any Non-bid Item Work Orders and those trades are other than those listed under ITEM 5: BASE LABOR RATE, the reimbursement will be made as outlined below:

Where the Contractor's own work forces are utilized to perform specialty work other than the trades listed under ITEM 5: BASE LABOR RATE, the compensation will be made under ITEM 5: BASE LABOR RATE with a different compensation factor. This factor will be calculated by dividing the hourly wage of the special trade as shown on the Prevailing Wage Rate Schedule by the skilled laborer hourly wage as shown on the Prevailing Wage Rate Schedule. This compensation factor shall then be multiplied by the BASE LABOR RATE unit bid price for ITEM 5 to arrive at the artisan's compensation to be paid.

Where a Sub-Contractor is employed for specialty work, the Contractor shall accept as full payment an amount equal to the cost to the Contractor of such work as determined by the Engineer, plus ten (10) percent. The compensation will be made under ITEM 7: SPECIALTY TRADE ARTISANS (Non-Bid Item Work).

No Subcontractor shall be ordered until approved by the Engineer and competitive prices may be required if the Engineer so directs.

All specialty trade artisans which are necessary to prosecute the work under the various contract bid items shall be incidental to those Items at no additional compensation.

ITEM 8: PAYMENT FOR NON-BID ITEM MATERIALS:

For materials used for Non-bid Item Work Orders, the Contractor will be paid the actual cost for materials and their delivery charge that are required to maintain or repair the bridge plus ten (10) percent. Any arrangements for the purchase of materials will be considered incidental. No materials shall be ordered until approved by the Engineer and competitive prices may be required if the Engineer so directs. Compensation for materials not covered by Bid Items shall be made under ITEM 8: MATERIALS (Non-Bid Item Work).

All materials which are necessary to prosecute the work under the various contract bid items shall be incidental to those Items at no additional compensation.

ITEM 9: PAYMENT FOR ENGINEERING SERVICES:

When any Engineering/Consultant Services are required for a Non- Bid Item work order, the Contractor will be paid the actual cost for these services, plus ten (10) percent.

For each non-routine structural repair, the Contractor shall submit drawings and design calculations prepared and stamped by a Massachusetts Registered Professional Engineer of the appropriate discipline within one week of notification (seven (7) calendar days after receipt of formal work order). The submittal shall address all structural defects itemized in the work order. It shall be submitted to DCR and the Contractor must get the proposed design approved by DCR prior to commencing any work.

When Engineering/Consultant services are deemed necessary by the Engineer, the design firm will submit a cost estimate for the proposed work. This estimate will include the classification, estimated hours needed, and the actual hourly rate for each individual anticipated to be used in developing the finished product. The Engineer shall approve all Engineering/Consultant services cost estimates prior to any design work being undertaken.

The maximum hourly rate allowed will be limited to \$100 per hour. The billable rates shall include overhead & profit. Overhead shall not exceed a maximum of 155%. The profit fee is 10%. The billable rate shall be calculated using $1.10 * (\text{Base Hourly Rate} + \text{Base Hourly} * \text{Overhead Rate } \%)$. Compensation for Engineering/Consultant Services for Non-bid Item Work Orders shall be made under ITEM 9: ENGINEERING SERVICES (Non-Bid Item Work).

All engineering services which are necessary to prosecute the work under the various contract items shall be incidental to those Items at no additional compensation.

Schedule

It is essential that work under this contract be carefully planned and organized in such a manner that the work can be completed in the shortest possible time. The Contractor will be required to submit to the DCR, for approval, a schedule of operations within one (1) calendar day after Notice to Proceed with the work. Approval of the Contractor's schedule of operations by the DCR does not relieve the Contractor from the responsibility of completing the work within the time specified or waiver of liquidated damages.

The Contractor shall review the Scope of Work outlined by the Engineer and shall communicate to the Engineer any alternate procedures which may accomplish the necessary repairs in a shorter time period. Based on the Scope of Work, the Contractor shall submit for approval, a schedule showing the order of work, estimated cost, dates for starting and completing the various operations, detailed methods of completing the items of work and the kind and quantity of equipment and labor he proposes to use, and a step-by-step description of the operations. Work shall not commence until approval of this schedule.

Progress Chart

The Contractor shall prepare and maintain a Progress Chart drawn to a suitable scale, so as to indicate with symbols, the percentage of the work completed at any time. The Contractor shall update the Progress Chart weekly and submit copies of the same to the Engineer.

Access, Traffic Management and Control

In most cases, the bridge (or Storrow Drive Tunnel) shall remain open to vehicular and/or pedestrian traffic. A traffic management/ control plan shall be implemented by the Contractor for the duration of the assignment as directed by the Engineer. Traffic Control Services (Police Details) as required shall be arranged by the Contractor and reimbursement (no mark-up) will be made under the specified bid item allowance provided.

The Contractor shall furnish and place all barricades, temporary barriers, plastic barrels, traffic cones, regulatory, warning and guide signs; all of which must conform with the requirements of the "Manual on Uniform Traffic Control Devices for Streets and Highways" and amendments published by the U.S. Department of Transportation Federal Highway Administration and the details and notations indicated on the plans and/or as directed by the Engineer. The Contractor shall be held responsible for all damage to work due to any failure of signs and barricades to protect the work from traffic, pedestrians or other causes and shall maintain adequate lighting at night.

If the Engineer decides a bridge shall be closed for the assignment, the Contractor shall furnish and place all barricades, concrete barriers, barrier fences etc. and "BRIDGE CLOSED" signage at both approaches to the work zone.

If directed by the Engineer, the Contractor shall place variable message boards for advance notification for any scheduled closures or detours that may inconvenience the traveling public.

Unless otherwise stipulated in the specifications as an item for payment, compensation for furnishing, maintaining and removal of all warning and regulatory signs, barricades, concrete barriers, barrier fences and other warning devices will be paid for by the Contractor.

Maintenance

The contractor shall conduct the work in a neat and orderly manner and shall cooperate with maintenance forces of the DCR by keeping the site of work and adjoining area usable and in a neat condition.

No materials or equipment shall be left on the walkways after working hours except as permitted by the Engineer. The Contractor shall provide for the removal of all materials spilled from his trucks on existing pavements over which it is hauled, and assume all (legal and financial) responsibilities as the result from by the spills.

Areas both within and beyond the site of the work that are damaged by the Contractor and his operations shall be restored to their original condition at his own expense.

Utilities

The Contractor is cautioned that work could affect various utilities in the construction area. The Contractor shall be responsible for notifying all utility companies of when he intends to perform work in the various areas. The Contractor shall inform the Engineer each day where he intends to work the following day.

Electric Power

The Contractor shall provide generators as required to provide power for all construction activities. No additional compensation shall be made for this provision.

Water Supply

The Contractor shall make all arrangements to provide and maintain adequate supply of water of a quality suitable for the required construction and domestic use and for drinking water. Water used for human consumption shall be kept free from contamination and shall conform to the requirements of State and Local Authorities for portable use. No additional compensation shall be made for this provision.

Staging and Scaffolding

No additional compensation shall be made for providing all necessary access staging and platforms as required to complete Bid Item work under this contract. All staging, platforms and other means of support shall conform to all State and Local ordinances.

Shielding

The Contractor shall exercise due caution and take all necessary precautions to prevent property damage and to protect the general public from exposure to construction debris, spray and any other potentially hazardous conditions. At the request of the Engineer and/or in cases where the plans or

contract documents specify the use of temporary shielding, the Contractor shall install the required shielding as instructed. The installation of temporary shielding consisting of plywood, tarps, or similar materials to contain debris shall be considered incidental to the work and no payment will be made.

Inspection Assistance

The Contractor shall provide ready and convenient access for the Engineer and Inspection Agencies to all parts of the work site including operation of any lift vehicles, furnishing, erecting, and moving scaffolding, platforms, ladders and other facilities reasonably required for such access. No additional compensation shall be made for this provision, and cost should be included in the Contractor's bid price for each work item.

Engineer's Equipment / Field Office

Work Order assignments anticipated under this maintenance and repair contract will not require establishing a field office for the DCR Resident Engineer, however there may be a request to provide some limited equipment and supplies. To cover any expenses, an allowance has been established for this bid item, and the Contractor shall be reimbursed for actual expenses plus ten (10) percent. The Contractor shall be requested to submit all receipts for these expenses prior to payment being made by the DCR.

Weather Conditions

In the event of temporary suspension of work or during inclement weather or whenever the Engineer shall direct, the Contractor shall be responsible for the protection of his work and all subcontractors and their work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or of any of the Subcontractors so as to protect his work, such work and materials shall be removed and replaced at the expense of the Contractor. The Contractor shall also be responsible for clearing ice, snow and debris after the weather event as necessary to resume the work.

Bridge Plans

When requested by the Contractor, the Project Engineer will provide copies of any available plans for bridges where work is assigned.

Professional Engineering Services

The Contractor shall have a Registered professional Engineer, licensed in the Commonwealth of Massachusetts in the field of Structural Engineering, either as a member of his staff or available as needed throughout the duration of the contract to assist in the development and execution of the various detailed repair procedures. The Professional Engineer shall personally review and be responsible for all procedures and shop drawings submitted for approval by the Engineer. No additional compensation will be made for engineering services required to complete bid item work under this contract. Engineering services required for non-bid item work shall be reimbursed as specified in these Special Provisions.

Permits and Fees

All necessary permits and permit fees are the responsibility of the Contractor.

Order of Conditions

In the event a work assignment will require compliance with the Order of Conditions issued by the Conservation Commission having jurisdiction over the location of the proposed work, the Contractor shall comply with any additional special conditions requested by the Conservation Commission.

Any such additional special conditions that fall outside the scope of work for each bid item shall be considered as a change order request and additional compensation shall be negotiated between the Contractor and the DCR.

Brand Names

When a particular brand name is specified, another brand name that is equal may be used.

Lead Paint

It is expected that many of the bridge structures which the Contractor will be working on contain lead paint. It will be the Contractor's responsibility to follow all laws and regulations regarding lead paint including abatement, removal and disposal. No additional compensation will be made for lead paint abatement, removal and disposal as the Contractor's charges for all such work shall be included in the cost of the various items of work.

Health and Safety

The Contractor shall conduct all work in compliance with all applicable safety and health laws and regulations. The Contractor is responsible for requiring employees, including sub-contractor employees and visitors, to wear appropriate personal protective and lifesaving equipment in all operations where there is an exposure to hazards or where this requirement indicates the need for using such equipment.



BID PACKAGE

PART V

TECHNICAL SPECIFICATIONS

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ITEM 1 EMERGENCY MOBILIZATION (EACH)

Description

This Item is intended to pay the Contractor for mobilizing those forces, materials, and equipment necessary for the timely response to an emergency and to begin work as directed.

This item shall include, but is not limited to, those preparations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site, for the establishment of facilities necessary for the work assignment, and for operations which must be performed and/or for costs not specified in the Contract and not included under any other Contract Item.

Payment for emergency response shall be in addition to that for any other items that may apply toward the completion of each emergency work order.

The Contractor shall respond to every *emergency* work order notified by the Engineer, and the Contractor shall commence work on the site within **four (4)** hours of that notification.

In the event that the Contractor does not satisfy the **four (4)** hour allotted time frame for an emergency response, payment for an emergency response will be made only at the discretion of the Engineer. Liquidated damages may be assessed in the amount specified in Part IV Special Conditions under Non-Response Penalties for each assignment the Contractor fails to respond as directed.

Basis of Payment

This Item shall be paid at the contract unit bid price EACH for every *emergency* work order under which the Contractor meets the response requirements outlined.

ITEM 2 MOBILIZATION (EACH)

Description

This Item is intended to be used as a means of providing payment to the Contractor for purposes of mobilizing those forces, materials and equipment necessary for each *scheduled (non-emergency response)* work order assignment.

This item shall include, but is not limited to, those preparations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site, for the establishment of facilities necessary for the work assignment, and for operations which must be performed and/or for costs not specified in the Contract and not included under any other Contract Item.

Payment for mobilization shall be in addition to that for any other items that may apply toward the completion of each scheduled work order.

When scheduled work is assigned, the schedule has been established for undertaking such work, and the Contractor fails to commence the work as scheduled, liquidated damages may be assessed in the amount specified in Part IV Special Conditions under Non-Response Penalties for each assignment the Contractor fails to respond as directed.

Basis of Payment

This Item shall be paid at the contract unit bid price EACH for every *scheduled (non-emergency)* work order under which the Contractor meets the response requirements outlined.

ITEM 3 ENGINEERS EQUIPMENT (ALLOWANCE)

Description

Work Order assignments anticipated under this maintenance and repair contract will not require establishing a field office for the DCR Resident Engineer, however there may be a request to provide some limited equipment and supplies to the Resident Engineer such as a mobile phone and monthly data plan charges, lap top computer, digital camera, file storage devices (external hard drives, memory/flash drives). To cover any expenses, an allowance has been established for this bid item.

Any request for equipment and supplies by the Resident Engineer shall be made to the DCR Project Engineer and Field Supervisor for Construction for review and approval and not directly to the Contractor.

Any equipment and supplies purchased by the Contractor and reimbursed by the DCR shall become the property of the DCR at the completion of this Contract.

Basis of Payment

The Contractor shall be reimbursed for actual expenses plus ten (10) percent. The Contractor shall be requested to submit all receipts for these expenses prior to payment being made by the DCR.

ITEM 4 POLICE DETAIL (ALLOWANCE)

Description

Work under this item shall consist of furnishing traffic control services required to regulate, control and protect vehicular and pedestrian traffic on existing roadways, pathways and parking facilities which will be interfered with by the Contractor's operations. Where vehicular and pedestrian traffic is maintained, the work shall be conducted and guarded so that there will be at all times a safe passageway.

Construction Methods

The Contractor shall provide such police officers, as may be deemed necessary by the Engineer, for the direction and control of vehicular and pedestrian traffic. Such officers shall wear regulation policemen's uniforms. Only State Police shall be employed on all parkways, roadways and property under the care and control of jurisdiction of the Department of Conservation and Recreation and State roadways. Police Officers may be obtained from the City/Town Police Department where work is taken place on local streets (non DCR or State roadways) only as applicable or as directed by the Engineer.

Police officers, employed by the Contractor on a temporary basis, are considered to be employees for payment purposes only. The Contractor shall issue W-2 "Statements of Earnings and Taxes Withheld" to such employees and must submit copies thereof to the Massachusetts Department of Revenue in the usual manner prescribed by law. With respect to orders, control and direction, State Police shall be under the jurisdiction of the State Police Commander and local City /Town Police under the local City/Town Police Chief.

Method of Measurement

The Contractor shall include in the bid the lump sum allowance provided for furnishing Traffic Control Services. The Contractor must submit certified copies of itemized bills of services rendered for review and approval by the Engineer. This lump sum allowance will be adjusted to the actual paid for, authorized, and approved services.

Basis of Payment

The service to be paid for under "Traffic Control Services" shall be the actual amount paid by the Contractor to provide satisfactory Traffic Control Services (Police Details) as stipulated above. No mark-up allowance for overhead shall be considered.

ITEM 5 BASE LABOR RATE (Non Bid Item Work) (HOUR)

Description

It is the intent to use this Item for unanticipated work which is outside the scope of the Contract Bid Items, as directed by the Engineer and as specified in Part IV Special Provisions under Non-bid Item Work Orders.

The Contractor will furnish competent artisans, possessing all pertinent licenses and/or certifications, as required by the Engineer, to maintain and repair various components of the bridges as they relate to the specialties itemized. The Contractor shall submit to the Engineer all pertinent licenses and/or certifications for each artisan prior to the commencement of any work.

The payment under this Item will only be for the artisan time spent performing the work order assignment.

Payment for equipment (other than the usual artisan tool kit) will be made under ITEM 6: Payment for Rental Equipment. All tools and equipment in artisans' tool kits shall be in excellent working condition. Artisans and tool kits are described below:

Skilled Laborer

Small hand tools, hand held power tools, and equipment, and power source as necessary to run the equipment that is normally used in the trade.

Equipment Operator

Shall have all the licenses and certifications required by the Commonwealth of Massachusetts for the equipment he or she will be operating. Operators shall be in possession of their licenses at all times and show it to the Engineer when requested.

Equipment which does not require a special licenses or certification for its operation shall be considered incidental to the artisan using it.

Carpenter:

Hammer, framing square, tape measure, pouch, levels, hand saws, all power tools common to the trade with power source as necessary to run the equipment.

Welder /Iron Worker /Millwright:

Spud wrench, dowels, alignment pins, tape measure, pouch, levels, chipping hammer, wire brushes, eye shields, gloves, protective clothing, rivet buster, air hammer, jack hammer, reamers, AC/DC, 300 amp, 100% duty cycle (minimum size) welding machine, torches for cutting, burning, or preheating steel, including fuel tanks, grinders, heating oven for all welding consumables and other equipment that is normally used in the trade.

Bridge Painter:

Hand scrapers, wire brushes, paint spray apparatus, needle guns, wire wheels, gloves, protective

clothing and all power tools common to the trade with power source as necessary to run the equipment. The construction of any containment system as required for paint removal shall be paid for under Skilled Laborer. Materials required for the containment shall be paid for under the non-bid materials allotment.

Electrician

Wire cutters, wire strippers, pliers, screwdrivers, utility knives, hammer, tape measure, hex keys, crimping tools, fish lines, multimeters, clamp on ammeters, AC ammeter, DC megger, flashlights, gloves, protective clothing, allen wrenches, files, scrapers, files, conduit benders, conduit threader, solder and soldering equipment, electric and hydraulic power tools including portable generators necessary to run the equipment and other equipment that is normally used in the trade. The Contractor must provide CDL Certified Electricians when operating trucks and equipment that require such certification.

Mechanic:

All wrenches and sockets (English and Metric), screwdrivers, hammers, chisels,, scrapers, files, drills, and all other necessary hand tools, power tools common to the trade with power source as necessary to run the equipment.

Cement Mason:

All masonry tools trowels, shovels, mixers, hammers, chisels, and all other necessary hand tools, power tools common to the trade, with power source as necessary to run the equipment.

COMPENSATION

The Engineer will calculate total Base Labor Rate hours spent on the project by artisans.

To calculate the total Base Labor Rate hours, the Engineer will modify hours spent by various artisans on the project using adjustment factor(s) described below:

Overtime hours will be paid for work exceeding eight (8) consecutive hours per day or forty (40) hours per week and shall be compensated as specified in this Item.

HOURLY RATE – COMPENSATION TABLE
COMPENSATION FACTORS

<u>ARTISAN</u>	<u>REGULAR</u>	<u>OVERTIME</u>
SKILLED LABORER	1.00	1.30
EQUIP. OPERATOR	1.21	1.57
CARPENTER	1.25	1.63
WELDER/IRON WORKER	1.24	1.61

MILLWRIGHT	1.13	1.47
BRIDGE PAINTER	1.28	1.66
ELECTRICIAN	1.35	1.76
MECHANIC	1.20	1.56
CEMENT MASON	1.34	1.74

The Compensation Factors above will be used to adjust the number of hours a specific artisan will be paid for, per one (1) hour of work.

Example:

If the time spent on this project by various artisans is:

- Laborer 8 hrs
- Carpenter 4 hrs
- Cement Mason 6 hrs

then the total hours for “Base Labor Rate” will be calculated as follows:

$$\begin{aligned}
 & \text{“Artisan A(hrs)”} \times \text{“Compensation Factor A”} + \\
 & \text{“Artisan B(hrs)”} \times \text{“Compensation Factor B”} + \\
 & \text{“Artisan C(hrs)”} \times \text{“Compensation Factor C”}
 \end{aligned}$$

$$\begin{aligned}
 & 8(\text{hr}) \times 1.00 + 4(\text{hr}) \times 1.25 + 6(\text{hr}) \times 1.34 = \\
 & 8.00(\text{hr}) + 5.00(\text{hr}) + 8.04(\text{hr}) =
 \end{aligned}$$

21.04 (billable hours)

BASIS OF PAYMENT

ITEM 5: Base Labor Rate, will be paid for at the Contract unit price per Hour, which price shall include all equipment and tools required to perform the normal artisans work. All clothing or safety equipment normally associated with the artisans work is also considered incidental to this item.

Any transportation required for an artisan and his tool box to travel to and from a job site will be incidental to the work. Ownership and operating costs, fuel and maintenance are not reimbursable for the vehicles and tools utilized under the artisan items.

This Item cannot be used to pay for work provided by other Items of this contract.

If a tradesman requires an assistant, then that assistant shall be compensated at the rate of a skilled laborer as outlined above in this Item.

SPECIAL NOTES REGARDING PREVAILING WAGE REQUIREMENTS

ITEM 5: Base Labor Rate establishes a unit price for the DCR to compensate the Contractor for furnishing competent artisans to maintain and repair various components of the bridges. Nothing herein should be construed as establishing, altering or otherwise affecting the prevailing wages rates applicable to the work performed or relieving the Contractor of its obligations to ensure that workers are paid in accordance with applicable labor and wage laws.

This is a state wide contract, with the potential for assignments within any county, and thus wage rates may vary. The Contractor shall consider this in when proposing this payment item in the contract bid. No adjustments to this pay item shall be considered for any variations by county.

Note that the erection and dismantling of scaffolding, rigging and containment for bridge painting work is subject to the “Painter (Bridges/Tanks)” prevailing wage rate. This includes surface preparation, including removal of all types of paint on bridges, the application of paint and the clean-up of debris resulting from paint removal operation on bridges, pursuant to the determination by the Massachusetts Department of Labor Standards’ 12/23/2009 “Notice Concerning the Removal and Application of Paint on Bridges and Tanks.”

ITEM ALLOWANCES RELATED TO BASE LABOR RATE COMPENSATION

As specified in Part IV Special Provisions under Non-bid Item Work Orders, the following allowances shall be included in the contract bid for these items related to performing non-bid item work order assignments:

ITEM 6 RENTAL EQUIPMENT (Non-Bid Item Work) (ALLOWANCE)

ITEM 7 SPECIALTY TRADE ARTISANS (Non-Bid Item Work) (ALLOWANCE)

ITEM 8 MATERIALS (Non-Bid Item Work) (ALLOWANCE)

ITEM 9 ENGINEERING SERVICES (Non-Bid Item Work) (ALLOWANCE)

ITEM 10 TEMPORARY PRECAST CONCRETE BARRIERS (LINEAR FOOT)

Description

The work under this item consists of furnishing, installing and maintaining temporary precast concrete barriers for traffic control during construction at the locations shown on plans or as directed by the Engineer.

Materials

Concrete barriers may be new or used and shall be delivered furnished with 2 eyebolts at each end for pinned connections. Barriers shall be constructed in lengths of ten feet. The units shall conform to the most current details shown in the Massachusetts Highway Department's Construction and Standard Details and shall comply with current American Association of State Highway and Transportation Officials (AASHTO) regulations.

Construction Methods

Each run of precast concrete barrier units shall be fastened together to form a continuous chain.

Method of Measurement

Temporary Precast Concrete Barriers will be measured complete in place by the linear foot used.

Basis of Payment

Temporary precast concrete barriers will be paid for at the Contract unit price per linear foot, complete in place, which price and payment shall constitute full compensation for furnishing, maintaining, positioning, repositioning and removing temporary precast concrete barriers for traffic control including all labor, tools and equipment necessary to complete the work.

The Contractor will not be compensated for any work necessary to realign units or replace damaged units. The Contractor will not be compensated for any temporary moves during construction for access by vehicles involved in the construction nor for repositioning barriers to redirect traffic.

ITEM 11 REFLECTORIZED DRUM WITH FLASHER (TYPE A) (DAY)

Description

The work under this item shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

This work shall consist of furnishing, positioning, repositioning, maintaining and removing reflectorized drums as needed in order to provide safe vehicular and/or pedestrian traffic control during any work, or as requested by the Engineer.

Materials

Reflectorized Drums shall conform to Subsection M9.30.9; no steel barrels shall be used.

The Type A low-intensity flasher shall be battery powered, portable, lens directed, enclosed lights. The flasher shall emit yellow light, and shall be set to operate in the flashing mode. Warning lights shall be in accordance with the current ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights, with regard to color, size of lens, flash rate and minimum “on”-time. Warning lights shall be mounted a minimum of 36” (inches) from the bottom of the lens to the pavement surface. Type A low-intensity flashing warning lights shall be visible on a clear night from a distance of 3,000 feet.

Construction Methods

Reflectorized Drums shall be positioned and removed from the pavement surface on a daily basis. Upon the completion of the workday, the Contractor shall remove the drums from DCR property.

Drums shall be positioned in accordance with the plans and the current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

Method of Measurement

Reflectorized Drum will be measured by the day, or any portion of a day that the devices were actually used on the project.

Basis of Payment

Reflectorized Drum shall be paid for at the Contract unit price per day. The payment of this unit price shall be full compensation for all labor, equipment, replacement of non-functioning flashers, vehicles, reflectorized drums with flashers (Type A) and all incidental work required to properly execute the work in accordance with these specifications, and to the complete satisfaction of the Engineer.

ITEM 12 TRAFFIC CONES FOR TRAFFIC MANAGEMENT (DAY)

ITEM 13 SAFETY SIGNING FOR TRAFFIC MANAGEMENT (SQUARE FOOT)

ITEM 14 PORTABLE BREAKAWAY BARRICADE TYPE III (EACH)

Description

The work under these items shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

The work consists of furnishing, installing, positioning, repositioning, maintaining, and removing as needed and/or as directed, traffic cones for lane reductions for work zones, regulatory, warning, and guide signs together with their supports, and portable breakaway barricades.

The design, application and installation of all signing for construction operations shall conform to the current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

The Contractor shall be responsible for the installation of adequate safety precautions for the protection of the traveling public and his own personnel.

Materials

Materials required under these Items need not be new but must be in first class condition and acceptable to the Engineer. Any materials that in judgment of the Engineer are unsatisfactory in appearance and/or performance shall be removed and immediately replaced by acceptable units.

Signs will be fabricated as specified in the relevant provision of Section 828.5 of the Standard Specifications. Signs over 50 square feet will require approval of design calculations and shop drawings of the support system where the sign will be unprotected.

All materials provided by the Contractor under this Item shall remain the property of the Contractor upon completion of the project.

Construction Methods

Traffic cones for traffic management shall be placed in accordance with the MUTCD.

Safety signage will be by attachment to existing structures and/or to temporary posts at locations agreed upon by the Engineer and in accordance with the MUTCD.

Signs which are damaged or are missing from their location shall be replaced by the Contractor without additional compensation.

All signs shall be maintained in a satisfactory manner including the removal of dirt, snow or road film that causes a reduction in sign reflective efficiency.

All erected signs not consistent with the use of the roadway shall be removed, completely covered, or turned away from traffic each day.

Barricades shall be moved from place to place as required during construction and as directed by the Engineer.

Method of Measurement

Traffic Cones for Traffic Management will be measured per day.

Safety Signing for Traffic Management will be measured per square foot,

Portable Breakaway Barricade Type III shall be measured per each.

Basis of Payment

Traffic Cones for Traffic Management will be paid for at the Contract unit price per day, which price shall include all labor and incidental costs to set up and break down lane closures as required for construction work zones.

Safety Signing for Traffic Management shall be paid for at the Contract unit price per square foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

Portable Breakaway Barricade Type III shall be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 15 SPECIAL LIGHTING UNIT (ARROW DISPLAY) (DAY)

ITEM 16 PORTABLE CHANGEABLE MESSAGE SIGN (DAY)

Description

The work under these items shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

The work shall consist of furnishing, installing, positioning, repositioning, maintaining and removing from roadways as needed and/or as directed Special Lighting Unit (Flashing Arrow) and Portable Changeable Message Board when employed as traffic control devices for the protection of the traveling public and working personnel during construction.

Materials

The units shall consist of a black background panel meeting the requirements of the Manual On Uniform Traffic Control Devices Section 6E-9, Table VI-3 for Type C and shall contain at least 15 # 4412A (or equal) amber lamps of approximately 8000 initial maximum candlepower each.

Arrow panels shall have the capability of the following mode selection: (1) left or right flashing or sequential arrows; or (2) left or right sequential chevrons; and (3) double flashing arrows; and (4) caution. The caution mode consists of four or more lamps, arranged in a pattern which will not indicate a direction.

Arrow panels shall automatically provide for a minimum of 50% dimming from their rated lamp voltage at night. The flashing rate of the lamps shall not be less than 25 or more than 40 flashes per minute.

Minimum mounting height should be seven (7) feet above the roadway to the bottom of the panel, except on vehicle mounted panels which should be as high as practicable.

Construction Methods

The special lighting unit and portable changeable message sign shall be positioned at the direction of the Engineer. The Contractor shall be responsible for the maintenance of these devices and defective devices shall be replaced immediately at the Contractor's expense.

Method of Measurement

Special Lighting Unit (Flashing Arrow) and Portable Changeable Message Sign will be measured the Unit Day or for any portion of a day that the devices were actually used on the project. A Unit Day shall consist of a 24 hour period or fraction thereof.

Basis of Payment

Special Lighting Unit (Flashing Arrow) and Portable Changeable Message Sign will be paid for at the Contract unit price per unit day, which price which price shall include all labor, materials, equipment and incidental cost required to complete the work.

ITEM 17 TEMPORARY FENCE (LINEAR FOOT)

Description

The work to be done under this item shall conform to the relevant portions of Section 600 of the Standard Specifications and the following:

The purpose of the fence is to completely close off the construction work area, particularly when construction activities have ceased for nights and weekends.

The work for this item shall also consist of removing and resetting temporary fence for construction operations and as directed by the Engineer, and final removal and disposal of the temporary fence at the completion of the project:

Materials

Fence materials shall conform to Section 644.40 of the Standard Specifications. The minimum fence height shall be 6 feet. Gates shall be used at all locations that are to be opened on a regular basis.

Fence fabric shall conform to Section M8.09.2 of the Standard Specifications.

Construction Methods

All construction shall conform to the relevant portions of Section 644 of the Standard Specifications.

All posts shall be driven into the ground and be firmly supported. Posts located on the bridge deck shall be firmly attached to temporary precast concrete median barriers or temporary single face precast concrete barriers.

Gates shall be locked at all times when there is no construction or watch personnel present.

Method of Measurement

Temporary Fence will be measured by linear foot between fence posts, complete and in place. No additional measurement will be made for resetting any fence for a stage of construction that was already installed for a previous stage of construction.

Basis of Payment

Payment for Temporary Fence will be paid for at the Contract unit price per foot of fence, which price shall constitute full compensation for all labor, tools, equipment, materials, and other incidentals required for installation, relocation (if required), and final removal of the fence.

ITEM 18 TEMPORARY ILLUMINATION FOR WORK ZONE (DAY)

Description

The work under this item shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

The use of temporary portable light towers shall be limited to balloon diffuser systems.

These portable light towers shall be used throughout the project area for temporary work zone lighting. The use of unshielded high wattage flood lights shall not be permitted.

The portable balloon light tower shall be used, relocated, and adjusted to meet the criteria in Section 850 of the Standard Specifications.

Method of Measurement

Temporary Illumination for Work Zone will be measured per Day.

Basis of Payment

Temporary Illumination for Work Zone will be paid for at the Contract unit price per Day. This cost shall include all labor, materials, equipment, tools, and all incidentals required for the installation of work zone lighting equipment. This shall include, but not limited to, wiring connections, equipment relocations and include all material and labor incidental to meet a complete and functional and operational system. The price of this item shall include any possible fabrication and installation of luminaires.

The per day price shall be full compensation for all "Temporary Illumination of Work Zone" regardless of the number of concurrent work areas, amount of equipment concurrently in use, or the durations of or changes of the work shifts per day.

ITEM 19 TEMPORARY PROTECTIVE SHIELDING (SQUARE FOOT)

Description

Work under this Item shall consist of designing, furnishing, installing, maintaining, removing and disposing of a protective shielding system in all areas where demolition and construction activities are conducted, to protect vehicular and/or pedestrian traffic and water ways from falling or flying debris, tools or incidental items.

Construction Methods

All shielding shall meet the following requirements.

1. The Contractor is responsible for the designing, furnishing, installing, maintaining, removing and disposing of all temporary shielding.
2. The Contractor shall submit drawings stamped by a Professional Engineer registered in the State of Massachusetts, of the proposed temporary shielding to the Engineer for his approval prior to its installation. The drawings shall include details of all connections, brackets and fasteners.
3. Shielding shall be designed such that impact on traffic during installation and removal shall be minimal. The Contractor shall submit his traffic plan to the Engineer for approval.
4. All spaces along the perimeter of the shielding and at the seams shall be sealed to prevent dust and debris from escaping and falling into traffic below the bridge.
5. The shielding shall not decrease the minimum vertical bridge clearance to the roadway unless otherwise approved by the Engineer.
6. Shielding shall be designed to safely withstand all loads that it will be subjected to. The allowable design stresses shall be in accordance with AASHTO Standard Specifications for Highway Bridges. No debris shall be swung over traffic on or below the bridge.
7. The shielding shall be maintained and remain in place until the completion of repair work and may be removed with the approval of the Engineer.
8. The shielding shall remain the property of the Contractor and shall be removed by him from the site when no longer needed.

Method of Measurement

Work under this Item will be measured per Square Foot, complete in place.

Basis of Payment

Work under this Item will be paid for at the Contract unit price per Square Foot, complete in place, which price shall include all labor, materials, equipment, tools, engineering services, and incidentals costs required to complete the work.

ITEM 20 LOW ALLOY STEEL TRAFFIC PLATES (SQUARE FOOT)

Description

The work under this item consists of furnishing, installing, removing and resetting one inch steel plates as required in order to cover areas of excavation that have not been filled with rapid setting concrete at the end of the work day or to cover voids in the roadway or bridge deck. The steel plates shall be of sufficient dimensions to completely cover the area as determined by the Engineer in the field.

The plates shall be adequately secured to insure no movement from traffic.

At the completion of the contract, the steel plates shall remain the property of the Contractor.

Method of Measurement

Low Alloy Steel Traffic Plates will be measured by the actual square foot area of steel plate installed for each location. No allowances will be made for removing and resetting the plates to complete the repair.

Basis of Payment

Low Alloy Steel Traffic Plates will be paid for at the Contract unit price per square foot for steel plates and shall include full compensation for all labor, tools, materials, furnishing plates, removing and resetting plates, transportation to the project, removal of steel plates and equipment necessary for proper completion of the work to the complete satisfaction of the Engineer.

ITEM 21 EROSION CONTROL BARRIER (LINEAR FOOT)

Description

Work under this item consists of furnishing and placing Compost Filter Socks to provide a barrier of organic material to prevent or contain sedimentation. This item is to be used in place of hay bales.

Materials

Compost Filter Socks shall conform to the following specifications:

1. The Compost Filter Sock shall consist of non-biodegradable poly propylene or HPDE 3/8-inch knitted mesh material or biodegradable cotton or burlap 3/8 inch knitted fabric material, or other approved equivalent mesh material. The mesh sock should be sized to create a round or oval tube 12 inches in diameter when filled with organic material. Sock material shall be used in 100-foot lengths.
2. Infill material shall consist of organic compost or mulch material and shall be between 20 100 percent (dry weight basis) organic material as determined by ASTM D2974 (method A) Standard Test Methods for moisture, ash and organic matter of peat and other organic materials.
3. Moisture content shall be <150 percent by dry weight as measured by ASTM D2216 Standard Test Method for Laboratory Determination of Water Content of Soil and Rock and ASTM D2974.
4. Particle size of the organic material as measured by sieving shall be as follows:

Sieve No.	Sieve Size (mm)	Sieve Size (in)	Percent Passing
75 mm	75	3	100
19 mm	19	0.75	70 – 100
4	4.75	0.187	30 – 75
20	0.850	0.0334	20 – 40

Construction Methods

Mulch or compost material shall be blown in to the fiber sock using a mulch blower and shall be filled at the project site and at the approximate location of the final installation.

The filled sock shall be reposition as needed to the correct location as noted on the plans and staked with oak stakes, 1 inch by 1 inch and 3 feet long every 10 feet along the length of the sock.

If necessary, joints between socks should be overlapped at least 2 feet and staked. Ensure the sock ends at any joint maintains good contact with the ground.

The ground surface under the compost filter sock should be smooth and free of sharp rocks, limbs, sticks, stumps or other materials that will interfere with good contact with the ground surface or that could cut the filter sock material. Excavation to embed the compost sock is not required.

Method of Measurement

Erosion Control Barrier (Compost Filter Sock) will be measured per linear foot, not including any overlapping sections, and shall include all materials, labor and equipment necessary for the installation.

Basis of Payment

Erosion Control Barrier (Compost Filter Sock) will be paid for at the Contract unit price per linear foot of length, not including any overlapping sections, and shall include all materials, labor and equipment necessary for the installation.

If biodegradable sock material is used, the item cost will include labor, material and equipment needed to remove and dispose of any sedimentation contained by the Compost Filter Sock.

If non-biodegradable sock material is used, the price will include labor, materials and equipment to cut the tube open and disperse the compost material and disposal of the sock material, as well as removal and disposal of any sedimentation contained by the Compost Filter Sock.

ITEM 22 TURBIDITY CONTROL CURTAINS (LINEAR FOOT)

Description

Work under this item consists of furnishing, installing, maintaining and removing floating silt dam/debris containment barriers (turbidity control curtains) as necessary to complete construction along the banks of waterways for protection of the environment.

Materials

Turbidity control curtain shall consist of fabric made of polyester reinforced vinyl high visibility yellow 18 oz/yd² weight; connector shackled and bolted load lines with slotted reinforced PVC pipe for fabric closure, and flotation of 8" expanded polystyrene over 19 lbs/ft buoyancy, with ballast line made of 5/16" galvanized chain (1.1 lbs/ft) and top load line made out of 5/16" galvanized wire rope enclosed in heavy tubing, as manufactured by Containment Systems, Parker Systems Inc., Brockton Equipment Co., Sunshine Technology Corp. or approved equivalent.

Construction Methods

The depth, length and location configuration and method of deployment of the turbidity control curtain shall conform to the manufacturer's specifications. The Contractor shall submit a plan showing this information to the Engineer for approval. Construction shall not begin until such approval is obtained in writing.

The silt dam/turbidity control curtain shall be ready for installation prior to the start of construction and shall be in place at all times when the Contractor is required to work in or perform work that causes any type of disturbance in the waterway which results in silting of the waterway. The turbidity control curtain may be kept in place continuously at the Contractor's option. The turbidity control curtain shall be changed and disposed of in accordance with the manufacturer's recommendations or at the direction of the Engineer.

The Contractor shall note that high water flows may result in damage or loss of the turbidity control curtains, in which case the curtains shall be repaired, reset or replaced at Contractor's expense, as directed by the Engineer.

Method of Measurement

Turbidity control curtains will be measured per linear foot, complete in place and accepted (not including any overlapping sections), maintained, relocate, removed, and disposed of.

Basis of Payment

Turbidity control curtains will be paid for at the Contract unit price per linear foot of length, which price shall include the cost of all labor, materials and equipment necessary for furnishing, installing, maintaining, repairing, resetting, replacing and removing the debris containment barriers, in addition to removing and properly disposing of the silt material.

ITEM 23 UNCLASSIFIED EXCAVATION (CUBIC YARD)

Description

The work under this item shall conform to the relevant provisions of Section 120 of the Standard Specifications and the following:

The work to be done under this item shall consist of excavation, stock piling and the reuse of or removal and legal disposal of any materials not being removed under some other item which is encountered within the limits of the Contract in accordance with the specifications and in close conformity with the lines, grades, thickness and cross sections shown on the contract drawings or established by the Engineer.

Unclassified excavation shall include any materials such as clay, bituminous concrete, sand, gravel, topsoil, muck, boulders of ½ cubic yard or less, existing roadway surfaces, sidewalks, unsuitable curbing, guardrails, fences and gates, anchors, steel bearings, steel posts and existing signs, including foundations and supports, not paid for under other contract items.

Disposal of Excavated Materials

No excavated material shall be placed on DCR property without the approval of the Engineer or placed adjacent to DCR property without the approval of the Engineer and the property owner. All slopes shall be left with neat even surfaces, according to the lines, grades and directions given.

All unsuitable materials and surplus materials which cannot be used within the limits of the work shall be legally disposed of by the Contractor outside the limits of DCR property without additional compensation and in such a manner as to not obstruct streams or otherwise impair the drainage, appearance, safety or efficiency of any structure or any other part of the roadway.

No materials from the excavation, or from construction, shall be deposited in flood plains or within 100 feet of any body of water without compliance under the applicable provisions of the Massachusetts Wetlands Protection Act. Notification to the Engineer, in writing, will be required where such work has been authorized by the local Conservation Commission.

Topsoil Excavated and Stacked

This work shall consist of removing topsoil and stacking it where and as directed in accordance with the relevant requirements of these specifications.

Topsoil to be reused will be selected, after testing by the DCR, from material obtained from test pits, or as directed by the Engineer, shall be stacked neatly outside the limits of the proposed

slopes within the DCR Right-of-Way or such material may be temporarily stacked outside the DCR Right-of-Way for his own convenience, with the approval of the Engineer, in which case the Contractor shall be responsible for all arrangements and negotiations. If the material stacked outside of the Right-of Way is not available when needed for use on the project, the Contractor will furnish at his own expense an equal volume of equal material.

If the storage areas outside the Right-of-Way require clearing and grubbing, the Contractor shall do such work without additional compensation. Storage areas shall be cleared, grubbed and rough graded so that a maximum amount of stacked material will be available for reuse.

The Contractor shall take reasonable care to avoid leaving any unsightly condition and to avoid unnecessary damage or injury to natural surroundings and roadway growth. The landscape shall be left in a satisfactory, neat and trim condition upon completion of the work.

Replacement of Excavated Material

If the Contractor wastes any excavated materials which are suitable and required as embankment material, select material or gravel sub-base, he shall furnish, at his own expense, similar materials obtained from borrow. Borrow materials shall be of satisfactory quality, in an amount equal to the amount of such materials wasted.

Method of Measurement

Unclassified Excavation will be measured in units per cubic yard in its original position by the cross section method or, only if not feasible, by the truckload or some other practicable method designated by the Engineer.

Basis of Payment

Unclassified Excavation will be paid for at the Contract unit price per cubic yard, which price shall be full compensation for all materials, tools, equipment, removal off site, storage of material, re-handling of material and labor incidental to and necessary for the completion of the work to the satisfaction of the Engineer.

ITEM 24 GRAVEL BORROW (CUBIC YARD)

Description

The work under this item shall consist of furnishing and placing gravel borrow as shown on the plans or as directed by the Engineer. All work shall conform to the relevant provisions of Sections 150 and 170 of the Standard Specifications.

Materials

All gravel material whether coming from excavation or borrow shall consist of solid, sound material aggregate. It shall be clean from deleterious, organic, elastic or foreign matter and shall be adequately graded for satisfactory compaction into a stabilized soil substructure.

Gradation requirements for gravel shall be determined by AASHTO –T11 and T27 and shall conform to the following:

Sieve	Percent Passing
½ inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

The maximum size gravel stone for roadway base course shall and backfill around structures shall be three (3) inches.

The maximum size gravel stone under walks shall be two (2) inches.

Construction Methods

Gravel Borrow shall be compacted in 6 – inch lifts. The Contractor shall submit for approval the manufacturer’s data on the compaction equipment to be used.

Frozen material shall not be placed on embankments nor shall embankment be placed on material frozen. If during construction of embankments, the top layer becomes frozen to a depth of over three (3) inches, the frozen material shall be removed before succeeding layer is placed on the embankment. This work shall be performed at no additional expense to the DCR.

Method of Measurement

Gravel Borrow will be measured by the cubic yard, complete in place after compaction.

Basis of Payment

Gravel Borrow will be paid for at the Contract unit price per cubic yard, complete and accepted in place, which price shall include all labor, materials, equipment and incidental costs required for the work.

No separate payment will be made for fine grading and compacting but all costs in connection therewith shall be included in the unit price bid for Gravel Borrow.

ITEM 25 CRUSHED STONE FOR REVETMENT (TON)

Description

The work under this item shall conform to the relevant provisions of Subsection M2.01.1 of the Standard Specifications and the following:

This work shall consist of placing a crushed stone base below the riprap along abutments and wingwalls and where required and directed by the Engineer.

Materials

Crushed Stone shall conform to the requirements of the Standard Specifications.

Construction Methods

No compaction shall be required for depths up to 12 inches. For any depth over 12 inches, the crushed stone shall be placed and compacted in layers not to exceed 6 inches. Compaction will be accomplished by means of mechanical or pneumatic tampers. Compaction effects continue until the stones are firmly interlocked and the surface unyielding.

Method of Measurement

Crushed stone will be measured per ton. The weight slips shall be countersigned on delivery by the Engineer, and no weight slip not so countersigned shall be included for any payment under the Contract.

Basis of Payment

Crushed Stone for Revetment will be paid for at the Contract unit price per ton, complete in place.

ITEM 26 RIPRAP (TON)

Description

The work under this item shall conform to the relevant provisions of Subsection M2.02.0 of the Standard Specifications and the following:

Riprap shall consist of slope protection at the location shown on the plans and in accordance with these specifications and in close conformance with the lines and grades as shown on the plans or as directed by the Engineer.

Construction Methods

The stones shall be placed upon an approved bed of crushed stone to the lines and grades shown on the plans or directed by the Engineer. The top of riprap is to come as close to the grade of the existing ground as practical.

Each stone shall be carefully placed by hand or machine, on a prepared bed, normal to the slope and firmly bedded thereon.

The larger stones shall be placed closely together and the intervening spaces filled with smaller stones in such a manner that the entire surface will form a compact mass.

Method of Measurement

The quantity of riprap shall be the weight of stones measured in tons.

Basis of Payment

Riprap shall be paid for at the Contract unit price per ton; complete in place, which price and payment shall constitute full compensation for all labor, tools, equipment, materials, protection, and incidentals thereto, and to the complete satisfaction of the Engineer.

ITEM 27 HOT- MIX ASPHALT FOR MISCELLANEOUS WORK (TON)

Description

The work to be done under this item shall consist of furnishing and placing plant-mixed hot-mix asphalt for reconstruction or resurfacing of approaches to and pavement on bridges, and other various locations indicated on the contract Plans or as directed by the Engineer.

Materials

Hot-Mix Asphalt shall be in accordance with either MassDOT Hot-Mix Asphalt (HMA) standards, designated under Sections 460 and M3 of the Standard Specifications and all Supplements, or the MassDOT SUPERPAVE requirements designated as Sections 450 and 455 and the following:

Submit a current MassDOT approved Hot-Mix Asphalt (HMA) Job Mix Formula (JMF) sheet.

All Hot-Mix Asphalt mixes shall conform to MassDOT “Type I” mixes:

- Base or SBC-37.5 and SBC-25.0
- Binder or SIC-19.0 and SIC-12.5
- “State Top” or SSC 12.5 (w/ ½” aggregate) for Parkway use
& “3/8-inch State Top” or SSC-9.5 for Sidewalk use

SSC, SIC, SBC mixes shall be approved Mass DOT Mix Designs, submitted to the Department prior to paving for the following design levels:

Level 1 - Sidewalks, patching, driveways and playing courts (50 gyrations).

Level 2 - Secondary Roads and parking lots (5 gyrations).

Level 3 - High Volume and heavy load roads (100 gyrations).

The Department shall be responsible for testing the temperature, asphalt content and gradation with the Contractor or Supplier responsible for testing the volumetric properties. The Contractor or Supplier shall adjust the mix to correct any out of specified range results as quickly as possible.

The lot of mix tested shall be a split sample, taken at random for each day’s production or for each 750 tons. HMA lots will be considered Category C (Minor lot) from Table 450.3 of the 2010 Quality Assurance Specification for Hot Mix Asphalt Pavement.

Method of Construction

Hot-Mix Asphalt Parkway/Parking Lot Pavement Repair: (The thicknesses listed below are **MINIMUMS**). The final thickness **MUST, at a minimum**, match the existing total parkway pavement thickness.

- 1-3/4” MassDOT-Type “I”-“State Top” surface course or SSC-12.5, minimum
- 2” MassDOT- Type “I” binder course or SIC-19.0 and SIC-12.5, minimum

4” MassDOT- Type “I” base course or SBC-37.5 and SBC-25.0, minimum

Hot-Mix Asphalt Sidewalk Repair, **WITH DRIVEWAY:**

1-1/4” MassDOT-Type “I”-“3/8 State Top” surface course or SSC-9.5, minimum
3” MassDOT- Type “I” binder course or SIC-19.0 and SIC-12.5, minimum

Hot-Mix Asphalt Sidewalk Repair, **WITHOUT DRIVEWAY:**

1-1/4” MassDOT-Type “I”-“3/8 State Top” surface course or SSC-9.5, minimum
2” MassDOT- Type “I” binder course or SIC-19.0 and SIC-12.5, minimum

Where existing roadway and bridge deck pavement is to be resurfaced, the bituminous concrete shall be placed in one course to the grade and contour approved by the Engineer and having a thickness of 3.5 to 4.5 times the nominal maximum size stone in the mix being placed.

Method of Measurement

Hot-Mix Asphalt (HMA) for miscellaneous work shall be measured by the ton for all types of hot-mix asphalt listed, and shall be the actual and verified tonnage complete in place and approved. The quantity shall be determined by weight slips that have been properly countersigned by the Engineer at the time of delivery.

Basis of Payment

Hot-Mix Asphalt (HMA) for miscellaneous work shall be paid for at the Contract unit price per ton, complete in place, which price shall include all necessary tools, equipment, materials and labor to complete the installation of hot-mix asphalt per this specification, and to the satisfaction of the Engineer.

ITEM 28 CONCRETE DECK EXCAVATION (PARTIAL) (CUBIC YARD)

ITEM 29 CONCRETE DECK EXCAVATION (FULL DEPTH) (SQUARE YARD)

ITEM 30 CONCRETE SUBSTRUCTURE EXCAVATION (CUBIC YARD)

Description

The work to be done under these items consists of full depth and/or partial depth excavation and removal of delaminated, spalled, and de-bonded reinforced concrete from bridge decks, soffits (underside of concrete arches, deck slabs, tunnel ceilings) sidewalks, stairs, coping walls, beams, piers, abutments, backwalls, wingwalls, retaining walls and any concrete element that is part of the superstructure and substructure of a bridge or tunnel as shown on plans and/or as directed by the Engineer.

The removal of any bituminous concrete overlay pavement shall be considered incidental under this item of work. The work shall include removal of any deteriorated reinforcing steel as directed by the Engineer. Also included under this item is saw cutting of existing concrete at limits of removal to allow for a uniform depth for the repair. Exposed reinforcing shall be cleaned by grit blasting and shall be free from all oil, grease, rust and other foreign material.

Materials

Not Used.

Construction Methods

Equipment: Surface preparation and concrete removal equipment shall be of the following types:

- (1) Pneumatic and Power Driven Chipping Hammers: In no event shall any Pneumatic or power hammer weighing in excess of twenty-five (25) pounds be used for the removal of concrete. Pneumatic or power hammers heavier than the nominal fifteen (15) pound class shall not be used for removing concrete from below any reinforcing bar.
- (2) Grit Blasting Equipment: Grit blasting equipment shall be capable of removing rust and old concrete from exposed reinforcing steel when deemed necessary.
- (3) Saw Cutting Edges: Provide a neat line between the unexcavated and the excavated areas of concrete by means of mechanical concrete saws to affect a uniform concrete patch depth a minimum of 3/4 inches below the surface. Feathering of a patch will not be allowed. The configuration of the patch shall be determined by the Engineer. The Contractor shall take extreme care so as to not damage any steel reinforcing or embedded structural steel.

The Contractor may propose the use of other demolition equipment, the use of which shall be subject to the review and approval of the Engineer. The Engineer may reject the use of any equipment or demolition methods that may cause excessive vibration of the structure, or threaten to damage the structure or any part thereof, or cause discomfort to the users of the structure, or present a hazard of any kind to the structure, Workers, or the Public. Hoe rams shall not be used.

If the removal of deteriorated concrete results in full or partial exposure of reinforcing steel, but less than 1 inch of clearance exists between the sound concrete and the inside face of the exposed reinforcing steel, the Contractor shall remove enough sound concrete as necessary to achieve a 1 inch minimum clearance between the face of the excavated concrete and the inside face of the reinforcing steel.

Any reinforcing steel which is to remain and has been loosened or dislodged shall be realigned and re-tied by the Contractor with coated wire ties. This will be considered incidental to this item of work.

Any deteriorated reinforcing steel that requires replacement as determined by the Engineer shall be paid for under ITEM 35: Steel Reinforcement- Epoxy Coated.

If during the course of this operation, the Contractor damages the existing reinforcing steel which is not designated to be replaced, the Contractor shall submit to the Engineer for approval his method of repair. The approved steel reinforcing repair shall be completed by the Contractor at no additional cost to the Department.

Preparation of Surface: Immediately before preparation for placement of new concrete, the exposed area to be patched shall be free of all oil, grease, rust or other foreign material. These materials shall be removed by grit blasting or wire brushing and by the use of compressed air.

Temporary protective shielding shall be used on bridges over railroads, waterways, roadways during excavation and when, in the opinion of the Engineer, there is a possibility of dislodging concrete or debris from the bottom of decks and substructures. Temporary protective shielding shall be paid under ITEM 19.

The Contractor shall take all measures necessary to protect pedestrian, water ways and vehicular traffic from his construction operations. No debris, tools or incidental equipment of any kind will be permitted to fall into water ways and areas where vehicular or pedestrian traffic exists. Any material that accidentally falls into such areas shall be removed immediately. All materials removed under this item shall be removed from the job site and legally disposed of.

Method of Measurement

Field measurements shall be conducted by the Engineer of the excavated area following removal of the excavated material regardless of the demolition method used.

Concrete Deck Excavation (Partial Depth) will be measured for payment by the number of cubic yards of material excavated.

Concrete Soffit Excavation will be measured for payment by the number of square feet of material excavated.

Concrete Deck Excavation (Full Depth) will be measured for payment by the number of square yards of material excavated.

Concrete Substructure Excavation will be measured for payment by the number of cubic yards of material excavated.

Basis of Payment

Concrete Deck Excavation (Partial Depth) will be paid for at the Contract unit price per cubic yard.

Concrete Soffit Excavation will be paid for at the Contract unit price per square foot.

Concrete Deck Excavation (Full Depth) will be paid for at the Contract unit price per square yard.

Concrete Substructure Excavation will be paid for at the Contract unit price per cubic yard.

Price and payment shall constitute full compensation for all excavation, removal of deteriorated reinforcing steel, saw cutting, blasting cleaning, scaffolding, platforms, staging, man-lift vehicles, legal disposal of excavated materials and any other incidental item necessary to complete this item to the satisfaction of the Engineer.

ITEM 31 4000 PSI, 3/8 INCH 660 CEMENT CONCRETE (CUBIC YARD)

Description

The work performed under this item shall conform to the relevant provisions of Section 901 of the Standard Specifications and the following:

The work under this item consists of furnishing, forming and placing, curing and finishing new concrete in areas that have been excavated, and/or as shown on plans or as directed by the Engineer.

Materials

Cement Concrete:

Portland Cement: Shall conform to AASHTO M85-89, latest edition. Cement concrete shall conform to the requirements in accordance with the STANDARDS OF THE DCR LABORATORY CONCRETE chart below and shall be subject to approval by the engineer. The Contractor shall submit to the engineer in sufficient time for DCR lab testing and mix design, his proposed concrete supplier, source and type of materials for the various mixes of cement concrete included under this item.

Minimum 28 days Strength (Lbs/Sq. In.)	Minimum Cement (Pound/Cubic Yard) Max. Size C.A. (Inches)			In Place Slump (Inches)
	1-1/2	3/4	3/8	
3000	470	517	564	3 - 5
3500	517	564	611	3 - 5
4000	564	610	658	3 - 5
4500	611	658	605	3 - 5
Air Content (% \pm 1)	5.0	6.0	7.5	

Membrane Waterproofing and Protective Course:

Membrane waterproofing and masonry block for protective course shall be in accordance with Section 967 of the Standard Specifications

Miscellaneous Materials:

Plastic water stops, preformed joint fillers, weep holes and curing compounds shall be in accordance with Section 901 of the Standard Specifications.

Construction Methods

Forms:

Approved forms shall be provided by the Contractor. No extra compensation for falsework shall be allowed, such work being considered part of the form work. Falsework shall be set to give the structural camber indicated on the plans or as specified, plus allowance for shrinkage, shortening under load or settlement. Forms, falsework and centering shall be designed for a liquid head, equal to the maximum height of the liquid concrete in the forms for various placing conditions assuming the weight of the liquid concrete at 150 pounds per cubic foot, and in addition thereto a live load allowance of 50 pounds per square foot on horizontal surfaces.

When not otherwise specified on the plans, or in the specifications, forms for all exposed portions of structures shall be lined with approved material, or form sheathing which shall consist of five-ply water-proof plywood, approved metal sheathing or other approved material in order to give the concrete a smooth even finish, and uniform appearance.

Full sheets of plywood or other approved material shall be used wherever possible and shall be placed in a regular pattern. The use of small pieces and leftovers will not be permitted except as they may be needed to complete the design. Forms in good condition may be reused, but forms for any one exposed face shall be all new or all used material and a mixture of old and new forms will not be permitted.

The sheathing shall be joined tightly to prevent leakage from the mix and it shall be of sufficient strength to hold the concrete without bulging between supports. Forms shall be properly braced and tied so as to maintain proper dimensions. Bolts, rods or other satisfactory form ties shall be used for internal ties. Wire ties will not be permitted except when directed or where concrete is not exposed to view. The Engineer may require the Contractor to employ screw jacks or hard wood wedges in connection with the centering of falsework in order to take up any distortion or settlement in the form work either before or during the placing of the concrete.

Approved inserts shall be used in connection with all ties in the region of exposed surfaces of the concrete. They shall be so designed as to permit their removal from the concrete without injury to the concrete, and the metal remaining in the concrete shall be no closer than 1 1/2 inches to the surface. The inserts shall be truly round, not more than 1 1/2 inches in outside diameter and shall be treated with non-staining mineral oil or other satisfactory material adequate for preventing any adherence to surrounding concrete. Special tools and methods shall be used to remove the inserts from the concrete in a manner to prevent damage to the concrete.

Form ties of a design with a weakened section 1 1/2 inches back from the concrete face may be used at places of minor pressure when permitted by the Engineer, but such ties shall be provided with special inserts so as to assure the breaking off of the ties at the proper depth inside the face

of the concrete. When such ties fail to break off at the designed depths, the tie metal shall be drilled out before the tie hole is patched.

The use of wooden struts within forms; or of metal ties without approved inserts, as required, will not be permitted.

The centers shall be true to the lines, satisfactorily supported and firmly secured. They shall remain in place as long as directed and shall be replaced with new ones if they lose their proper dimensions and shape.

The shape, strength, rigidity, water-tightness and surface smoothness of re-used forms shall be maintained at all times. Any warped or bulged lumber must be resized before being used. Forms which are unsatisfactory in any respect shall not be used and shall be removed immediately from the work.

The inside of forms shall be coated with non-staining material oil or other approved material to prevent adherence of the concrete to the forms, immediately before placing the concrete. When oil is used, it shall be applied before the reinforcing steel is placed. Any material, which will adhere to discolor or affect the concrete in any manner, shall not be used.

Prior to placing concrete in the forms all foreign matter and any extraneous materials shall be removed.

Forms shall be inspected immediately preceding and during the placing of the concrete. All dimensions shall be checked carefully and any errors, bulges, warping or other defects shall be remedied before any concrete is placed.

The foregoing specifications for forms as regards design, mortar, tightness, bracing, alignment, treatment by coating with oil or other approved material, removing and reuse, shall apply to metal forms when such forms are approved for use. The metal forms used shall be of such strength that the forms will remain true to shape. Clamps, pins or other connecting devices shall be designed to hold the forms rigidly together and to allow removal without injury to the concrete. Metal forms, that do not present a smooth surface or that do not line up properly shall not be used. Special care shall be exercised to keep metal forms free from rust, grease or other foreign matter that will tend to discolor the concrete. Metal forms shall be provided with an adjustable metal section or occasional sections where wooden forms may be inserted to compensate for slight inaccuracies in measurement.

Handling and Placing Concrete:

The Contractor shall notify the Engineer at least 24 hours in advance of his intention to place concrete.

All concrete shall be placed during daylight, and the placing of concrete shall not be started unless it can be completed and finished during daylight hours, except that when an adequate and approved lighting system is provided beforehand, the Engineer may waive this requirement.

No concrete shall be placed until the depth, character and water conditions of the foundations, the adequacy of falsework and forms, the absence of debris in the forms, the condition of the construction joints, and the condition and spacing of the reinforcing steel have been inspected and approved by the Engineer.

The placing of concrete shall be so regulated that the pressures caused by the wet concrete shall not cause distortion or movement of the forms.

The operation of handling and placing the concrete shall be conducted so as to form an artificial stone of maximum density and impermeability and of uniform texture which shall show smooth surfaces when the forms are removed.

Concrete shall be deposited in such manner that the total deflection or settlement of supporting members and the final finishing of the surface shall have occurred before initial set of the concrete takes place. An approved admixture shall be used as necessary to retard setting.

Transportation:

The concrete shall be transported from the mixer and placed in the forms by a method which will permit handling concrete of the slump required without segregation. Buggies and wheelbarrows used for this purpose shall be equipped with pneumatic tires. Chutes may be used but the use of long chutes will be permitted only on authority from the Engineer. If such conveyors are allowed and the quality of the concrete as it reaches the forms or the methods of placing or working it therein are not satisfactory, the Engineer may order their use discontinued and the substitution of a satisfactory method of placing. Chutes shall be metal or metal lined, inclined so as to have a slope of between 2 and 3 horizontally to 1 vertically; and shall extend as nearly as possible to the point of placing concrete. Long chutes shall be provided with reverse flow or remixing hoppers in order to correct for segregation. All chutes shall be kept clean and free from coatings of hardened concrete.

Transportation of concrete by pumping will be permitted provided that the required slump and air content can be maintained at the discharge end of the hose and there is no adverse effect to the mix design. The equipment shall be suitable in kind and adequate in capability for the work. The operation shall be such that a continuous stream of concrete without air pockets is produced. When pumping is completed, the concrete remaining in the pipeline shall be ejected in such a manner that there will be no separation of the ingredients.

Pumping through aluminum piping will not be permitted.

At the conclusion of placement, the entire equipment shall be thoroughly cleaned.

Depositing:

The concrete shall be placed in the form the approved manner to prevent stone pockets, voids or segregation and to reduce re-handling and flowing in the forms to a minimum. The concrete shall not be dropped more than 3 feet or dragged more than 10 feet in the forms. Points of deposit shall be spaced not more than 20 feet apart nor more than 10 feet from the ends of the forms. Concrete shall be properly distributed in the forms by hand shoveling. The forms shall be filled at a rate of 1 to 3 feet in depth per hour unless an alternate form design is submitted and approved by the Engineer. Care shall be taken to avoid splashing the forms and reinforcing above the level of the concrete as placed.

Consolidation:

Each layer shall be thoroughly consolidated by rodding and vibration. The face of the forms shall be carefully spaded, if possible, to bring a dense mortar to the face, and produce a good finish.

All concrete for masonry structures, unless otherwise directed, shall be compacted by means of approved mechanical vibrators operated within the mass of the concrete. The Contractor shall provide approved methods of vibration to fully consolidate the mix. Vibrators shall be of internal type of standard make and approved capacity, and shall be capable of transmitting vibrations of the concrete at frequencies of not less than 4500 impulses per minute.

Vibration of forms or reinforcing shall not be permitted except where internal vibration is not practicable and then only with the approval of the Engineer.

The vibrator shall be applied directly to the mass at the point and time of deposit and moved throughout the mass continuously from point to point in the mix using care to avoid over vibration, causing segregations, over finished surface and excess water gain. Vibrators shall not be used close to the forms.

When concrete is placed in lifts, vibrators shall be inserted into at least half the depth of the underlying lift so to thoroughly consolidate the two lifts into an integral mass without streaks or hardened lift lines. Vibrators shall not be used to move concrete in the forms.

A sufficient number of vibrators shall be provided to obtain proper compaction in accordance with the rate of deposit.

Extreme care shall be taken to prevent penetrating or disturbing previously placed concrete which has become partially set.

Construction Joints:

Concrete in structures shall be placed in such a manner that all construction joints shall be exactly horizontal or vertical, as the case may be, and that they shall be straight and as inconspicuous as possible.

Construction joints shall be located in the field, spaced at no greater than 30 feet apart and approved by the engineer. Each 3rd joint shall be constructed as expansion joints. Expansions joints shall be spaced no greater than 90 feet apart and approved by the Engineer.

In order to allow for shrinkage, concrete shall not be placed against the second side of the construction joints for at least 12 hours after that on the first side has been placed.

Approval of the Engineer in writing must be secured before the placing of any construction joints not shown on the plans, except in case of emergency as specified in paragraph "C" hereinafter.

The plans on which a day's work is to terminate shall be predetermined before depositing of concrete begins. They shall in general be perpendicular to the lines of principal stress and in regions of small shears. Horizontal joints will not be permitted in retaining walls, unless otherwise indicated on the plans.

Unless otherwise indicated on the plans, interlocking or keying at construction joints shall be provided by use of keyways or dowels in a manner approved by the Engineer.

In walls requiring a construction joint it shall generally be a keyed vertical joint extending the full height above the footing. In retaining walls the second portion placed at a vertical joint shall be placed not earlier than 24 hours after the first portion is placed, except with special permission of the Engineer.

Construction joints, not shown on the plans and above ordinary low water level in retaining walls that retain earth fills shall have approved water stops and shall be furnished at the Contractor's expense.

When making a horizontal construction joint, care shall be taken to have the concrete below the joint as dry as possible and any excess water or creamy material shall be removed before the concrete sets. Within 12 hours after the concrete below the joint has been placed, the top surface shall be thoroughly cleaned by the use of wire brushes and all laitance and loose material removed so as to expose clean, solid concrete. Care must be taken not to loosen any of the coarse aggregate in the concrete. If for any reason this laitance is not removed before the concrete has hardened in place, it shall be removed using such tools and methods as may be necessary to secure the results specified above. Immediately before placing concrete above the joint, the surface of the concrete below the joint which has been cleaned as specified above shall be thoroughly wetted and coated with mortar of the same proportions used in the concrete. This mortar shall be thoroughly wetted

and coated with mortar of the same proportions used in the concrete. This mortar shall be thoroughly brushed into all openings and crevices with a stiff broom and new concrete shall be placed before this mortar has taken initial set. On all exposed surfaces, the line of the proposed joint shall be made truly straight by tacking a temporary horizontal straight edge on the inside of the form with its lower edge on the line of the joint and then placing the concrete sufficiently higher than this edge to allow for settlement. Immediately before placing the new concrete, the forms shall be drawn tightly against the concrete already in place.

In construction joints, approved water stops of plastic material shall be placed not less than 3 inches from the face of concrete and shall extend a minimum of 2-1/2 inches into the concrete unless otherwise shown on plans.

Prior to the use of plastic water stops, the manufacturer's installation instructions shall be furnished to the Engineer.

Bonding To Concrete Already Set:

In bonding new concrete to concrete already set, the surface of the concrete shall be thoroughly cleaned, roughened, wetted with clean water, and then flushed with a mortar composed of equal parts of the cement and sand specified for the new concrete, before new concrete is placed adjacent thereto. New concrete shall be placed before mortar has taken initial set. In lieu of the mortar, an epoxy adhesive suitable for bonding fresh concrete to hardened concrete may be used. The epoxy adhesive shall be applied in accordance with the manufacturer's recommendations.

Emergency:

When the work of placing concrete is unexpectedly interrupted by breakdowns, storms or other causes and the concrete as placed would produce an improper construction joint, the Contractor shall form a construction joint to the satisfaction of the Engineer. When such a joint occurs at a section on which there is a shearing stress, the Contractor shall provide an adequate mechanical bond across the joint by forming a key, inserting reinforcing steel or by some other satisfactory means, which will prevent a plane of weakness.

Weep Holes and Drains:

Weep holes shall be provided through all structures as indicated on the plans, and as directed. Ends of weep holes that are to be covered by filling material shall be protected by 1/4 inch mesh galvanized wire screen 23 gauge and not less than one cubic yard of screened gravel or crushed stone conforming to the item for crushed stone.

Protection, Curing and Finishing:

Protection: Suitable precautions shall be taken to thoroughly protect the concrete from any damage by weather conditions or otherwise during and after placing.

1. Hot and Dry Weather

During hot dry weather, and as directed, all new concrete shall be kept shaded from the sun, shielded from the wind and kept wet with water, or protected by other approved methods to retain the moisture in the concrete throughout the curing period.

2. Rainy Weather

During rainy weather all new concrete shall be properly covered, as may be necessary to prevent damage. Sufficient approved materials for covering shall be available at the site of the work for immediate use as may be needed.

3. Cold Weather

During cold weather all new concrete shall be fully protected, by methods approved by the Engineer, until properly set and hardened to prevent damage.

Curing: All concrete shall be kept fully saturated and protected against any drying action by methods of curing specified herein or as otherwise approved by the Engineer for not less than 5 days after placing standard cement concrete.

All surfaces of concrete which are to receive a rubbed surface finish or on which bitumen is to be placed, and concrete at construction joints shall be cured in accordance with requirements below for water curing. All other concrete may be cured in accordance with requirements below for water curing or waterproof membrane curing.

1. Water Curing

Curing of concrete shall begin by fog spraying immediately after the initial set. Fog spraying shall continue until the burlap cover has been placed. The amount of fog spray shall be strictly controlled, so that accumulations of standing or flowing water on the surface of concrete shall not occur.

Should atmospheric conditions render the use of fog spray impractical, the Contractor shall use plastic covers of suitable weight and securely weighted down, but not directly in contact with deck concrete. The covers shall be used only until the initial set has taken place. The burlap covers shall be placed immediately thereafter. On the windward side of the panel being cured, the Contractor shall erect canvas barriers of suitable height when necessary to protect the curing concrete from the direct force of the wind.

The area of concrete to be cured shall be covered by wet burlap blankets when concrete has set sufficiently, but in no case later than 5 hours after placing of concrete. Fog spray or covers shall be used continuously during this period.

The materials for the coverings shall be as submitted by the contractor and approved by the DCR. The coverings shall be kept thoroughly wet by sprinkling with a fine spray of water until they may be removed. Wooden forms without liners, if left in place longer than 2 days after the placing of the concrete, shall be thoroughly wet down at least once each day for the remainder of the required curing period. Formed surfaces shall, after the removal of forms, be

cured in like manner for the remainder of the required period, the entire surface of the concrete being thoroughly drenched with water and covered immediately after the forms are removed. Portions of the covering material may be removed temporarily when and as necessitated by any required finishing or waterproofing operation

2. Impervious Liquid Membrane Curing

Immediately after the free water has disappeared on surfaces not protected by forms and immediately after the removal of forms, if such are removed before the end of the required curing period, the concrete shall be sealed by spraying as a fine mist a uniform application of the membrane curing material in a manner as to provide a continuous uniform, water impermeable film without marring or otherwise damaging the concrete. The impervious liquid membrane material used shall be as submitted by the contractor and approved by the commission.

The membrane curing shall be applied in one or more separate coats at the rate of at least one gallon per 150 square feet. If, in the Engineer's judgment, discontinuities or pinholes exist or if rain falls on the newly coated surface before the film has dried sufficiently to resist damage, an additional coat of the material shall be applied immediately to those affected areas at the specified rate. If a slight delay in application shall occur, which permits the concrete surface to dry, the surface of the concrete shall be thoroughly moistened with water, immediately prior to the application of the membrane curing material. Application of membrane curing may be delayed for 12 hours if the concrete surface is protected and kept moist by the use of wetted burlap.

The membrane compound shall be thoroughly agitated immediately before application. The liquid shall be applied under pressure by means of an approved pressure spray which shall be held not more than 2 feet away from the concrete and the spray protected from any wind by suitable means as may be necessary, so as to apply the material directly onto the concrete surface.

The sprayed surface film shall be protected from abrasion or damage for the duration of required curing period. The placing of materials or unnecessary walking on the surface will not be allowed until the film is at least 2 days old; and then only if no damage is caused to the surface film during the required curing time.

3. Curing by Other Methods

Other methods of curing may be used but only when approved in writing by the Engineer prior to any use in the work.

Finishing: The external surface of all concrete shall be thoroughly vibrated and spaded during the operation of depositing the concrete by means of tools of an approved type. The vibrating and spading shall be such as to force all coarse aggregate away from the surface and slowly work the

mortar against the forms to produce a smooth finish free from water and air pockets or honeycomb. Unless otherwise shown on the plans or provided in the Special Provisions, the final finish required on particular concrete shall be as follows:

1. Formed Surfaces not Exposed to View

Immediately after forms have been removed and form ties cut back from the face of the concrete, all voids and cavities shall be filled with a stiff mortar of the same composition and air-entrainment as the mortar in the original concrete mix. The mortar for filling shall have been mixed and let set for 30 minutes and then remixed before placing in the work. In case the operation of filling is delayed, the surface of the concrete shall be thoroughly cleaned and washed with water, if necessary, before the mortar is applied.

2. Formed Surfaces Exposed to View

Within 48 hours after the forms have been removed and form ties cut back from the face of the concrete, all fins, projections and irregularities shall be carefully removed and all voids and cavities shall be carefully and completely filled with a stiff mortar of the same composition and air-entrainment as the mortar in the original concrete mix. The same brand and color of cement, and the same kind and color of aggregate as was used in the original concrete mix shall be used in this mortar. The mortar for filling shall have been mixed and let set for 30 minutes and then remixed before placing in the work. The surface film of all such pointed surfaces shall be carefully removed before setting of the mortar occurs.

If the Engineer determines these surfaces as prepared above do not present a uniformly smooth, clean surface of even texture and appearance, the surface shall be treated and rubbed to obtain a satisfactory finish. The Engineer shall be the sole judge of the amount of rubbing which will be required.

If rubbing is required, the rubbing will start within 48 hours of notification that rubbing is required; the surface shall be wetted with clean water and rubbed with a No. 16 Carborundum brick or other abrasive of equal quality until even and smooth and of uniform appearance, without applying any cement or other coating. If additional finishing is necessary it shall be obtained by a thorough rubbing with a No. 10 Carborundum brick or other abrasive of equal quality. Subject to approval by the Engineer, rubbing may be performed by use of satisfactory power equipment and tools, providing that the operational procedures shall be the same as those outlined above for hand rubbing.

Rubbing will be kept to a minimum found necessary to produce smooth, even surfaces of uniform appearance. Rubbing will not be required to fill very small surface air bubble holes, to remove a uniform wood grain pattern left by forms, nor to remove inconspicuous lines of marking between form panels.

Patches required for form ties, if carefully and properly done, may not necessitate rubbing. If however, this work is done in such a manner that these patches are conspicuous, the entire exposed face on which they occur, shall be rubbed.

After the final rubbing is completed, and the mortar has set up, the surface shall be thoroughly drenched and kept wet with clean water for a period of 5 days, unless otherwise directed.

No rubbing will be permitted when the air temperature is below 40°F.

Concrete Construction During Cold Weather:

Any concrete placed during cold weather shall be placed at the Contractor's risk and any damaged or unsatisfactory concrete shall be removed and replaced at the Contractor's expense. Concrete mixed or placed when the air temperature is below 40°F will be considered cold weather concrete and will require special treatment. In general the special treatment is indicated below.

No concrete shall be placed when the atmospheric temperature in the shade and away from artificial heat is below 35°F or when the temperature may be expected to drop below 30°F within 24 hours, except upon permission in writing by the Engineer, which shall not be granted until satisfactory provisions have been made to protect the work.

If the air temperature in the shade and away from artificial heat may be expected to reach 40°F or lower at any time during the day or night of the 24 hours following the placing of the concrete, protective cover, heating or protective cover and heating will be required on exposed surfaces. When the air in the shade and away from artificial heat is 40°F or lower temperature, the mixing water and/or aggregates may be heated (prior to cement being added) by approved methods so that the temperature of the aggregates and water mixture is not less than 70°F nor more than 140°F. The temperature of the concrete shall not be less than 60°F nor more than 90°F at the time of placing it in the forms. The heating shall be done in a manner to preclude the occurrence of overheated areas which might result in damage to the materials. Any material containing frost or lumps of hardened material shall not be used.

Where it may be expected that considerable heat will be generated by the hydration of the concrete, and in some cases where heat is not rapidly dissipated, suitable coverings shall be used to protect concrete. Heavy footings in which the concrete is placed at a temperature of 70°F and protected by the surrounding earth, except on top, shall be protected down to an air temperature of about 15°F by a tarpaulin placed over the top with an air space between the concrete and the tarpaulin. Mass concrete, when concrete as such is so specified on the plans or so defined by the Engineer, may be protected down to an air temperature of about 20°F, by enclosure with tight wooden forms at least 5/8 inch in thickness and the concrete is placed at a temperature of 70°F; except at corners and edges. Double Heating, insulation board or tarpaulins with a dead air space between the covering and the forms shall be placed to equally protect such edges and corners. Enclosures and added artificial heat will be required for such concrete placed at lower air temperatures.

The Contractor shall have readily available for installing on the work adequate material for the proper enclosure or covering of the concrete together with adequate equipment for satisfactory heating as may be necessary.

As much as possible of any enclosure for protection, shall be in place before depositing of any concrete and the remainder shall be installed as rapidly as possible in order to reduce heat losses to a minimum.

The temperature of the concrete inside the enclosure shall be held above a minimum temperature of 50°F, and the air surrounding the fresh concrete shall be kept at a temperature within a 50°F to 80°F range. The temperature of the concrete shall be maintained above 70°F for the first three days or above 50°F for the first five days after the concrete is completed in place, except periods of time may be reduced when satisfactory strength is attained sooner, as with the use of a high early strength cement concrete, then a minimum of 70°F for two days or 50°F for four days will be required. In any case the periods of time provided above are minimum requirements and extensions of these periods of time will be required provided that such may be necessary to develop satisfactory strength in the concrete.

After the concrete has been cured for the required length of time, the temperature within the housing shall be gradually reduced no faster than 1 degree per hour until it equals the surrounding air temperatures.

Heating within the enclosure shall be attained by such means of artificial heat as will maintain the temperatures specified continuously and with a reasonable degree of uniformity in all parts of the enclosures. All exposed surfaces of concrete within the enclosure shall be kept sufficiently moist to prevent any rapid drying of the surface concrete with possible resulting damage to the concrete in place. Heating appliances shall not be placed in such a manner as to endanger the enclosure, forms or supports, or expose any area of concrete to rapid drying out or other injury due to excessive temperatures.

Should the Contractor wish to secure permission to use other methods than those provided above for protective retaining of heat within the concrete or direct protective heating of the concrete by adequate facilities for same, such request shall be made in writing by him to the Engineer and shall include verifiable evidence of satisfactory results obtained by use of such methods. Other methods than those provided herein shall not be used unless approved in writing by the Engineer, and then only under the full responsibility of the Contractor.

Method of Measurement

Work under this item will be measured complete in place, by the cubic yard of actual concrete used and the quantity shall be determined in accordance with dimensions shown on the plan or a method approved by the Engineer. Contractor shall have no claims for special allowances for extra cement or apparent shrinkage due to inaccurate proportioning or control, bulging of forms, spilling, waste or for any other project conditions within his control.

Basis of Payment

This item will be paid for at the Contract unit price per cubic yard complete in place and accepted, which price and payment shall constitute full compensation for all labor, equipment, materials, scaffolding, platforms, staging, surface preparation, curing, finishing, or any other incidental items necessary to complete the work to the satisfaction of the Engineer.

ITEM 32 RAPID SETTING CONCRETE (CUBIC YARD)

Description

The work to be done under this item shall consist of furnishing and placing rapid setting cement concrete as directed by the Engineer.

Materials

The patching compound material used in the field must be a product on the MassDOT Qualified Construction Materials List under the category of “Rapid Setting Polymer Concrete” or an approved equivalent and appropriate for the intended application.

PRODUCT NAME	SUPPLIER
EMACO 2020 WITH 2041 PRIMER	MBT/CHEMREX, INC.
FX-826	FOX INDUSTRIES, INC
TRANSPO T-17 WITH T-41S PRIMER	TRANSPO INDUSTRIES, INC.
EMACO 440 CI WITH 2041 PRIMER	MBT/CHEMREX, INC.
APPROVED EQUIVALENT	

Construction Methods

Prior to placing the compound, the patch areas shall be flushed with clean water to remove all dust and then blasted with compressed air to remove all standing water.

When temperatures are at or below the freezing point, the following steps shall be taken to ensure proper setting action:

1. Use warm mixing water.
2. Use warm aggregate.
3. Pre-heat the excavated areas to be patched.
4. Protect the mixture from freezing after placement until after hydration takes place.

The Contractor shall be required to mix and place the cement by using two (2) rubber-blade mobile mixers of sufficient size, one (1) of which will be used and one (1) of which can be a standby. Sufficient mixing and placing equipment shall be provided on the construction site by the Contractor to insure that a breakdown of equipment will not cause significant delays in completing the scheduled work.

Forms shall be placed and conform to the requirements of Cement Concrete.

Method of Measurement

Rapid Setting Concrete will be measured in place by the cubic yard.

Basis of Payment

Rapid Setting Concrete will be paid for at the Contract unit price per cubic yard, complete in place, which price and payment shall be full compensation for all labor, materials, transportation to the site, water for mixing, clean-up, finishing of the concrete, tools, forms, equipment and any other incidental item needed and necessary to complete the work and to the satisfaction of the Engineer.

ITEM 33 SPECIALTY CONCRETE FOR PATCHING (SQUARE FOOT)

Description

Work under this Item shall consist of chipping away deteriorated concrete and placing polymer modified / cementitious concrete to areas of the piers, pier caps, abutments, and bridge deck, or as directed by the Engineer. This work item is not intended for full depth repairs.

Materials

The patching compound material used in the field must be a product on the MassDOT Qualified Construction Materials List under the category of “Concrete Repair Materials” and appropriate for the intended application.

Horizontal Fast Set

SUPPLIER	PRODUCT	TYPE
CTS Cement Manufacturing Corp.	Rapid Set DOT Repair Mix	Polymer Modified
Dayton Superior Corp.	HD 50	Polymer Modified
Master Builders US LLC	MasterEmaco T1060	Cementitious
Or an Approved Equal		

Construction Methods

Concrete Substrate Preparation:

All deteriorated, scaling, loose or unsound concrete shall be removed by mechanical or hand chipping. The remaining surface shall be free of oil, grease, paint, corrosion deposits, dust, laitance or other surface contamination.

The Contractor shall have the approval of the Engineer certifying that all spalled and deteriorated concrete has been removed prior to repairing the deteriorated areas.

Concrete at the edges of all areas to be patched using cementitious mortar for patching shall be removed to a minimum depth of 1 inch prior to the application of the mortar.

The mortar shall be prepared in accordance with the Manufacturer's instructions. The following are general expectations regarding typical product applications:

1. At the time of application, surfaces should be damp (saturated surface dry) with no glistening water.

2. Mortar must be worked into substrate filling all pores and voids. Force material against edge of repair, working toward center. After filling, consolidate, then screed.
3. Maximum thickness of application in one pass shall be one inch. If the depth of patch exceeds 1 inch, mortar shall be placed in two passes of approximate equal thickness. Before the first pass has achieved initial set, the surface shall be prepared for the second pass by scratching with a trowel.
4. Prime and work the mix into substrate, filling all pores and voids. Avoid puddling of primer on horizontal substances.
5. Priming is not always required (see manufacturer's recommendations), but when the surface is porous, or the mix is stiff, typically one of the components of a two-component system is used as a prime coat. A stiff mix is required for vertical or overhead surfaces.
6. Brush primer over the substrate just before placing the repair. Do not prime until ready to patch. Mortar must be placed while prime coat is wet. Do not let primer dry before placing mix, and do not just re-prime if it does. Dried primer coat must be removed by mechanical means.

Manufacturer's Field Representative

1. The Contractor shall arrange with the manufacturer or distributor to have the services of a competent field representative at the work site prior to any mixing of components to instruct the work crews in the proper mixing and application procedures. The field representative shall remain at the job site after work commences to instruct until he and the Engineer are satisfied that the crew has mastered the technique of installing the system successfully. The representative shall make periodic visits to the project as the work progresses and shall confer on each visit with the Engineer.
2. The Manufacturer's Field Representative must be fully qualified to perform the work and shall be subject to the approval of the Engineer.
3. The Contractor shall be completely responsible for the expense of the services of the required field representative and the bid contract price shall be full compensation for all costs in connection therewith.

Method of Measurement

Work under this item will be measured per square foot of patched area complete in place. All

work and final results must be acceptable to the Engineer before any area is to be considered for payment.

Basis of Payment

This item will be paid at the Contract unit price per square foot, complete in place, which price and payment shall be full compensation for all materials, labor, tools, forms, equipment, preparation of the areas to be repaired (include facing excavated), and all incidentals costs required to complete the work in accordance with these specifications and as required by the Engineer.

ITEM 34 SPECIALTY CONCRETE FOR V/O PATCHING (SQUARE FOOT)

Description

Work under this Item shall consist of chipping away deteriorated concrete and placing polymer modified / cementitious patching concrete to vertical and overhead areas on piers, abutments, bridge decks, or as directed by the Engineer.

Materials

The patching compound material used in the field must be a product on the MassDOT Qualified Construction Materials List under the category of “Concrete Repair Materials” and appropriate for the intended application.

Vertical & Overhead

SUPPLIER	PRODUCT	TYPE
CTS Cement Manufacturing Corp.	Rapid Set V/O Repair Mix	Polymer Modified
Kaufman Products	Duracrete II VOFT	Cementitious
Kaufman Products	HiCap FT	Cementitious
Or an Approved Equal		

The mortar shall be applied by workmen who, in the judgment of the Engineer, are sufficiently experienced and skilled in this class of work.

Construction Methods

Concrete Substrate Preparation:

All deteriorated, scaling, loose or unsound concrete shall be removed by mechanical or hand chipping. The remaining surface shall be free of oil, grease, paint, corrosion deposits, dust, laitance or other surface contamination.

The Contractor shall have the approval of the Engineer certifying that all spalled and deteriorated concrete has been removed prior to repairing the deteriorated areas.

Concrete at the edges of all areas to be patched using cementitious mortar for patching shall be removed to a minimum depth of 1 inch prior to the application of the mortar.

The mortar shall be prepared in accordance with the Manufacturer's instructions. The following are general expectations regarding typical product applications:

7. At the time of application, surfaces should be damp (saturated surface dry) with no glistening water.
8. Mortar must be worked into substrate filling all pores and voids. Force material against edge of repair, working toward center. After filling, consolidate, then screed.
9. Maximum thickness of application in one pass shall be one inch. If the depth of patch exceeds 1 inch, mortar shall be placed in two passes of approximate equal thickness. Before the first pass has achieved initial set, the surface shall be prepared for the second pass by scratching with a trowel.
10. Prime and work the mix into substrate, filling all pores and voids. Avoid puddling of primer on horizontal substances.
11. Priming is not always required (see manufacturer's recommendations), but when the surface is porous, or the mix is stiff, typically one of the components of a two-component system is used as a prime coat. A stiff mix is required for vertical or overhead surfaces.
12. Brush primer over the substrate just before placing the repair. Do not prime until ready to patch. Mortar must be placed while prime coat is wet. Do not let primer dry before placing mix, and do not just re-prime if it does. Dried primer coat must be removed by mechanical means.

Manufacturer's Field Representative

4. The Contractor shall arrange with the manufacturer or distributor to have the services of a competent field representative at the work site prior to any mixing of components to instruct the work crews in the proper mixing and application procedures. The field representative shall remain at the job site after work commences to instruct until he and the Engineer are satisfied that the crew has mastered the technique of installing the system successfully. The representative shall make periodic visits to the project as the work progresses and shall confer on each visit with the Engineer.
5. The Manufacturer's Field Representative must be fully qualified to perform the work and shall be subject to the approval of the Engineer.
6. The Contractor shall be completely responsible for the expense of the services of the required field representative and the bid contract price shall be full compensation for all costs in connection therewith.

Method of Measurement

Work under this item will be measured per square foot of patched area complete in place. All work and final results must be acceptable to the Engineer before any area is to be considered for payment.

Basis of Payment

This item will be paid at the Contract unit price per square foot, complete in place, which price and payment shall be full compensation for all materials, labor, tools, forms, equipment, preparation of the areas to be repaired (include facing excavated), and all incidentals costs required to complete the work in accordance with these specifications and as required by the Engineer.

ITEM 35 STEEL REINFORCEMENT-EPOXY COATED (POUND)

ITEM 36 STEEL REINFORCEMENT (POUND)

Description

Work under these items shall consist of furnishing and installing reinforcing bars, galvanized welded wire reinforcing or epoxy coated reinforcing bars and welded wire reinforcing for cement concrete as shown on contract plans and/or as directed by the Engineer.

Steel reinforcement for structures will be used to replace deteriorated existing reinforcing steel or for new placements. Any reinforcing steel scheduled to be retained and is damaged by the Contractor's operations shall be replaced by the Contractor at his own expense.

Unless directed otherwise by the Engineer, the Contractor will not be required to submit for approval, detail plans and schedules of the bar reinforcement.

The Contractor will replace, where directed by the Engineer, bars to the size and spacing of the bars being replaced or added. Welded wire reinforcing shall be placed where shown on contract plans or as directed by the Engineer.

Materials

Reinforcing bars shall consist of deformed bars. The bars shall be rolled from new billet steel conforming to the reinforcements of AASHTO M 31, Grade 60. Epoxy coated reinforcing bars shall be bars conforming to M8.01.0 of the Standard Specifications and shall be epoxy coated in accordance with AASHTO M284.

Welded wire fabric shall Welded wire reinforcement (WWR) shall conform to the requirements of AASHTO M55 (ASTM A185). WWR shall be epoxy coated or galvanized in accordance with ASTM A641.

Construction Methods

The required distance between reinforcing steel and the forms shall be maintained by means of stays, blocks, ties, hangers or other approved supports. The spacing of reinforcing supports shall not exceed four (4) feet.

Steel reinforcing mats shall be firmly secured against displacement by tying every other intersection point with a maximum of twelve (12) inches between tied joints. In addition, steel reinforcing mats (top and bottom) shall be securely connected together so that uniform vertical

spacing can be maintained throughout. This connection may be accomplished by tying with coated tie wires or other means as approved by the Engineer.

Connections shall be placed no further than 4'-0" on centers. Support devices may be utilized for this purpose. Connection devices shall neither deflect the steel reinforcing nor interfere with the smooth flow of concrete.

Blocks for holding reinforcement from contact with the forms shall be pre-cast mortar blocks of approval shape and dimensions. Blocks for spacing reinforcing bars shall be pre-cast mortar blocks of approved design and short enough to permit their ends to be adequately covered with concrete.

The pre-cast mortar blocks shall be made from the same materials and of the same proportions of sand and cement as that of the concrete in which they are to be used. They shall be cast and properly cured before use and shall have a wire of copper or non-rusting metal or other approved device cast into each block suitably placed so that the block can be securely fastened to the reinforcement.

Layers of bars shall be separated by such blocks, which may be reinforced, and which shall have slots to receive the bars and hold them in place, or by other approved means.

Any parts of metal supports that are left in place within 3 inches of an exposed surface of the concrete shall be non-rusting metal or coated with non-rusting materials. Galvanizing of such parts will be acceptable provided the weight of the zinc coating per square foot of actual surface shall average not less than 2 ounces, and no individual specimen shall show less than 1.8 ounces.

Reinforcement in any member or section shall be in place and approved by the Engineer before the placing of concrete begins.

In no case shall reinforcing steel be driven or forced into the concrete after it has taken its initial set. Any reinforced concrete placed in violation of these provisions will be rejected by the Engineer and shall be removed and replaced by the Contractor at his own expense.

Dowels, where required, shall be furnished and placed as indicated on the plans and/or as directed by the Engineer.

Reinforcement that extends continuously within the concrete of the superstructure, or any other reinforcement that might stain the exposed surface of the bridge shall be given a light coat of neat cement grout on the surfaces of the reinforcement that will be exposed for more than three weeks before being encased in concrete. Subsequent coats of grout may be required.

Method of Measurement

Reinforcing bars will be measured by the actual weight of the lengths, size and quantity of bars used as determined by the standard weights per linear foot.

Welded wire reinforcing will be measured by the pound of material used.

Basis of Payment

Steel Reinforcement for Structure will be paid for at the Contract unit price per pound, complete in place, which price and payment shall be full compensation for furnishing the steel, transportation, cutting to length, installation, securing by means of ties, tie wire, supports where necessary, layout, all labor, tools, equipment, removal of waste and any other incidental items necessary to complete the installation of reinforcing steel to the satisfaction of the Engineer.

ITEM 37 DRILL AND GROUT DOWELS WITH EPOXY (EACH)

Description

Work under this item shall consist of drilling holes in concrete or stone masonry and grouting dowels or anchor rods at the locations shown on the plans, in accordance with the plans, the manufacturer's recommendations, and as directed by the Engineer.

The drilling, grouting and dowel installation shall be witnessed by DCR. No work required for the installation shall occur without a DCR inspector present.

Materials

Dowels: The dowels shall be reinforcing bars, conforming to the requirements of Section M8.01.0 of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

Anchor Rods: Anchor rods shall be in accordance with ASTM F1554, Grade 55. Anchor rods shall be mechanically galvanized in accordance with ASTM B695, Class 50.

Epoxy Adhesive Grout: The adhesive bonding material shall be a resin compound specially formulated to anchor steel bars in holes drilled into concrete or stone masonry for the purpose of resisting tension pull-out.

The epoxy grouting adhesive used shall be:

- Sikadur 32, Hi-Mod, as manufactured by Sika Corporation, Lyndhurst, New Jersey,
- Master Builders, Inc.,
- Fosroc, Inc., or
- selected from the Massachusetts Department of Transportation Approved Product List.

Certification: A Materials Certificate and Certificate of Compliance shall be required for the adhesive bonding material, certifying the conformance of this material to the requirements stated herein.

Construction Methods

The Contractor shall follow the recommendations of the manufacturer for mixing and placing the adhesive prior to placement of the steel dowels.

The Contractor shall drill holes into the concrete or masonry stone to the depth and diameter required to install the steel dowels.

Specifications and recommendations for the aforementioned may be obtained from the manufacturer of the adhesive bonding material, or as indicated on the plans or as directed by the Engineer whichever greater.

All holes shall be blown clear of any loose material prior to placing the adhesive.

The Contractor shall have the approval of the Engineer for the condition of the finished holes before any adhesive is placed.

The Contractor shall submit the following to the Engineer for approval: type of drill, diameter of bit, method of cleaning holes and method of placement of the adhesive bonding material.

The weight of the drill shall not exceed 20 pounds.

The reinforcing dowels shall be able to develop a pull-out resistance of 90 percent of their nominal yield strength when bonded at the embedment depths provided.

The Contractor shall provide the minimum cover for the dowels as shown on the plans.

If the existing reinforcing steel is encountered during drilling, the holes may be relocated only if approved by the Engineer.

Drilling methods shall not cause spalling, racking, or other damage to the concrete.

Those areas damaged by the Contractor shall be repaired by him in a manner suitable to the Engineer and at no expense to the DCR.

The Contractor shall take necessary precautions to prevent any materials from falling into waterways below.

Method of Measurement

Drilling and Grouting Dowels with Epoxy Adhesive will be measured per each (up to 2" in diameter, and up to 18" in depth), completed and accepted.

Basis of Payment

Drilling and Grouting Dowels with Epoxy Adhesive will be paid for at the Contract unit price per each, completed and accepted, which price shall include all labor, equipment and materials for drilling and preparing holes, applying adhesive bonding material and installation of dowels and anchor rods.

Dowels and anchor rods will be paid for under ITEM 35– Steel Reinforcement – Epoxy Coated.

ITEM 38 EXPANSION ANCHORS AT SLAB SOFFIT REPAIRS (EACH)

Description

Work under this item includes drilling holes in the underside of the concrete roof slab and installing expansion anchors as indicated on the Drawings, and as directed by the Engineer.

Materials

The anchors shall be Hilti Kwik Bolt TZ torque controlled expansion anchors (carbon steel with electroplated zinc) or approved equal.

Construction Methods

Conduct a thorough training with the manufacturer or the manufacturer's representative for the installer on the project. Training shall consist of a review of the complete installation process for drilled-in anchors, and shall include but not be limited to:

- Hole-drilling procedure
- Hole preparation & cleaning technique
- Proper application of installation torque

Drill holes with rotary impact-hammer drills using carbide-tipped bits. Drill bit diameters, and drill hole depths shall be in accordance with the written specifications of Hilti. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.

Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging existing utilities.

Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.

Perform anchor installation in accordance with Hilti's written specifications. Torque shall be applied with a calibrated torque wrench. Protect threads from damage during anchor installation.

100% of expansion anchors at each patch shall be loaded to a tensile load of 1000 lbs, by an approved independent testing agency. Tensile load tests shall be performed in accordance with ASTM and AAHSTO specifications as submitted by the independent testing agency and as approved by the Engineer. Any anchor that fails the load test shall be reported to the Engineer immediately and no further anchors shall be installed until a solution is developed.

Submittals

The Contractor shall submit the following items to the Engineer for approval prior to proceeding with the work in this item:

Manufacturer's product data sheets for the anchor bolts specified.

Manufacturer's current installation instructions and written requirements, including instructions for handling, storage, substrate preparation, mix proportions, mixing procedures, placement, and curing the specified/approved materials.

Installer Qualifications & Procedures: Submit installer qualifications showing at least five years of experience performing similar installations.

Letter of procedure stating method of drilling, the product proposed for use, the complete installation procedure, manufacturer training date, and a list of the personnel to be trained on anchor installation.

Load Testing Reports from the independent testing agency. These reports shall be submitted on a weekly basis.

Method of Measurement

Work under this item will be measured for payment per each; by the number of anchors actually installed, complete in place, regardless of type, size, coating, embedment length, or length of exposed thread.

Basis of Payment

This item shall be paid for at the Contract unit price per each mechanical anchor, complete in place, as measured above, which price and payment shall constitute full compensation for all labor, materials, tools, equipment, and all incidentals required to properly execute the work in accordance with these specifications and to the complete satisfaction of the Engineer.

ITEM 39 UNDERCUT ANCHORS AT SLAB SOFFIT REPAIR (EACH)

Description

Work under this item includes drilling holes in the underside of the concrete roof slab and installing undercut anchors as indicated on the Drawings, and as directed by the Engineer.

Materials

The anchors shall be Hilti-P-20x250/050 undercut anchors (carbon steel) or approved equal.

Construction Methods

Conduct a thorough training with the manufacturer or the manufacturer's representative for the installer on the project. Training shall consist of a review of the complete installation process for drilled-in anchors, and shall include but not be limited to:

- Hole-drilling procedure
- Hole preparation & cleaning technique
- Proper application of installation torque

Drill holes with rotary impact-hammer drills using carbide-tipped bits. Drill bit diameters, and drill hole depths shall be in accordance with the written specifications of Hilti. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.

Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging existing utilities.

Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.

Perform anchor installation in accordance with Hilti's written specifications. Torque shall be applied with a calibrated torque wrench. Protect threads from damage during anchor installation.

100% of undercut anchors at each patch shall be loaded to a tensile load of 2000 lbs, by an approved independent testing agency. Tensile load test shall be performed in accordance with ASTM and AAHSTO specifications as submitted by the independent testing agency and as approved by the Engineer. Any anchor that fails the load test shall be reported to the Engineer immediately and no further anchors shall be installed until a solution is developed.

Submittals

The Contractor shall submit the following items to the Engineer for approval prior to proceeding with the work in this item:

Manufacturer's product data sheets for the anchor bolts specified.

Manufacturer's current installation instructions and written requirements, including instructions for handling, storage, substrate preparation, mix proportions, mixing procedures, placement, and curing the specified/approved materials.

Installer Qualifications & Procedures: Submit installer qualifications showing at least five years of experience performing similar installations.

Letter of procedure stating method of drilling, the product proposed for use, the complete installation procedure, manufacturer training date, and a list of the personnel to be trained on anchor installation.

Load Testing Reports from the independent testing agency. These reports shall be submitted on a weekly basis.

Method of Measurement

Work under this item will be measured for payment per each; by the number of anchors actually installed, complete in place, regardless of type, size, coating, embedment length, or length of exposed thread.

Basis of Payment

This item shall be paid for at the Contract unit price per each undercut anchor, complete in place, as measured above, which price and payment shall constitute full compensation for all labor, materials, tools, equipment, testing, and all incidentals required to properly execute the work in accordance with these specifications and to the complete satisfaction of the Engineer.

ITEM 40 PRESSURE INJECTIONS OF CRACKS (LINEAR FOOT)

Description

The work under this Item involves the repair of cracks in the existing sound concrete at locations shown on the Contract Plans and/or as designated by the Engineer.

Cracks designated by the Engineer to be repaired by pressure injection, shall be bonded by penetration with an epoxy adhesive in accordance with the epoxy manufacturer's recommendations.

Materials

The Contractor shall submit manufacturer's literature completely describing products for approval. The materials shall be delivered clearly marked with legible and intact labels containing the manufacturer's name, brand name, and identification of the temperatures which conform to manufacturer's recommendations and instructions.

The Contractor shall comply with all manufacturer's instructions and recommendations regarding safety.

1. Multipurpose, two component, 100% solids, moisture insensitive, high-modulus, structural epoxy adhesive used in filling cracks. Materials shall comply with ASTM C881 Types IV or V, Grade and Class as recommended by the manufacturer based on application. Applications include vertical, overhead and horizontal applications. Materials shall be suitable for interior and exterior applications.
2. Comply with the following physical and performance properties:

Color when exposed to view: Clear or Grey

Bond Strength (ASTM C882, 14 Day Cure) (Min.): 1500 psi

Compressive Strength (ASTM C695, 7 Day Cure):

Type IV (Min.): 10,000 psi

Type V (Min.): 8,000 psi

Tensile Strength (ASTM D895, 7 Day Cure):

Type IV (Min.): 7,000 psi

Type V (Min.): 6,000 psi

Shear Strength (ASTMD732) (Min.): 1,500 psi

Submittals

The Contractor shall submit the manufacturer's literature and certified test from independent testing laboratories for all specified materials. Test data shall verify materials comply with referenced standards and physical and performance properties.

The Contractor shall provide samples when required by the Engineer.

Delivery, Storage and Handling

Pressure injected structural crack filler materials and accessories shall be in original unopened packages, clearly labeled with the manufacturer's identification and printed instructions. Store and handle in accordance with the recommendations of the manufacturer.

Construction Methods

The repairs will be classified by the Engineer, as vertical, overhead or horizontal for measurement and payment purposes. All dust, dirt, debris, oil, laitance, grease, curing compound, impregnations, waxes and other bond inhibiting materials which will prevent epoxy penetration must be removed. The surface and the cracks must be clean and sound.

The injection equipment shall be used as recommended by crack filler material manufacturer. Set appropriate injection ports based on system used. Seal ports and cracks with materials specified by the crack filler material manufacturer. Inject full depth of cracks in strict accordance with manufacturer's written instructions.

Mix materials in strict accordance with manufacturer's instructions.

Clean Up: Clean equipment and adjacent surfaces as recommended by material manufacturer.

Remove injection ports and sealing materials from surfaces of concrete which will be permanently exposed to view or as otherwise directed by the Engineer. Grind surface smooth. Clean concrete surface to match adjacent concrete.

Method of Measurement

Pressure injected structural crack filler will be measured per linear foot, complete in place.

1. Measurements and calculations of crack length will be made by the Engineer in the field from one side of the surface only.
2. A crack may or may not propagate completely through the concrete element. The full depth of the crack shall be repaired. No differentiation will be made based on crack depth for measurement and payment purposes.

3. The Engineer will measure the crack in an essentially linear fashion and will not consider short, jagged changes in crack direction.
4. The measurements and calculations made by the Engineer will be used for payment purposes.
5. Additional repair materials used to repair defective work, waste materials and materials required because contractor exceeds authorized repair limits will not be measures for payment.
6. Payment for work under this Item shall be at the Contract Unit Price per foot for the pressure injected cracks.

Basis of Payment

Pressure injected structural crack filler will be paid for at the Contract unit price per linear foot, complete in place.

The unit price shall include all work associated with the pressure injected structural crack filler included but not limited to surface preparation, materials removal and disposal, injection ports, crack sealer, and removal of ports and surface sealer after repair work is completed.

ITEM 41 TYPE 1 CRACK REPAIR - ROUT AND POINT (LINEAR FOOT)

ITEM 42 TYPE 2 CRACK REPAIR - ROUT AND EPOXY (LINEAR FOOT)

ITEM 43 TYPE 3 CRACK REPAIR - ROUT, EPOXY, PIN (LINEAR FOOT)

Description

Work under these items shall consist of repairing cracks in stone masonry, reinforced or unreinforced concrete at the locations shown on the plans, in accordance with the plans, the manufacturer's recommendation, and as directed by the Engineer, by:

1. Routing the cracks and pointing with mortar,
2. Routing the cracks, filling cracks with epoxy, and embedding stone dust in the epoxy to match adjacent stone appearance, and
3. Drilling holes in stone across crack, insert remedial anchors (stainless steel threaded rod dowels) embedded in epoxy to "stitch" crack together, and provide repair mortar to fill anchor holes.

Materials

Type 1 Crack Repair - Rout and Point

- Repair Mortar:

Jahn by Cathedral Stone Products, Hanover, Maryland, 800-684-0901, www.cathedralstone.com. Color shall match existing cleaned masonry; note that product may be installed only by a Jahn certified applicator.

- Mortar Mixes:

Measure cementitious and aggregate material in a dry condition by volume or equivalent weight. Measure materials with an approved device, not by shovel.

For pointing only, use prehydrated mortar prepared as follows: Mix materials in a clean mechanical batch mixer. Thoroughly mix cementitious and aggregate materials together before adding any water. Then mix again, adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 60 min. Add remaining water in small portions until mortar of desired consistency (somewhat stiffer than bed mortar) is reached. Use within 60 min. of final mixing.

Do not use admixtures of any kind in mortar, with the exception of those specified herein or specifically approved by the Designer.

Type 2 Crack Repair - Rout and Epoxy

- Epoxy for Crack Repair:

Two-component exterior grade epoxy adhesive; color shall match existing masonry (multiple colors may be required); Bonstone Match by Bonstone Materials Corporation.

- Aggregate for mixing with Epoxy:

Stone of same color as the area to be patched, reduced to a fine aggregate with a mallet. Use particles that pass through a No. 50 sieve and are retained on a No. 200 sieve.

Type 3 Crack Repair - Rout, Epoxy, and Pin

Epoxy for Crack Repair:

- Two-component exterior grade epoxy adhesive; color shall match existing masonry (multiple colors may be required); Bonstone Match by Bonstone Materials Corporation.

Aggregate for mixing with Stone-Joining Epoxy:

- Stone of same color as the area to be patched, reduced to a fine aggregate with a mallet. Use particles that pass through a No. 50 sieve and are retained on a No. 200 sieve.

Remedial Anchors (Dowels):

- Dowel:

Type 304 stainless steel threaded rod, 3/8 in. dia. unless directed otherwise by the Engineer; embedment as shown on the Drawings.

- Epoxy for Dowels:

HIT HY 150 two-part epoxy, supplied with static mixing tubes by Hilti.

- Repair Mortar:

Jahn by Cathedral Stone Products, Hanover, Maryland, 800-684-0901, www.cathedralstone.com. Color shall match existing cleaned masonry; note that product may be installed only by a Jahn certified applicator.

Construction Methods

Type 1 Crack Repair - Rout and Point

General Procedures: Masonry workmanship shall comply with all applicable recommendations of the Brick Industry Association (BIA) and the Indiana Limestone Institute of America, except as modified below.

Conduct all masonry work in a neat and workmanlike manner to prevent staining any surface with mortar or other spills. Avoid dropping mortar on completed masonry work or other elements of the bridge. If mortar drops or spills, spot-clean immediately using a sponge and clean water.

Hot Weather (above 90°F): Do not use mortar when masonry surface temperature is above 90°F. At air temperatures over 80°F, protect the mortar from direct sunlight and exposure to wind to prevent rapid evaporation of water in the mortar before, during and after installation.

Cold Weather (below 40°F): Do not work in average daily temperatures below 40°F without providing cold-weather protection as described in ACI 530 and outlined in the table below. Continue to operate heaters overnight with appropriate supervision as outlined. Do not use heaters that produce oily deposits on the masonry. If any oily deposits occur, consult with the Designer to determine how best to remove oily deposits and remove at the Contractor's expense.

Temperature	WORK IN PROGRESS		COMPLETED WORK
	Mortar	Assemblage	Assemblage
Above 40°F	No requirements.	No requirements.	No requirements.
40°F to 25°F	Heat during mixing to between 40°F and 120°F. Maintain above freezing while in use.	No requirements.	Protect masonry with a weather-resistive cover for 24 hrs after construction. Completely cover masonry when temperature is less than 32°F.
25°F to 20°F	Heat during mixing to between 40°F and 120°F. Maintain above freezing while in use.	Use heat sources on both sides of wall. Provide wind breaks when velocity is over 15 mph.	Completely cover with insulated blanket for 24 hrs after construction.
Below 20°F	Heat during mixing to between 40°F and 120°F. Maintain above freezing while in use.	Provide an enclosure and use heat sources to maintain temperature above 32°F within the enclosure.	Provide an enclosure and use heat sources to maintain temperature above 32°F within the enclosure.

Crack Repair:

Using appropriate cutting tools, rout out cracks to a depth 2-1/2 times the width (minimum 5/8 in.) and a 1/4 in. minimum width. Clean routed cracks of dust and debris using compressed air and a stiff nylon bristle brush of sufficient length to reach the full depth of the cut. Do not use metal wire brushes. Wash thoroughly with clean water; leave the surface damp for optimum bond.

Fill routed cracks with repair mortar. Perform the entire installation in accordance with manufacturer's recommended installation practices. In the case of any apparent conflict between these specifications and manufacturer's recommended practices, consult with the Designer before proceeding. Perform repairs using mechanics approved and certified by the manufacturer of the repair mortar for this work.

Do not mix more material than can be used within 20 min. Discard any unused material after 20 min.

Mortar Mix: Mix water and dry ingredients thoroughly. Adjust amount of water considering the weather for the day and the porosity of the masonry substrate in accordance with the mortar manufacturer's printed instructions. Mix mortar with proper amount of water to have the following characteristics:

- Mortar will hold shape immediately upon application.
- Mortar will be shapeable without using molds.
- Mortar can be applied up to 1/2 in. thick.

Build up patching material at routed cracks (in a series of 1/2 to 3/4 in. lifts, with no waiting period or scratch coat between layers) so that it stands slightly proud of adjacent masonry surface. Allow 15 to 30 min. to set slightly and then scrape off excess material using a straight edge such as a plasterer's miter rod. Do not press down or "float" the surface of the patch. In no case should patch material bridge the joint between adjacent masonry units. Where patches occur at corners, form the patch mortar to match the shape of the undamaged masonry using a slip-sheet and rigid board to match the joint width. Where patches occur on masonry with a curved profile, shape the patch to conform to the profile of the curve. In all cases, finish the patch so that it is as indistinguishable as possible from the adjacent masonry.

Before patch material sets, clean mortar residue from area of surrounding masonry around patch area by sponging as many times as necessary with clean water.

Keep patch damp with a fine mist of water for 24 hrs. Follow ACI 308R-01 procedures. Protect repair from direct sunlight, wind, rain and frost during curing period.

Pointing: Rinse joint surfaces with water to remove dust and mortar particles. Time the application of rinsing so that, at time of pointing, excess water has evaporated or run off, and joint surfaces are damp but free of standing water.

Apply mortar in successive layers until a uniform depth is formed. Compact each layer thoroughly and allow it to become thumbprint-hard before applying the next layer. Allow at least 24 hrs to pass between successive stages of mortar application to allow for mortar shrinkage between stages. After joints are filled to a uniform depth, place the remaining pointing mortar in successive layers of no greater than 1/2 in. depth until flush with exterior face of stone. Fully compact each layer and allow it to become thumbprint hard before applying the next layer. Where existing stones

have rounded edges, recess final layer slightly from face. Take care not to spread mortar over edges and onto exposed face.

When mortar at the exterior face is thumbprint-hard, tool to form a joint, flush with the face of the stone (match existing joint profile). Use a tool slightly larger than the joint size to compact mortar against stone joint surface. Remove excess mortar from edge of joint by brushing.

If shrinkage cracks develop because of curing too quickly, cure mortar by maintaining in a damp condition for not less than 72 hrs. Keep masonry covered with tarpaulins and use a fog spray periodically to maintain moist conditions under the cover. Do not wash the newly pointed mortar with a stream of water.

After mortar has fully hardened, thoroughly clean the exposed limestone surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water, spray-applied at low pressure.

Type 2 Crack Repair - Rout and Epoxy

Refer to General Procedures specified for Type 1 Crack Repair above.

Using appropriate cutting tools, rout out cracks to a 1 in. minimum depth and a 1/8 in. minimum width. Clean routed cracks of dust and debris using compressed air and a stiff nylon bristle brush of sufficient length to reach the full depth of the cut. Do not use metal wire brushes.

Mask the face of the masonry around cracks to prevent epoxy residue from contaminating the surface. Use non-staining masking tape.

Mix repair epoxy as directed by the manufacturer. Mix only the amount of epoxy that can be used within 10 minutes. Discard all unused epoxy after 10 minutes. Combine the epoxy with aggregate following the manufacturer's published instructions to create a repair that appears similar to the adjacent masonry.

Type 3 Crack Repair - Rout, Epoxy, and Pin

Refer to General Procedures specified for Type 1 Crack Repair above.

Prior to repairing Type 3 cracks, consult with the Engineer to determine the locations, diameters, and lengths of remedial anchors to be used.

Provide remedial anchors using mechanics trained and approved by the epoxy manufacturer for the epoxy installation work. Maintain proof of such certification for each epoxy mechanic at the site at all times.

Measure and mark the location for remedial anchors before drilling. Drill holes through the stone (across crack) as directed. Holes shall be 1/16 in. larger in diameter than the anchor to be used (e.g. 7/16 in. dia. holes for 3/8 in. dia. anchors). Install anchors and epoxy following

manufacturer's recommended procedures. Recess anchors as shown on the drawings. After epoxy is cured, provide repair mortar in anchor hole.

After remedial anchors are installed, using appropriate cutting tools, rout out cracks to a 1 in. minimum depth and a 1/8 in. minimum width. Clean routed cracks of dust and debris using compressed air and a stiff nylon bristle brush of sufficient length to reach the full depth of the cut. Do not use metal wire brushes.

Mask the face of the masonry around cracks to prevent epoxy residue from contaminating the surface. Use non-staining masking tape.

Mix repair epoxy as directed by the manufacturer. Mix only the amount of epoxy that can be used within 10 minutes. Discard all unused epoxy after 10 minutes. Combine the epoxy with aggregate following the manufacturer's published instructions to create a repair that appears similar to the adjacent masonry.

Submittals

- Prior to beginning any masonry work, conduct a hands-on survey of all masonry and submit to the Designer for approval.
- Submit product data for each type of product or equipment indicated or proposed for use, including material safety data sheets (MSDS) where appropriate.
- Submit documentation demonstrating contractor qualifications.
- Submit proposed mortar mix proportions.

Method of Measurement

Work under these items will be measured by the linear foot of crack repaired.

There will be no additional compensation for installing and maintaining containment to:

- prevent cleaning chemical and effluent (wash water) from masonry cleaning operations (cleaning related activities) from entering the surrounding water bodies or soil, or contact with the surrounding landscape,
- maintain a containment to retain water, debris, aggregates, cleaning chemical, materials and equipment used during masonry operations,
- protect vehicular traffic, pedestrians, and the surrounding environment.

Basis of Payment

Work under these items shall be paid for at the Contract unit price per linear foot of crack repaired as measured above including routing the existing crack, pointing with mortar, filling with epoxy, embedding stone dust to match appearance of adjacent stone, drilling holes for and embedding

stainless steel threaded rods in epoxy, repairing anchor holes, cleaning of excess mortar and debris from surrounding masonry after completion of repair, which price shall constitute full compensation for all labor, materials, tools, equipment, and incidentals required to properly execute the work in accordance with the plans and these Specifications.

ITEM 44 JOINT SEALANTS AND BACKER ROD (LINEAR FOOT)

Description

Work to be done under this Item consists of removal and replacement of sealants and backer rods in concrete control joints as noted on plans or as directed by the Engineer.

Materials

Joint backing material shall be backer rod material that is extruded or expanded as specified by the sealant manufacturer, which will not bond to the sealant. The backer rod shall be sized per the joint width and have an outside diameter as recommended by the sealant manufacturer. Multiple size backer rods may be required due for varied joint widths at the time of installation.

The joint sealant shall be a high performance, moisture cured, single component polyurethane sealant meeting ASTM C920, Type S, Grade NS. Color to be determined by the Department of Conservation and Recreation from manufacturer's standard colors. Provide manufacturer's recommended primer. The following products or approved equal shall be used:

- Sikaflex 1a by Sika Corporation
- 3M Polyurethane Sealant 540 by 3M Company
- Vulkem 45SSL by Tremco Commercial Sealants & Waterproofing

Construction Methods

Existing materials shall be removed from each joint gap by routing. The minimum depth of removal shall be the manufacturer's recommended compressed preformed joint filler height plus clearance for the proposed joint sealer.

After the removal of existing materials, the joint gaps shall be thoroughly cleaned, dried and/or primed in accordance with the special provisions of the Item under which the joint sealer shall be applied.

If the sealant manufacturer recommends or requires a primer, the joint faces shall be primed with an approved primer in accordance with the manufacturer's instructions.

The backer rod shall then be installed to the proper depth and the sealant shall be extruded into the joint so that the extruded joint sealant is at the thickness recommended by the manufacturer and that the recess from the top of the joint is as recommended by the manufacturer.

A qualified representative of the sealant manufacturer shall be present at the start of work to insure proper installation and shall remain on the project until the Engineer is satisfied that the Contractor's staff is adequately trained.

The sealant shall be constructed to the dimensions shown on the typical drawings or as directed by the Engineer.

Method of Measurement

Work under this Item will be measured and per linear foot along the centerline of the exposed surface of each completed joint.

Basis of Payment

Work under this will be paid for at the Contract unit price per linear foot along the centerline of the exposed surface of each completed joint, which price shall include all labor, equipment and materials required to complete the work as described and as required by the Engineer.

ITEM 45 PRE-COMPRESSED SEAL BRIDGE JOINT (LINEAR FOOT)

Description

The work shall consist of furnishing and installing a pre-compressed seal bridge joint system as shown on the plans or at locations as directed by the Engineer. The pre-compressed seal bridge joint system assembly shall consist of a preformed (pre-compressed) seal, epoxy adhesive, and injection silicone sealant bands all combined in a manner to fulfill the requirements of these specifications so that a fully operational, waterproof system will seal the joint. The pre-compressed seal bridge joint system may also be used as a replacement seal for existing armored joint systems, or the joint filler in existing concrete headers.

Components of the pre-compressed seal bridge joint system shall not be substituted and shall be supplied from one expansion joint manufacturer.

Materials

The material of the pre-compressed seal joint system shall be capable of accommodating movements of +50%, -50% (100% Total) of nominal material size, required to seal opening up to 4 inches.

The pre-compressed seal joint system shall be comprised of three components:

1. cellular polyurethane foam impregnated with hydrophobic 100% acrylic, water based emulsion, factory coated with highway-grade, fuel resistant silicone
2. field-applied epoxy adhesive primer
3. field-injected silicone sealant bands

The pre-compressed seal bridge joint system shall be one of the following or an approved equal:

- Wabo H Seal by Watson Bowman Acme
- BEJS Bridge Expansion Joint System by Emseal Joint Systems LTD.
- Sealtite 50N by Schul International Co.

Submittals

The pre-compressed seal bridge joint system product shall be submitted to the Engineer for approval. The Contractor shall submit the proposed application procedures and Manufacturer's Product Data Sheet(s) that completely describe the product.

Construction Methods

The Contractor shall ensure and properly prepare all joint interfaces prior to installation and in accordance with the manufacturer's installation guidelines. Repair joint interfaces where needed and with materials approved by the expansion joint manufacturer.

All joint surfaces must be completely dry prior to application of the pre-compressed foam-silicon bridge seal and adhesive. Apply adhesive per manufacturer's installation guidelines to insure complete contact with joint interface and pre-compressed foam-silicon seal. Apply silicon bead along the top edge of each side of seal along supporting substrate and tool per manufacturer's installation guidelines.

Pre-compressed seal bridge joint system shall be sized in accordance with the manufacturer's recommendations, and installed at locations shown on the drawings or as directed by the Engineer.

Manufacturer's Field Representative

The Contractor shall arrange with the pre-compressed seal joint system's manufacturer or distributor to have the services of a competent field representative at the work site prior to any installation to instruct the work crews in the proper installation procedures. The field representative shall remain at the job site after work commences and continue to instruct until the representative and the Contractor, the Inspector and/or Engineer are satisfied that the crew has mastered the technique of installing the system successfully. The representative shall make periodic visits to the project as the work progressed and shall confer on each visit with the Contractor, Inspector and/or Engineer.

The manufacturer's field representative must be fully qualified to perform the work and shall be subject to the approval of the Engineer.

The Contractor shall be completely responsible for the expense of the service of the required field representative and the bid contract price shall be full compensation for all costs in connection therewith.

Method of Measurement

The Pre-compressed Seal Bridge Joint System will be measured by the linear foot along the centerline of the joint system installed in place and accepted.

Basis of Payment

The Pre-compressed Seal Bridge Joint System will be paid at the Contract unit price per linear foot, complete in place, which price shall include all labor, materials, tools, equipment, and incidentals necessary to complete the work.

ITEM 46 ELASTOMERIC PROTECTIVE COATING (SQUARE FOOT)

Description

Work under these Items shall consist of applying a minimum of two coats of an elastomeric acrylic protective coating to the above grade surfaces of concrete barriers, bridge substructures, including but not limited to abutment, backwall, wingwall, pier column and caps, and other locations as directed by the Engineer. The limits of coating application at each location shall be as directed by the Engineer. A total dry film thickness (DFT) of 16 mils shall be required.

Materials

The acrylic protective coating shall be breathable, durable, flexible, and color retentive. It shall provide protection and be resistant to weathering, carbon dioxide, chlorides, UV light, wind driven rain, dirt pick up and mildew. It shall also bridge hairline cracks up to 1/32". The acrylic protective coating system shall be one of the following or an approved equal:

- SikaGard 550W Elastocolor by Sika Corp.
- Flexxide Elastomer by Carboline
- Colorlastic by ChemMasters

Submittals

The proposed coating product shall be submitted to the Engineer for approval. The Contractor shall submit the proposed application procedures and Manufacturer's Product Data Sheet(s) that completely describe the product. The color of the coating(s) shall be selected by the Project Engineer. Separate colors shall be required for concrete barriers/bridge parapets vs. bridge substructure elements.

Actual product samples shall be provided in one quart cans for color testing/selection. A minimum of four (4) different color samples shall be required for each separate color use required.

Construction Methods

All surfaces to be coated must be dry, clean, sound and free of all contaminants that could interfere with adhesion of the coating. All loose material shall be removed. If directed by the Engineer, the Contractor shall repair any holes and any spalled and damaged concrete prior to applying the coating. The Contractor shall pressure wash all concrete surfaces to be coated. The pressure washer shall operate at a minimum of 3,000 psi and heat the water to a minimum of 125°F. The protective coating shall not be applied until the surface is dry and the surface preparation has been approved by the Engineer.

Application shall be done by airless sprayer or roller or a combination of both and in accordance with the manufacture's recommendations. The use of a primer shall not be required unless stipulated for that particular coating by the manufacturer. A minimum of two coats shall be applied to achieve a total DFT of 16 mils. The recommended minimum wet film thickness (WFT) must be maintained during each application. The manufacturer's specified temperature and weather limitations for the application shall be strictly adhered to.

Method of Measurement

Elastomeric Protective Coating shall be measured by the square foot for all concrete surfaces to which the coating is applied, complete in place, and accepted.

Basis of Payment

Elastomeric Protective Coating shall be paid for at the Contract unit price per square foot, which price shall include all labor, materials, tools, equipment, and incidentals necessary to complete the work. The Contractor will also supply a concrete moisture meter and wet/dry film thickness gauge for the use of the Resident Engineer and the cost of this device shall be considered incidental to this Item. The Contractor will retain ownership of the meter and gauge.

ITEM 47 ANTI-SKID WATERPROOF MEMBRANE (SQUARE FOOT)

Description

Work under this item shall consist of preparing concrete and steel substrates surface, furnishing and installing an effective dual function waterproofing and slip resistant wearing course protective system suitable for vehicular and pedestrian traffic on horizontal and/or sloped surfaces, and furnishing and installing waterproofing on vertical surface.

Materials

The desired protective system shall consist of at least three components: primer, waterproofing membrane and slip resistant wearing course; a system that combines a flexible, seamless, liquid applied waterproofing membrane with a fully compatible hardwearing slip resistant surface. Membrane shall be of type that can be sprayed horizontally, vertically and overhead at any thickness. No wearing course is required for vertical or overhead surface.

The required features are as follows:

- Can be applied to both concrete and steel substrates
- Can be applied to structure with gradients in excess of 12%
- Ease, rapid application, rapid cure and lightweight
- Weather tolerant
- High bond strength to substrate and superior inter-coat adhesion
- Ease of repair
- VOC (Volatile Organic Compound) compliant
- Resistance to carbonation and UV exposure
- Long service life

TECHNICAL DATA REQUIREMENTS

Property	Test Method	Min. Value
Density	ASTM C138	17 – 18 lb/gal
Compressive Strength	ASTM C579	5,300 psi
Flexural Strength	ASTM D790	3,300 psi
Tensile Strength (Resin only)		> 870 psi
Tensile Strength (Filled)		670 psi
Tensile Adhesion	Steel Concrete	290 psi 290 psi
Elongation (Unfilled)	ASTM D638	> 130%
Low Temperature Fatigue	-30° F for 2 million cycles, steel	No failure

Impact Resistance	-15° F, 20° F	No failure
Water Absorption	140° F, 28 days	0.9%
System Weight		Approximately
Pedestrian	1/6 inch	2.62 lb/ft ²
Vehicle	1/4 inch	4.15 lb/ft ²

Submittals

A. Product Data

1. Latest edition of Manufacturer’s literature including performance data and installation procedures.

B. Samples

1. An 8 inch square sample of the proposed system. Color, texture and thickness shall be representative of overall appearance of finished system.

C. Product References

1. Manufacturer shall submit three (3) references of successful completed projects using products of a character similar to that of the products proposed for this project. The referenced products shall have performance satisfactory for at least five (5) years at geographic location with similar weather condition as the State of Massachusetts.
2. The project references shall consist of the following:
 - Owner (Agency)
 - Structure type
 - Location
 - Year
 - Product type
 - Square footage
 - Contact person (name, phone or email)

Quality Assurance

A. Qualifications

1. The Manufacturer shall have a minimum of 10 years’ experience in the production, sales and technical support of wearing courses and related materials.

B. Certifications

1. A certificate of Conformity shall be issued by the Manufacturer with each delivery of materials to the site.

Delivery, Storage and Handling

A. Packaging and Shipping

1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.

B. Storage and Protection

1. A storage area shall be provided for all components. The area shall be cool, dry, out of sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
2. Copies of Material Safety Data Sheets for all components shall be kept on site for reference by the Engineer or other personnel.

Construction Methods

The Contractor shall furnish the services of a technically competent representative of the manufacturer, as required by the Engineer, at no additional cost to the Department of Conservation and Recreation (DCR).

The manufacturer's technical representative shall supply detailed instructions supplementing those specified herein for use in applying the material; and shall be present during installation of the System to give such aids and instructions in the installation as are required to obtain satisfactory results.

The Contractor shall acquaint itself with the materials specified and their handling characteristics. The Contractor shall be thoroughly familiar with the construction procedures recommended by the manufacturer before application of the system.

The Contractor shall furnish the Engineer a copy of the manufacturer's printed instructions for recommended application and construction procedures.

Preparation of Substrate Surface

Concrete:

- a. New concrete surface shall be allowed to cure a minimum of fourteen (14) days.

- b. The concrete shall be abrasively cleaned in accordance with ASTM D4259, to provide a sound substrate free from laitance. The surface profile is not to exceed 1/8" (peak to valley).
- c. The substrate shall be sounded and all spalls repaired prior to placement of the prime coat. Spalls shall be repaired with rapid cure concrete patch materials per the Engineer's and Manufacturer's recommendations.
- d. Prior to abrasive blasting, all protrusion shall be ground smooth and depressions filled with a two-component, solvent-free, moisture-insensitive, low-modules, non-sagging, epoxy resin binder compatible with the proposed System.
- e. Areas of minor surface deterioration of 1/4" and greater in depth shall also be repaired to prevent possible ponding of the system, leading to excessive usage. The extent and location of thin surface patches shall require the approval of the Engineer before the System is applied.
- f. There shall be no visible moisture present on the surface at the time of application of the System. Compressed oil-free air and/or a *light* passing of a propane torch may be used to dry the substrate.
- g. New or existing surfaces shall be free of oil, grease, curing compounds, loose particles, sand, clay, dust, moss, algae growth, laitance, friable matter, dirt, salt deposits, bituminous products, previous waterproofing materials or other foreign matter. The concrete surface shall be allowed to air dry for not less than 12 hours and shall be visibly dry prior to and during application of the primer. The primer shall be applied uniformly and completely to cover the entire surface.
- h. A minimum 1/4" key cut shall be made at expansion joint edges to properly seat the System, providing a smooth transition between areas. This detail cut shall also apply to drain perimeters.
- i. Random tests for adequate tensile bond strength shall be conducted on the substrate by the Manufacturer's representative at the job site using a pull-off adhesion tester conforms with ASTM D4541 at a minimum frequency of three tests per 5,000 ft². Smaller areas shall receive a minimum of three tests. Adequate surface preparation will be indicated by tensile bond strengths of primer to the substrate greater than or equal to, for Pedestrian usage: 250 psi with failure in the concrete; and, for Highway vehicular usage, 290 psi. Should the tensile bond strengths be lower than a minimum specified, the Engineer may request additional substrate preparation.

Steel Substrates

- a. The steel surfaces to be coated shall be dry-blast cleaned in accordance with the provisions of NACE NO. 2/SSPC-SP 10 Near-White Metal Blast Cleaning, to remove all oil, dirt, rust, existing overlays and other materials which would prevent proper bonding and curing

of the primer. The blast cleaning shall leave all surfaces with a dense, uniform, angular, anchor pattern of no less than 1.5 mils as measured in accordance with the requirements of ASTM D4417. Water blasting will not be permitted.

- b. Construction traffic shall not be allowed on any portion of the prepared deck. There shall be no visible moisture present on the surface on the surface at the time of the application of the System. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.
- c. Immediately prior to priming, the substrate surface must comply with the specified cleanliness standard. SSPC-SP 10/NACE No. 2 requires that “random staining shall be limited to no more than 5% of each unit area of surface as defined in [SP 10] Section 2.6, and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied coating”. “Rust-back (rerusting) occurs when freshly cleaned steel is exposed to moisture, contamination, or a corrosive atmosphere. The time interval between blast-cleaning and rust-back will vary greatly from one environment to another. Under mild ambient conditions, if chemical contamination is not present it is best to blast clean and coat a surface during the same day. Severe atmospheric environmental conditions may require more expedient coating application to avoid contamination from fallout. Chemical contamination should be removed prior to coating.”
- d. Prior to the application of the primer, random tests for adequate tensile bond strength shall be conducted on the substrate with a minimum of 290 psi and failure in the concrete and in accordance with ASTM D 4541. At least one test shall be conducted per 5,000 ft² of deck area. Additional preparation of the substrate shall be required if a bond strength of at least 290 psi is not demonstrated. Should the tensile bond strengths be lower than the minimum specified, the Engineer may require additional substrate preparation. Immediately prior to application of the primer, the deck shall be cleaned by brooms and compressed air. The Engineer and the material manufacturer’s representative shall be the sole judge of the need for re-cleaning.
- e. The polymer concrete overlay system shall not be placed when weather or surface conditions, as determined by the manufacturer’s representative, are such that the material cannot be properly applied and cured within the specified time allowed. There shall be no visible moisture present on the steel at the time of application of the primer, or on the primer at the time of the polymer concrete overlay installation or on the overlay prior to the application of the Sealer. None of the overlay’s product-components (primer, overlay slurry mortar, sealer) are to be installed when the Dew Point is only 5° F or less below the surface temperature.

Application

The proposed System shall be installed strictly in accordance with the Manufacturer's written instructions.

The technical representative shall be present at the work site prior to the start of any application to instruct the Contractor and the Engineer on application and inspection procedures and to inspect the prepared surfaces prior to application.

Application shall proceed while air and substrate temperatures are between 32° F and 104° F providing that at all times during application the substrate is above the dew point. Neither the primer nor the membrane shall be applied during wet weather conditions.

The Engineer, accompanied by the technical representative, shall inspect the concrete surface immediately prior to application of the primer and prior to application of the membrane.

Application of either the primer or membrane may not begin until approval is granted by the Engineer after consultation with the manufacturer's on-site representative.

A. General

1. The System will be applied in five distinct steps as listed below:
 - a. Substrate preparation
 - b. Priming
 - c. Binder application
 - d. Aggregate broadcast
 - e. Sealer application
2. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the System.
3. Immediately prior to the application of any components of the System, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
4. 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 as approved or directed by the Engineer.

B. Primer

1. For concrete surfaces, the primer coat shall consist of a single coat with a minimum overall coverage rate of 100 ft²/gal.

2. For steel surfaces, the primer coat shall consist of a single coat with a minimum overall coverage rate of 125 ft²/gal.
3. All components shall be measured and mixed in accordance with the Manufacturer's recommendations.
4. The primer shall cure tack-free before application of the seamless overlay.

C. Binder

1. The binder shall be applied any time after the primer has cured tack-free.
2. Prior to application of the binder the primer shall be clean and free from loose debris, moisture or other contaminants. Oil, diesel or grease shall be removed with solvent approved by the Engineer.
3. The binder shall be applied in one coat with a minimum thickness of 1/6 inch for pedestrian structures and a minimum thickness of 1/4 inch for structure to accommodate vehicular traffic. Greater thicknesses can be achieved with multiple lifts, following consultation with the Manufacturer.
4. The binder shall be comprised of a resin and filler together with a hardener powder which is to be added in accordance with the Manufacturer's recommendations.
5. The hardener powder shall be added to the resin and thoroughly dispersed by suitable approved mechanical means such as an air driven high-speed paddle mixer. The filler shall then be added to the catalyzed mixture and dispersed in the same manner to achieve homogeneous slurry. The slurry shall be applied over horizontal cured primed surface using gage rakes, screeds, trowels or other systems approved by the Manufacturer.

D. Aggregate Broadcast

1. Aggregate shall be broadcast into the wet, uncured binder in such a manner as to fall vertically and cover the binder completely. Coverage rates for aggregate shall be typically 1.25 lb/ft².
2. The fully broadcast binder shall be cured at least 45 minutes or until sweeping-off or vacuuming can be performed without tearing or otherwise damaging the surface. Non traffic or equipment shall be permitted on the binder during the curing period. Subsequently, all loose aggregate shall be removed by sweeping-off or vacuuming in preparation for the sealer application. Recovered loose aggregate may be reused at the discretion of the Engineer. Under no circumstances shall the unsealed binder be opened to traffic.

E. Sealer

1. The sealer shall consist of one with an overall coverage rate of 100 ft²/gal.
2. The sealer shall be comprised of a methyl methacrylate liquid resin component and a hardener powder which is to be added at a rate in accordance with the Manufacturer's recommendations and thoroughly dispersed by suitable approved mechanical means such as an air driven high-speed paddle mixer.
3. The sealer shall be roller applied to the cured and swept binder.
4. The sealer shall be fully cured before the complete system may be opened to traffic.

F. Repairs / Patching

1. If area is left untreated or the binder becomes damaged, a patch repair shall be carried out to restore the integrity of the system. The damaged area shall be cut back to sound material and wiped with solvent (e.g. acetone) up to a width of at least 4" on the periphery. The following repairs shall be effective, depending upon the extent of damage.
2. The substrate shall be primed as necessary.
3. The binder shall then be applied so as to fill in the repair area and restore a uniform, continuous appearance. Additional aggregate shall be broadcast if required.
4. One coat of sealer shall be applied with a 4" overlap onto the existing area.

Method of Measurement

Anti-skid waterproof membrane will be measured by the square foot of plan surface, complete in place.

Basis of Payment

Anti-skid waterproof membrane will be paid for at the Contract unit price per square foot, complete in place, such price and payment shall constitute full compensation for preparing the surface, furnishing and applying the System, furnishing the services of a qualified technical field representative, and for all labor, equipment, materials and incidentals required to complete the to the satisfaction of the Engineer.

ITEM 48 STRUCTURAL STEEL (POUND)

ITEM 49 STRUCTURAL STEEL - LIGHT WEIGHT (POUND)

Description

The work under these items shall consists of removal and disposal of damaged or deteriorated steel members such as: stringer beams, floor beams, cover plates, angles or any other steel component of the bridge in repair and the installation of new steel as indicated on furnished plans and/or as directed by the Engineer.

If special fabrication of any element that requires shop assembly and fabrication is necessary, the cost shall be included in the unit price of this item.

Bolting and welding associated with the assembly or installation of new steel will also be included in this item.

Also included under this item are any miscellaneous steel repairs as directed and the bracing and jacking as may be required or directed by the Engineer during the repair or replacement process to maintain stability of the structure.

Where individual steel pieces used for repairs weigh twenty (20) pounds or less, the Contractor will be compensated under Item “Structural Steel – Light Weight”.

Materials

Structural steel material shall conform to AASHTO Designation M270-Grade 50 (ASTM A709 Gr. 50) or as indicated in the drawings or as directed by the Engineer.

Before fabrication, if requested by the Engineer, the Contractor shall submit shop drawings to the Engineer for approval. Shop drawings shall be submitted in accordance with Article V Section 22. Before shop drawing submittal, the Contractor shall verify all field dimensions.

The Contractor will be required to submit to the Engineer, for approval, three (3) certified copies of the mill test report for each kind of steel furnished.

These certificates shall certify compliance with the specifications and shall give the chemical and physical analysis of the steel and shall contain marking numbers as used on steel as required in AASHTO M-160 (ASTM A6) so as to be able to reference certificates to steel covered by certificates. Any cost in furnishing the certificates shall be borne by the Contractor.

Inspection at the mill will not be required.

The Contractor's structural steel fabricator will be subjected to prior approval by the DCR for performance of work under this contract. The fabricator shall demonstrate five (5) years of experience in the fabrication of structural steel required in the project.

The Contractor shall give sufficient notice to the Engineer of the beginning of the work at the shop, so that arrangement may be made for inspection. No material shall be fabricated before the Engineer has been notified as to the source of supply.

It will be the Contractor's responsibility to submit three (3) sets of fabrication inspection reports on a weekly basis suitably bound and catalogued.

The DCR will not waive the right to have its commercial testing agency conduct their inspections and review the above specified materials. The Contractor shall provide ready and convenient access to this testing agency at all fabricating plants.

Furthermore, the DCR reserves all rights to reject any and all steel delivered to the project site which does not meet the specifications.

All welding and the preparation and assembly of material for welding shall conform to the Massachusetts Highway Department Standard Specification for Highways and Bridges, the MSHTO Standard Specifications for Highways and Bridges and the MSHTO / AWS Bridge Welding Code (ANSI / MSHTO / AWS D1.5).

Construction Methods

Damaged steel shall be removed in accordance with procedures established by the Engineer at that particular bridge. New steel shall be placed as shown on sketches provided by the Department of Conservation and Recreation (DCR).

Different sized steel members from those described on the sketches may be used if the sizes specified are unavailable. The steel members must be equivalent in strength and stiffness to the specified steel and be approved by the Engineer.

Prior to structural steel member replacement, the Contractor shall submit a replacement procedure including jacking and shoring as required.

Painting: All steel shall be primed in the shop prior to delivery with one coat of inorganic zinc rich primer with a minimum thickness of 3 mils. After installation, all steel shall receive two coats of high build vinyl with a thickness of 3-5 mils. The final coat color to be determined in the field.

Bolts, Nuts and Washers: Bolts, nuts and washers shall conform to requirements of the current edition of the AISC Specification for Structural Joints using ASTM A325 X (unless otherwise noted).

Method of Measurement

Structural Steel and Structural Steel – Light Weight will be measured by the pound of steel supplied and installed.

The weights (masses) of the rolled members shall be as tabulated in the AISC Manual of Steel Construction.

The mass of the rolled shapes and of the plates, regardless of the width of the plates, shall be computed on the basis of their nominal mass and of their dimensions as shown on the approved shop drawings, deducting for copes and cuts, and for all open holes that are not to be filled with rivets, bolts or plug welded.

The computed weight shall not include the weight of welds. The density of the steel (Structural, Cast, Galvanized) shall be assumed as 490 pounds per cubic foot.

Bolts, nuts, washers and welding will not be measured for payment but will be considered as incidental to this item.

No additional allowance in mass will be made for the shop coat of paint or for any other coat of paint or other protective covering.

Structural Steel shall consist of steel pieces weighing more than twenty (20) pounds.

Structural Steel – Light Weight shall consist of steel pieces weighing twenty (20) pounds or less.

Basis of Payment

Structural Steel and Structural Steel – Light Weight will be paid for at the Contract unit price per pound complete in place which price and payment shall be full compensation for furnishing the steel, delivery, transportation, all labor, equipment, bolts, nuts, washers, any drilling of holes, any welding associated with the fabrication and installation of new steel, bracing, minor jacking, painting, staging, safety precautions, removal and disposal of deteriorated steel and any other incidental items necessary to complete the work to the satisfaction of the Engineer.

ITEM 50 REPLACEMENT OF EXISTING RIVET OR BOLT (EACH)

Description

Work under this item shall consist of replacing existing rivets or bolts with new high-strength bolts at locations shown on the drawings or as directed by the Engineer based on discovered field conditions.

Materials

New bolts shall be high-strength bolts conforming to ASTM A325. Bolts shall be furnished with nut and washer(s). New bolts shall be galvanized where in contact with a galvanized member, and black where in contact with a bare steel or painted member. The diameter of the bolt shall closely match the diameter of the rivet removed.

Construction Methods

The Contractor shall use care so as not to damage existing structural iron that is to remain. Flame-cutting of rivets will not be permitted. Removed rivets and loose corroded iron and debris shall be disposed of away from the project. The removal of this material shall be considered incidental to this item.

Submittals

The Contractor shall submit mill test reports, signed by manufacturers certifying that the high-strength bolt-nut-washer assemblies comply with specified requirements.

Method of Measurement

Work under this item will be measured per each; of existing rivets or bolts removed and replaced with a new high-strength bolt, nut, and washer.

Basis of Payment

Work under this item will be paid at the Contract unit price per each; existing rivet or bolt removed and replaced with a new high-strength nut, bolt, and washer, complete in place, which price and payment shall constitute full compensation for all labor, tools, equipment, materials, cutting, drilling, protection, and incidentals thereto, and to the complete satisfaction of the Engineer.

The removal of existing rivets and the furnishing and installation of new high-strength bolts associated with structural steel repairs shall be measured and paid for under Items for Structural Steel or Structural Steel-Light Weight.

ITEM 51 PRESSURE TREATED WOOD – TIMBER (MBF)

ITEM 52 PRESSURE TREATED WOOD - DECKING (MBF)

ITEM 53 PRESSURE TREATED WOOD - RAILINGS (MBF)

ITEM 54 IPE WOOD - DECKING (MBF)

ITEM 55 IPE WOOD - RAILINGS (MBF)

Description

The work under these items shall consist of partial or full removal, disposal and replacement of existing timber bridge superstructure components (beams, blocking, decking, and bridge railings) and timber substructure components (pile caps, cross bracing) with the exception of timber piles, as shown on the plans or as directed by the Engineer. Decking and bridge railings components will be pressure treated wood or IPE wood. All other components shall be pressure treated wood.

This work includes removal and re-use or replacement of miscellaneous steel deck joint plates, railing post connection brackets, “z-clip” fasteners for timber beam to steel beam flange connections, or any other existing miscellaneous steel components incidental to the work. The Engineer shall determine which components are to be re-used or replaced prior to demolition. Replacement of miscellaneous steel items shall be paid for under ITEM 49 Structural Steel-Light Weight.

This work includes furnishing and installing new decking and railing fasteners (deck screws, lag bolts, carriage bolts) and furnishing and installing miscellaneous corrosion/ isolation barrier materials between pressure treated wood components and steel components, and an adhesive waterproofing membrane material to the top side of timber beams prior to installation of new timber decking.

Materials

Pressure Treated Timber and Decking: shall be Southern Pine No. 1 or better, surfaced four sides with a maximum moisture content of 19% before installation. Wood shall have the following minimum AASHTO design values:

SIZE	BENDING Fb (psi)	TENSION PARALLEL TO GRAIN Ft (psi)	SHEAR PARALLEL TO GRAIN Fv (psi)	COMPRESSION PERPENDICULAR TO GRAIN Fc [⊥] (psi)	COMPRESSION PARALLEL TO GRAIN Fc (psi)	MODULUS OF ELASTICITY E (PSI)
2”-4” THICK X 2”-4” WIDE	1500	1000	175	565	1650	1,600,000
2”-4” THICK X 5”-6” WIDE	1350	875	175	565	1550	1,600,000
2”-4” THICK X 8” WIDE	1250	800	175	565	1500	1,600,000
2”-4” THICK X 10” WIDE	1050	700	175	565	1450	1,600,000

5"X5"AND LARGER	1350	900	165	375	825	1,500,000
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Wood Preservative Treatment: All Southern Pine shall be pressure treated with Alkaline Copper Quaternary Preservation (ACQ-D), or approved equivalent conforming to AWWA Standards U1, at the following minimum retention levels:

1. Pieces with 2 inch or 3 inch nominal thickness – 0.25 PCF
2. Pieces with 4 inch or greater nominal thickness – 0.40 PCF
3. Pieces with 8 inch or greater nominal thickness – 0.60 PCF

All cuts, holes and injuries to the surface of treated wood shall be field protected by field treatment meeting AWWA Standard M4. All treated wood products shall be handled and field fabricated in accordance with AWWA Standard M4 for the care of preservative treated wood products.

IPE Lumber for decking and railings: shall be IPE, Tabebuia spp., lapacho group. IPE lumber shall have a minimum density of 64 pounds per cubic foot. Lumber for decking shall be dressed (S4SE4E) with the edges eased to a radius of 1/8".

The lumber for decking shall be dried to a moisture content of no more than 19%. Dimensions shall have a tolerance of plus/minus 0.08" at 19% moisture.

The IPE lumber supplier shall provide proof of membership in the Certified Forest Products Council.

Ends of the lumber shall be sealed after cutting using a clear aqueous wax end sealer appropriate for use with IPE to reduce end checking.

Lumber for decking shall be in sound condition, free from worm holes, knots, longitudinal heart cracks, soft sap wood, fungus, and deformation (twisting or cupping) that cannot be removed during installation using normal installation methods and tools. Natural drying checks to a maximum of 1/8 inch width will be acceptable.

All holes shall be predrilled. Bolt holes shall be 1/16 inch larger than bolt thread diameter.

Fasteners:

Preservative-treated wood: All connectors, fasteners, and hardware shall be either stainless steel type 304 or 316 alloy or shall be Hot-dip galvanized meeting the requirements of ASTM A153 and A123, with 2 ounces of zinc coating per square foot minimum. Fasteners, connectors, and hardware used together shall be of the same type.

Do not use standard carbon-steel or aluminum products in direct contact with preservative-treated wood. Electroplated galvanized metal products are not acceptable.

IPE decking and railing: Regardless the type of fasteners removed, all connectors, fasteners, and hardware shall be stainless steel type 304 or 316 alloy. Fasteners, connectors, and hardware used together shall be of the same type.

Submittals

A certificate of wood treatment shall be furnished to the Engineer upon delivery of the treated wood products. Treated wood shall bear the appropriate American Wood Protection Association (AWPA) quality mark for the treatment employed. The certificate shall indicate acceptability of treated wood to receive field-applied stain.

Construction Methods

Quality Assurance:

Beams that contain unsound knots and shakes, excessive checking or other defects that may be detrimental to their structural integrity will be rejected and shall not be used in the proposed work.

Execution:

To provide the necessary slope on the steel beams or girders, timber beams may need to be notched. The Contractor is responsible for determining the depth and width of each notch and submit the dimensions for approval prior to notching any beams.

Wood surfaces, cut or injured, shall be brush treated with two applications of wood preservative using material of the same specifications as that used in the preservative treatment.

The Contractor shall take extreme care in the handling of the decking and railings. Any damaged timbers will be replaced by the Contractor at the discretion of the Engineer.

Decking planks shall span the full width of the bridge deck, unless otherwise directed by the Engineer. Horizontal bridge railing members shall span a minimum of three vertical post supports.

Wood and IPE rails shall be erected to form a smooth continuous rail conforming to the required line and grade. Butt adjoining rail sections with a maximum separation between adjoining rail sections of 1/16 inch.

Rails shall be butt jointed at alternate posts or as directed. Hammering or other forceful method of inserting bolts shall not be used.

Corrosion Protection:

Where treated members are in direct contact with steel (at existing steel girders, new angles or new plate washers) provide VYCOR deck protector barrier membrane by W.R. Grace & Co. or Engineer approved equal (attach to wood). Follow manufacturer's recommendations for storing and installation.

Waterproofing Protection:

Provide a layer of Grace Ice & Water Shield (waterproofing membrane) by W.R. Grace & Co. or Engineer approved equal the top side of timber beams before installing decking.

Cut and adhere the waterproofing membrane the full length of each beam and wrapped a minimum of 1" down the sides of the beam. The membrane shall not be installed continuous over adjacent beams to prevent the trapping of water and debris under the decking.

Follow all requirements of the manufacturer when storing and installing this product.

Method of Measurement

ITEM 51, ITEM 52, ITEM 53, ITEM 54, and ITEM 55 will be measured installed per MBF (thousand board foot) complete in place.

Basis of Payment

ITEM 51, ITEM 52, ITEM 53, ITEM 54, and ITEM 55 will be paid for at the contract unit price per MBF (thousand board foot) complete in place, which price and payment shall be full compensation for removal/ disposal of existing wood components, furnishing and installing new wood (Pressure Treated and/or IPE) components including all labor, tools, equipment, fasteners (with the exception of light weight steel fabricated items), corrosion protection (VYCOR barriers) and waterproof membrane (Grace Ice & Water Shield), to the satisfaction of the Engineer.

ITEM 56 REMOVE AND RESET WOOD RAILING (LINEAR FOOT)

ITEM 57 REMOVE AND RESET IPE RAILING (LINEAR FOOT)

Description

The work under these items shall consist of removing and re-assembling/ resetting wood and IPE railing to the limits shown on plans or as directed by the Engineer. Components of railing designated to be reused and reset shall be temporarily stored and protected. Any damaged/ unusable components as determined by the Engineer shall be removed, disposed of and replaced. Railing components include, but are not limited to; horizontal rails, posts, braces, connectors, plates, anchor bolts, fasteners and any other items that may be attached thereto or as directed by the Engineer.

Materials

Railing components identified by the Engineer to be replaced shall conform to the following requirements:

- ITEM 53: Pressure Treated Wood Railings
- ITEM 55: IPE Wood Railings
- ITEM 49: Structural Steel – Light Weight

New connectors and fasteners required to re-assemble/ reset railings and shall be of Stainless Steel Types 304 and 316 or as noted on the plans or as directed by the Engineer. Connectors, fasteners (carriage bolts, lag screws etc.) with the exception of steel fabricated components that may require replacement (covered by ITEM 49: Structural Steel – Light Weight), shall be considered incidental to these work items.

Construction Methods

The Contractor shall propose an acceptable method for removing and resetting railing, subject to the approval of the Engineer.

The Contractor shall take precautions to prevent damage to the existing railing components identified to re-used/re-installed. If damage does occur, it shall be repaired by the Contractor to the satisfaction of the Engineer at no additional expense to the DCR.

Damaged, unusable components shall be the property of the Contractor and shall be removed and disposed of by the Contractor.

The Contractor's attention is drawn to potential environmental sensitivity of site and the surrounding areas. For areas designated as a no-drop zone, the Contractor shall provide temporary shielding below the structure prior to removal to prevent debris, tools and/or other materials from entering into or dropping to the area below the structure. All debris as result of the Contractor's work shall be promptly cleaned up and removed from the site or from the water body at no additional expense to the DCR.

Prior to initiating work, the Contractor shall submit for review, a work plan describing the methods of removal and temporary shielding required for the protection of traffic, environmentally sensitive areas, and adjoining property, all in accordance with the pertinent requirements as stipulated in the project specifications. Acceptance of the work plan shall not be considered as relieving any responsibility of the Contractor.

Method of Measurement

Work under these items will be measured by the number of linear foot of wood and IPE railing removed and reset, completed and accepted.

Wood and IPE railing components replaced will be measured by MBF (thousand board foot) of actual material used.

Fabricated steel components replaced will be measured by the pound of Structural Steel – Light Weight used.

Temporary shielding will be measured per square foot, complete in place.

Basis of Payment

Work under these items shall be paid for at the contract unit price per linear foot, which price shall include full compensation for all labor, equipment, tools, and incidentals to remove, temporarily store and reset wood and IPE railing, disposal of damaged components, furnishing and installing new connectors and fasteners as required, except for the follow:

Wood railing components replaced will be paid for at the contract unit price per MBF (thousand board foot) for ITEM 53: Pressure Treated Wood Railing for the actual material used.

IPE railing components replaced will be paid for at the contract unit price per MBF (thousand board foot) for ITEM 55: IPE Wood Railing for the actual material used.

Fabricated steel components replaced will be paid for at the contract unit price per pound for ITEM 49 Structural Steel: Light Weight for the actual material used.

Temporary shielding will be paid for at the contract unit price per square foot for ITEM 19: Temporary Protective Shielding for the area of shielding installed.

ITEM 58 REMOVE AND RESET METAL RAILING (LINEAR FOOT)

Description

The work under this item shall consist of removing and resetting metal (steel and aluminum) railing to the limits shown on plans or as directed by the Engineer. Components of railing designated to be reused and reset shall be temporarily stored and protected. Any damaged/ unusable components as determined by the Engineer shall be removed, disposed of and replaced. Railing components include, but are not limited to; horizontal rails, posts, braces, connectors, plates, anchor bolts, fasteners and any other items that may be attached thereto or as directed by the Engineer.

Materials

Requirements/specifications for railing components identified by the Engineer to be replaced are as follows:

Steel Bridge Railing:

Materials used in the fabrication of the steel bridge railing shall conform to the following requirements:

1. All structural steel shall be new and shall be blast cleaned prior to fabrication in accordance with Section 960.61C of the 1995 MassHighway Standard Specifications for Highway and Bridges.
2. Steel anchor bolts, nuts and washers shall conform to requirements for Stainless Steel Type 304 or 316.
3. Anchor plate shall conform to ASTM A36.
4. Steel posts and base plates shall conform to ASTM A709, Grade 50.
5. Rail splice tube plates and picket carrier angles shall conform to ASTM A709, Grade 36.
6. Stainless steel thread welded studs conforming to ASTM A 304 which have been annealed after cold working shall be used to attach the rail tubes to the posts. Threaded welded studs conforming to ASTM A108 shall be used to attach: tubular pickets to the carrier angles; the picket panel assembly to the rails.
7. All threaded studs shall be supplied with nuts, washers, and lock washers. Stud welding shall conform to the current edition of the ANSI/AASHTO/AWS D1.5, Bridge Welding Code. The features used in stud welding shall be kept clean and dry and shall be stored at a temperature of 85 °F.
8. Rubber-cotton duck bearing pad shall conform to M9.16.1 of the 1995 MassHighway Standard Specifications for Highways and Bridges.

Aluminum Bridge Railing:

Aluminum posts shall be furnished with neoprene bearing pad at the base to isolate it from receiving surface.

Aluminum welding shall be in accordance with the American Welding Society “Structural Welding Code-Aluminum”, ANSI/AWS D1.2.

All connectors and fasteners shall conform to requirements for Stainless Steel Type 304 or 316.

Materials used for the fabrication of aluminum bridge railing shall conform to the following requirements:

1. All materials shall be new and free from any surface coatings of paint or other materials. All castings shall be sound, free from blow-holes or other imperfections and have smooth surfaces.
2. Anchor bolts, nuts and washers shall conform to ASTM A193, Grade B8.
3. Stainless steel screws shall conform to ASTM A193, Grade B8.
4. Rails, posts and bases shall conform to ASTM B221, Alloy 6061-T6.
5. Splices and clamp bars shall conform to ASTM B221, Alloy 6061-T6.
6. Rivets shall conform to ASTM B 316, Alloy 6061-T6.
7. Aluminum washers shall conform to ASTM B209, Alloy Alclad 2024-T4.
8. End plugs shall conform to ASTM B26, Alloy 356.0-F.
9. Tubular Pickets shall conform to ASTM B221, Alloy 6063-T5.
10. The elastomer for the neoprene bearing pad shall be 100% virgin chloroprene (neoprene) meeting the requirements of Section 8 of the AASHTO Standard Specifications for Highway Bridges

Construction Methods

The Contractor shall propose an acceptable method for removing and resetting railing, subject to the approval of the Engineer.

It is anticipated that the removal of the existing metal railing can be accomplished through mechanical means by disconnecting bolted connections. However should the Contractor choose to remove the railing by means and methods that would require removal of paint, which can potentially contain lead, the Contractor shall be responsible for containing, collecting, storing and legally disposing of paint debris at no additional expense to Department of Conservation and Recreation (DCR).

If any existing anchor bolts are broken, damaged or if removal of nut and washers requires cutting, the Contractor shall furnish and install new anchor bolts.

The Contractor shall take precautions to prevent damage to the existing railing components identified to re-used/re-installed. If damage does occur, it shall be repaired by the Contractor to the satisfaction of the Engineer at no additional expense to the DCR.

Damaged, unusable components shall be the property of the Contractor and shall be removed and disposed of by the Contractor.

The Contractor's attention is drawn to potential environmental sensitivity of site and the surrounding areas. For areas designated as a no-drop zone, the Contractor shall provide temporary shielding below the structure prior to removal to prevent debris, tools and/or other materials from entering into or dropping to the area below the structure. All debris as result of the Contractor's work shall be promptly cleaned up and removed from the site or from the water body at no additional expense to the DCR.

Prior to initiating work, the Contractor shall submit for review, a work plan describing the methods of removal and temporary shielding required for the protection of traffic, environmentally sensitive areas, and adjoining property, all in accordance with the pertinent requirements as stipulated in the project specifications. Acceptance of the work plan shall not be considered as relieving any responsibility of the Contractor.

The Contractor shall furnish and install new rubber-cotton duct base plate bearing pads for steel railings and neoprene base plate bearing pads for aluminum railing prior to resetting railings.

Railings shall be carefully adjusted prior to tightening of anchor bolts to insure proper alignment at abutting joints and correct alignment throughout the length of railing. After installation, all railing components shall be free of burrs, sharp edges and irregularities.

Submittals

For replacement of railing components that require fabrication, the Contractor shall submit shop drawings/sketches for review and approval by the Engineer.

Method of Measurement

Work under this item will be measured by the number of linear foot of metal railing removed and reset, completed and accepted.

Temporary shielding will be measured per square foot, complete in place.

Basis of Payment

Work under this item shall be paid for at the contract unit price per linear foot, which price shall include full compensation for all labor, equipment, tools, and incidentals to remove, temporarily store and reset metal railings, disposal of damaged components, furnishing and installing new base plate bearing pads except for the following:

Temporary shielding will be paid for at the contract unit price per square foot for Item 15: Temporary Protective Shielding for the area of shielding installed.

Replacement of damaged anchor bolts and damaged railing components and all cost associated with this work shall be paid for per ITEM 5: Base Labor Rate and the associated allowances as applicable.

ITEM 59 STONE MASONRY WALL (R&R) (CUBIC YARD)

Description

The work shall consist of the removing and rebuilding of existing stone masonry walls, or rebuilding collapsed stone masonry walls, in cement mortar or dry, in accordance with these specifications, and in close conformity with the lines and grades shown on the plans or established by the Engineer.

Materials

The stone shall consist of those in the present wall and its foundation and such new stones as may be required.

Mortar shall meet the requirements of Subsection M4.02.15 of Division III, Materials of the Standard Specification.

Construction Methods

Construction of wall shall meet the pertinent requirements of Section 690 of the Standard Specification.

Method of Measurement

Work under this item will be measured for payment by the cubic yard and the pay quantity shall be only that quantity actually laid and approved.

Basis of Payment

This item will be paid for at the Contract unit price per cubic yard for the kind of wall removed and rebuilt, complete in-place and accepted, which price shall constitute full payment for all materials, tools, labor, equipment, and incidental work.

ITEM 60 POINTING AND GROUTING MASONRY (BAG)

Description

Work under this item includes the cleaning out of defective mortar joints in the exposed surfaces of the existing granite block and stone masonry walls, abutments, piers and wing walls and pointing the joints with new cement mortar. Also included is the filling of voids left by the excavation of deteriorated stonework and rubble with new cement mortar as directed by the Engineer.

Materials

Mortar: The cement mortar shall meet the requirements of Subsection M4.02.15. Mortar shall be one component, polymer modified, rapid setting Portland cement mortar.

1. Performance criteria shall be as follows:
 - a. Set time (ASTM C-266)
 - b. Initial: 20-30 minutes
 - c. Final: 30-60 minutes
2. Working time: 15 minutes
3. Color: Shall match or replicate existing masonry and native stone as closely as possible.
4. Compressive Strength:
 - a. 1 Day: 3000 PSI Min
 - b. 7 Days: 5000 PSI Min
 - c. 28 Days: 6000 PSI Min
5. Bond Strength (ASTM C882 Modified)
 - a. 28 Days: 2400 PSI Min
6. Chloride Permeability (ASTM E-1202): 27 Coulombs
7. Material shall not produce a vapor Barrier
8. Material shall meet or exceed the requirements of ASTM A-928.

Cement mortar may be extended with 3/8" clean, well graded saturated surface dry pea gravel aggregate having low absorption and high density.

Grout for Filling Void Spaces (Proprietary Mix):

1. Grout shall be a flowable, high strength cementitious grout requiring only potable water for mixing. Placement shall be by pump or tremie.
2. Compressive strength in accordance with ASTM C109:
 - a. 1 Day: 3000 PSI Min
 - b. 2 Days: 5000 PSI Min
 - c. 28 Days: 7000 PSI Min

3. Initial Setting Time: 2 to 2.5 hours
4. Final Setting Time: 4 to 6 Hours

Grout for Filling Void Spaces (Ready-Mix):

As an alternative to a proprietary grout mix, the following ready-mix grout may be utilized.

Placement shall be by pump or tremie:

1. Portland Cement: Portland Cement for grout shall be type III and shall conform to the requirements of ASTM C-150. Portland Cement for other uses shall be type II. Fine and Coarse aggregates shall conform to the requirements of ASTM C-33. Maximum size of coarse aggregate shall be $\frac{3}{4}$ inches.
2. Water used as an ingredient in grout shall be clean, potable and free from injurious amount of foreign matter.
3. Admixtures shall be prepared ready for use by the manufacturer and shall not require additional mixing by the contractor or ready mix producer.
4. Air entrained agent shall be used in all mixes and shall conform to ASTM C-260
5. Water reducing agent shall be used in all mixes and shall conform to ASTM C-494
6. The required minimum compressive strength at 28 days shall be 5,000 psi.
 - a. Grout Slump: 4" - 6"
 - b. Water/Cement Ratio: 0.44 Max
 - c. Placement Temperature of Concrete: 70° F Max
 - d. Air Temperature at grout Placement: not less than 40° F

Cement Filled Sand Bags:

1. Bags for sand and cement mix shall be burlap.
2. Ratio of cement to sand shall be 1:3. Portland Cement Type II shall be used.

Submittals

1. The contractor shall submit data sheets for all materials that will be used under this item for approval of the Department including the grain size analysis and location of source for sand and gravel.
2. Copies of all cement grout testing shall be sent to the Department and the Engineer.

The Department reserves the right to be present at all tests performed for this project. The Contractor shall notify the Department at least 48 hours prior to the performance of any test, to ensure sufficient time for an inspector to be present. The Department reserves the right to perform its own tests of any materials.

Construction Methods

All defective stone masonry joints, as determined by the Engineer, shall be chipped out to a minimum depth of 2 inches by means of pneumatic tools. The joint shall be thoroughly cleaned of all loose mortar, dust, dirt, and vegetation with high pressure air and water blast and flushed clean.

All cleaned joints shall be inspected and approved by the Engineer prior to the application of cement mortar. The mortar shall be driven to the back of the excavated joint and tooled to match existing conditions. Only enough mortar shall be mixed that can be effectively used to repoint the prepared joints and voids.

Pointing shall not be done in freezing weather or when the stone contains frost.

The Contractor shall be responsible for maintaining the stability of the masonry walls throughout the work.

Method of Measurement

The work under this item will be measured by the number of 80 lb. bags of cement used for making mortar and actually used for pointing and grouting, complete and accepted by the Engineer.

Basis of Payment

The work under this item will be paid for at Contract unit price per bag of cement used for pointing and grouting, complete in place, which unit price shall include full compensation for all labor, materials, removal of existing joint mortar, surface preparation, curing and finishing, equipment, tools and all other incidental work necessary to complete the work under this item, as directed by the Engineer and as specified herein.

ITEM 61 CLEANING DRAIN INLETS (EACH)

ITEM 62 CLEANING SCUPPERS (EACH)

ITEM 63 CLEANING DRAINAGE PIPE (LINEAR FOOT)

Description

The work under this item consists of cleaning all bridge drain inlets, scuppers and drainage pipes and related components, as directed by the Engineer. Cleaning shall be done by mechanical means or any other means to remove all materials from the lines to ensure proper drainage to the satisfaction of the Engineer.

Each inlet shall be cleaned free of dirt, vegetation and debris. Debris material resulting from the cleaning of other drainage structures and steel structures that falls into the drain inlet shall be removed at no additional compensation.

The scuppers are considered clean when unobstructed flow of drainage, as determined by the engineer, is established and there is no further evidence of dirt or debris in the scupper.

The drainage pipe shall be considered clean when unobstructed flow of drainage as determined by the engineer is established and there is no further evidence of dirt debris in the pipe.

Methods

The Contractor shall use either hydraulic cleaning equipment or high-velocity hydro-cleaning equipment. The Hydraulic cleaning equipment shall be the movable-dam-type and constructed such that a portion of the dam can be collapsed during cleaning to prevent flooding. The movable dam shall be the same diameter as the diameter of the pipe being cleaned, and shall provide a flexible scraper around its outer periphery to ensure total removal of all sediments.

The High-Velocity Hydro-Cleaning equipment shall have a minimum of 500 feet of high pressure hose. It shall have two or more high velocity nozzles capable of producing a scouring action from 15 to 45 degrees in all sizes of pipe to be cleaned. The equipment shall be capable of producing flow from a fine spray to a long-distance solid stream; and shall include a water tank, auxiliary engines and pumps, and a hydraulically driven hose reel. The Equipment shall have the capacity of vacuuming sediments. In addition, the equipment shall have a root-cutting attachment available, if needed, and all equipment operating controls shall be located above ground.

Sediments shall be removed at the downstream catch basin or manhole of each section of line cleaned. The passing of removed material from one line to another will not be permitted. **No material will be allowed to pass to any bodies of water.**

The Contractor shall make two passes with the cleaning equipment through each section of line to be cleaned. Acceptance of the cleaning will be made upon dragging a ball 90% of the inside diameter of the pipe, completely through the line without interference. If the ball will not pass through the line, re-cleaning will be performed by the Contractor at no cost to the DCR.

Debris Removal

The removal and disposal of all sediments removed during the cleaning of drainage structures shall comply with the regulations of the Department of Environmental Protection in effect at the time of disposal. Removal and legal disposal of all debris, sediments, vegetation, etc. from drainage structures shall be the responsibility of the Contractor, shall not be deposited on DCR property, and shall be disposed of in accordance with local, state and federal regulations.

Method of Measurement:

ITEM 62 and ITEM 63 will be measured per each; cleaned out and returned to proper working order.

ITEM 64 will be measured per linear foot of drainage pipe cleaned and accepted by the Engineer.

Basis of Payment:

ITEM 62 and ITEM 63 will be paid for at the Contract unit price per each.

ITEM 64 will be paid for at the Contract unit price per linear foot measured and accepted by the Engineer.

The contract unit prices shall be full compensation for all labor, material, equipment, containment of debris, legal disposal of all waste and all other incidentals required to complete the work to the satisfaction of the Engineer.

ITEM 64 REMOVE & REPLACE DOWNSPOUTS (LINEAR FOOT)

Description

The work to be done under this item consists of removing and disposing of sections of any type of drainage pipe below the bridge superstructure and furnishing and installing new replacement drainage pipe as directed by the Engineer.

Materials

New replacement drainage pipe shall be plastic (Polyvinyl Chloride) pipe, Type 1 Schedule 40. The inside diameter of the replacement pipe shall match the inside diameter of the existing pipe.

Included in the work are the installation of the required pipe bends, reducers and adapters necessary to complete the drainage pipe system for its full height.

Incidental to this item is the furnishing and installing of downspout support brackets, hardware, cast iron plugs and concrete splash pads, as required, without additional compensation.

All support brackets and hardware shall be hot-dipped Galvanized in accordance with ASTM A-123, ASTM A-153. Otherwise, all new hardware shall be similar to the existing hardware.

Construction Methods

The Contractor is advised that metal drainage piping may be coated with lead paint. When removing drainage downspouts that are to be replaced, the contractor shall not use any method that will cause lead paint dust or particles to be emitted and/or dispersed into the environment. Flame cutting of bolts will not be allowed. The contractor shall install a proper shielding and/or netting under all lead-paint-coated downspouts ordered removed in order to catch any loose lead paint chips, dust or particles. All pipe coated with lead paint, whether encapsulated or not, is considered hazardous waste.

Repaint metal that is exposed by work done under this item. The paint shall be High Build Mastic paint with dry film thickness of 5.0 mils to 8.0 mils. The cost for repainting exposed metal shall be considered incidental to this item of work.

Removed sections of drainage piping and any debris within the pipe sections removed and replaced shall be legally disposed of by the Contractor away from the job site at no additional compensation.

Method of Measurement

This item will be measured per linear foot along its centerline installed complete in place as accepted by the Engineer.

Basis of Payment:

This item will be paid for at the Contract unit price per linear foot installed, which price shall include full compensation for all labor, materials, tools, equipment, disposal and all incidental work that may be required to complete the work.

ITEM 65 INSTALL BRIDGE SCUPPER GRATES AND COVERS (POUND)

Description

The work under this item shall include complete installation of new scupper grates and covers as directed by the Engineer.

Materials

New cast iron bridge scupper grates shall conform to the requirements of AASHTO Designation M105, Class No. 30, Gray Iron Castings, unless otherwise specified. Bridge scupper grates shall be a two-directional or “grid-pattern” type, and **not** the one-directional style which is more hazardous to bicyclists.

Construction Methods

The Engineer shall verify the locations where the grates/covers are either missing or broken and to be replaced. Any broken scuppers and grates/covers removed and replaced shall be removed from the job site and disposed of by Contractor.

As the existing scuppers grates and covers are of various sizes, the work shall include field measurement to determine the size of the missing/broken grates and covers to be replaced.

Method of Measurement

This item will be measured per pound; for complete installation of new scupper grates and covers complete and accepted by the Engineer.

Basis of Payment:

This item will be paid for at the Contract unit price per pound of new scupper grates and covers complete in place and shall include full compensation for all materials, equipment, tools, labor and disposal costs incidental to this work.

ITEM 66 CLEANING BRIDGE DECK JOINTS (LINEAR FOOT)

ITEM 67 CLEANING BRIDGE SEATS AND WALLS (SQUARE FOOT)

Description

Work under this item shall consist of cleaning bridge deck joints, bridge seats, backwalls and any other locations as directed by the Engineer, to remove oil, grease, loose mill scale, loose rust, loose paint, dirt, salt, contamination of birds, animals, any deleterious material from all surfaces.

The Contractor shall lay out areas at one location where the work can be completed the same day. The Contractor may be required to furnish and erect temporary flood lights not less than 150 watts each, if certain areas have insufficient light for proper cleaning operations, in the opinion of the Engineer. Electrical power shall be supplied by the Contractor. If necessary, scaffolding, ladders, or staging, shall be provided, or rearranged, to afford complete inspection by the Engineer.

All horizontal surfaces of the abutments and pier caps shall be cleaned of all debris, which may include but is not limited to, gravel, lead paint chips, bituminous materials and guano (bird droppings). This material shall be removed and disposed of away from the job site in accordance with these specifications, and all local, state and federal regulations.

When the bridge is over water, the contractor shall take all precautions necessary so as not to have any guano or other debris fall into the water below.

After the debris has been removed, the contractor shall wash down the horizontal surfaces of the abutments and pier caps with fresh water under pressure.

The contractor shall wash all surfaces for the superstructure that is directly above the pier caps and abutments. Cleaning the superstructure surfaces shall be so programmed that dust and other contaminants from the cleaning process will not fall on wet, newly cleaned surfaces.

Methods of Cleaning

Cleaning operations shall be accomplished by hand scrapers and power washing in accordance with these special provisions. All dirt, oil, grease, tar, road salt, bird contamination or other foreign material accumulated on surfaces shall be removed with a power washing apparatus and shall be the final phase of cleaning.

Containment during power washing operations shall also include use of a micro-net type filter to screen all debris washed from the structure.

Public traffic should be warned that power washing operations are being conducted. The Contractor shall be solely responsible for damages arising from the power washing operations.

The Contractor shall supply all water necessary to complete the cleaning operation in a satisfactory manner, to the engineer. The contractor shall use non-phosphate, non-polluting detergent that will clean the surfaces in a satisfactory manner, material use to clean the stones and concrete shall be approved by the Engineer. It is estimated that 0.5% by weight of cleaning compound at the nozzle is sufficient for cleaning. Concentrations of detergent above 0.75% could possibly remove sound paint, which if occurs will require remedial work by the contractor at his own expense.

Once power-washing work is underway, the Contractor shall change or adjust the compound or percentage of each in order to attain a clean surface properly prepared, without damage to any sound paint.

The contractor shall be responsible for proper cleaning procedure, with the following serving only as a guideline for him to consider:

The operator should hold the face of the nozzle within 6” of all surfaces and tilted slightly in the direction of travel.

The surface should first be wetted to allow the cleaning compound to loosen foreign matter, which is later removed by the cleaner pass.

The time interval between wetting and cleaning should be regulated according to the degree of dirt accumulation. Usually it is sufficient to go twice over an area which is comparable to that used in spray painting.

A properly cleaned surface will feel firm and somewhat tacky, it should not be slick or grimy to the touch. Ninety percent of cleaned areas may be verified by sight. For inaccessible or hard-to-view areas, the contractor shall provide access to the engineer for inspection purposes.

Excessive deposits of cleaning liquids remaining on surfaces after cleaning the last pass on any surface should be made with clean fresh water without detergent to remove surplus solution.

Method of Measurement

ITEM 66: Cleaning Bridge Deck Joints will be measured per linear foot.

ITEM 67: Cleaning Bridge Seats and Walls will be measured per square foot of surface cleaned, complete and accepted.

Basis of Payment

ITEM 66: Cleaning Bridge Deck Joints will be paid for at the Contract unit price per linear foot.

ITEM 67: Cleaning Bridge Seats and Walls will be paid at the Contract unit price per square foot of surface cleaned, complete and accepted.

Payment shall be at the contract unit price per the actual number of Linear Foot of bridge deck joints, and the actual number of Square Foot of bridge abutments, parapets, bridge seats at pier caps and/or abutments, and tunnel walls surface to be cleaned as directed by the Engineer.

The contract unit price shall be full compensation for all labor, materials, equipment, containment of debris, legal disposal of all waste and incidentals required to complete the work to the satisfaction of the engineer.