

TOWN OF WESTFORD, MASSACHUSETTS

**CONTRACT DOCUMENTS
FOR**

CULVERT REPLACEMENT PROJECTS

**EAST PRESCOTT STREET AND NORTH MAIN STREET OVER REED BROOK
&
ACTON ROAD OVER UNNAMED STREAM**

CONTRACT NO. IFB 26-12



January 21, 2026

Town of Westford

**Department of Public Works
28 North Street
Westford, Massachusetts 01886**

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SECTION 00020

INVITATION FOR BIDS

Sealed bids for the Culvert Replacement Projects at East Prescott Street and North Main Street over Reed Brook and Acton Road over Unnamed Stream will be received at the Westford Department of Public Works, located at 28 North Street, Westford, MA 01886 until the time specified below at which time the bids will be publicly opened and read.

The Work consists of the demolition and replacement of two corrugated metal pipe culverts with new precast concrete box culverts, associated wing walls, and other miscellaneous work at the locations specified in the contract documents.

Specifications and bid forms may be obtained via download at www.westfordma.gov/rfp. All potential bidders must be registered as a plan holder using the above link to be eligible to receive addenda.

Bids will be opened at the Department of Public Works on Thursday, February 19, 2026, at 2:00 p.m. Each Bid must be accompanied by a bid security consisting of a BID BOND, CASH, or, CERTIFIED CHECK issued by a responsible bank or trust company in the amount of 5% of the bid price.

A performance bond in an amount equal to 100 percent of the total amount of the contract price with a surety company qualified to do business in the Commonwealth of Massachusetts will be required for the faithful performance of the contract, as well as a labor and materials bond in an amount equal to 100 percent of the total contract price. All bids for this project are subject to applicable public bidding laws of Massachusetts, including, but not limited to G.L. c.30, §39M.

MassDOT prequalification of contractors with the class of work as, Bridge - Culverts, for the project with an estimated value of \$1,541,910.00 will be required.

Attention is directed to the minimum wage rates to be paid as determined by the Commissioner of Labor and Workforce Development and the weekly payroll record submittal requirements under the provisions of Massachusetts General Laws, Chapter 149, Section 26 through 27D inclusive.

Selection of the contractor will be based upon bidder qualifications, including evidence of past performance in similar projects, and bid price. The contract will be awarded to the bidder deemed by the awarding authority to be the lowest responsible and eligible bidder. The bidder agrees that its bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

The Town reserves the right to waive any informalities, to accept or reject, in whole or in part any or all bids, or take whatever other action may be deemed to be in the best interest of the Town.

Town of Westford
Department of Public Works

SECTION 00100

INSTRUCTIONS TO BIDDERS

1. Receipt and Opening of Bids

The Town of Westford, Massachusetts, herein called the Owner, acting by and through its Select Board, will receive sealed Bids for the project known as Culvert Replacement Projects at East Prescott Street and North Main Street over Reed Brook & Acton Road over Unnamed Stream.

General bids shall be addressed to Paul Starratt, P.E., Town Engineer, Department of Public Works, 28 North Street, Westford, Massachusetts 01886, and endorsed **“Bid for Culvert Replacement Projects - East Prescott Street and North Main Street over Reed Brook & Acton Road over Unnamed Stream”**. Bids will be received at the Department of Public Works until 2:00 p.m. prevailing time, on Thursday, February 19, 2026 at which time and place said bids will be publicly opened and read aloud.

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified will not be considered. The bidder agrees that its bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids.

2. Location and Work to be Done

The Work consists of the demolition and replacement of two existing corrugated metal pipe culverts at the two separate locations as depicted on the contract drawings. Culvert #1 is located where East Prescott Street becomes North Main Street, and Culvert #2 is located on Acton Road just south of Greenwood Road and the town line. Both culverts will be replaced with new precast concrete box culverts, associated wing walls, and all other work incidental thereto, in accordance with the specifications and contract drawings.

Additional drawings showing details in accordance with which the Work is to be done may be furnished by addendum from time to time during the bidding period by the Owner or its Architect/Engineer and shall then become a part of the Contract Documents.

The Contractor shall furnish all labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies, and all other things necessary to do all work required for the completion of each item of the Work and as herein specified.

The Work to be done and paid for under any item shall not be limited to the exact extent mentioned or described but shall include all incidental work necessary or customarily done for the completion of that item.

3. Preparation of Bid

Each bid must be submitted on the prescribed form. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, their address, and endorsed with the name of the project as specified in Receipt and Opening of Bids, above. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in Receipt and Opening of Bids, above.

4. Bid Opening Procedure

The following list of requirements shall apply to each filed bid. Bids not meeting all the requirements for timeliness and security will be rejected; bids not meeting signature and addenda requirements will be rejected prior to checking of bid amounts.

Bids shall be filed at the place and before the time specified in Receipt and Opening of Bids, above.

Properly executed bid security shall be placed in a sealed envelope and shall be attached to the outside of the envelope containing the bid.

Bid signatures will be checked.

All addenda will be sent certified mail, with return receipt requested, and/or facsimile or e-mail to all prospective bidders. All bidders shall include with their bids the written acknowledgment form provided in Section 00300, FORM OF GENERAL BID.

The total dollar amount of each bid will be read, and the three apparent lowest bids will be selected for further consideration. These three apparent low bids will be read aloud for the benefit of the other bidders and the bid opening procedure will be closed. All those present at the bid opening may examine all bids after the bid opening and after the reading of the three apparent low bids.

5. Modification

Any bidder may modify their bid by written communication at any time prior to the scheduled closing time for receipt of bids. Any telegraphic communication must be received by the Owner prior to the closing time, and, provided further, the Owner must be satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. If written confirmation is not received within two days from the closing time, no consideration will be given to a telegraphic communication.

The communication shall not reveal the bid price but shall provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened.

6. Ability and Experience of Bidder

No award will be made to any bidder who cannot satisfy the Owner that he has sufficient ability and experience in this class of work and sufficient capital and plant to enable them to prosecute and complete the work successfully within the time named. The Owner's decision or judgment on these matters will be final, conclusive, and binding.

The Owner may make such investigations as it deems necessary, and the bidder shall furnish to the Owner, under oath if so required, all such information and data for this purpose as the Owner may request.

7. Conditions of Work

Each bidder must familiarize themselves fully with the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of their obligation to furnish all material and labor necessary to carry out the provisions of their contract. Insofar as possible the Contractor, in carrying out their work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

8. Addenda and Interpretations

No interpretation of the meaning of the plans, specifications or other prebid documents will be made to any bidder orally. All information given to bidders other than by means of the plans, specifications, or by addenda, as described below, is given informally and shall not be used as the basis of a claim against the Owner.

Every request for such interpretation should be in writing addressed to Paul Starratt, P.E., Town Engineer, Department of Public Works, 28 North Street, Westford, MA 01886, phone 978-399-2716 and to be given consideration must be received at least seven (7) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, when issued, will be mailed by certified mail with return receipt requested to all prospective bidders (at the respective address furnished by them for such purposes), or sent via facsimile or email if time requires. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under their bid as submitted. All addenda so issued shall become part of the Contract Documents.

9. Security for Faithful Performance

Simultaneously with their delivery of the executed Contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor and materials under this contract. The surety on such bond or bonds shall be a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Owner. The bonds shall remain in force for one year after final acceptance of the work by the Owner, unless the Owner, in writing, releases the Contractor from the obligation sooner.

10. Power of Attorney

Attorneys-in-fact who sign Contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

11. Laws and Regulations

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances or bylaws, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the Contract the same as though written out in full.

12. Liquidated Damages for Failure to Enter into Contract

The successful bidder, upon their failure or refusal to execute and deliver the Contract and bonds required within 10 days after presentation thereof by the Owner, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with their bid, but the amount forfeited shall not exceed the difference between their bid price and the bid price of the next lowest responsible and eligible bidder. In case of death, disability, bona fide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the bidder, their bid deposit will be returned.

13. Obligation of Bidder

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Contract Documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect of their bid.

14. Information Not Guaranteed

All information given in the Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes, and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of bidders and is not guaranteed.

It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes, or other structures encountered during construction will be the same as those indicated in the Contract Documents. It is further agreed and understood that no bidder or Contractor shall use or be entitled to use any of the information made available to them or obtained in any examination made by them in any manner as a basis of or ground for any claim or demand against the Owner or the Architect/Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

15. Bid Security

Each bid and sub-bid must be accompanied by bid security in the form of a certified check, a bid bond, cash, or a treasurer's or cashier's check, payable to the Owner, in the amount of five (5) percent of the value of the bid. Such security of general bidders will be returned to all except the three lowest responsible and eligible bidders within five days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids, and the remaining securities will be returned promptly after the Owner and the accepted bidder have executed the Contract, or if no notice of intent to award has been presented to the selected contractor within 30 days, Saturdays, Sundays and holidays excluded, after the date of the opening of bids, upon demand of the bidder at any time thereafter.

16. Right to Reject Bid

The Owner reserves the right to waive any informalities in bids and to reject any and all bids, should the Owner deem it to be in the public interest to do so.

The Owner may also reject bids which in its sole judgment are either incomplete, conditional, obscure or not responsive or which contain additions not called for, erasures not properly initialed, alterations, or similar irregularities.

17. Time for Completion

The successful general bidder must agree to commence work within ten (10) days of the date of the Notice to Proceed and to fully complete the project within the time limit stated in Section 00300, FORM OF GENERAL BID.

18. Comparison of Bids

Bids will be compared on the basis of prices set forth in the bid forms. In the event that there is a discrepancy between the lump sum or unit prices written in words and figures, the prices written in words will govern.

19. Award of Contract

The Contract will be awarded to "the lowest responsible and eligible bidder" pursuant to General Laws Chapter 30, Section 39M, as amended. Such a bidder shall possess the skill, ability and integrity necessary for the faithful performance of the work, shall be able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, in the work, and shall otherwise comply with all applicable provisions of law. Contract award shall be subject to availability of an appropriation for funding.

20. Statutes Regulating Competitive Bidding

Any bid which does not comply with the provisions of Massachusetts General Laws Chapter 30, Section 39M, as amended, need not be accepted and the Owner may reject every such bid.

21. Wage Rates

Prevailing Wage Rates as determined by the Commissioner of Department of Labor and Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Section 26 to 27G, as amended, apply to this project. It is the responsibility of the bidder, before bid opening, to request any additional information on Prevailing Wage Rates for those tradespeople who may be employed for the proposed work under this contract.

22. Contractor Records

The Contractor shall comply with the provisions of Massachusetts General Laws, Chapter 30, Section 39R concerning Contractor records.

23. Insurance

The Contractor shall carry and continuously maintain until completion of the Contract, insurance as specified in Agreement and in such form as shall protect them performing work covered by this Contract, and the Town of Westford and its employees, agents and officials, from all claims an liability for damages for bodily injury, including accidental death, and for property damage, which may arise from operations under this Contract. The Town shall be named as an additional insured. The Contractor covenants and agrees to hold the Town and its employees, agents and officials harmless from loss or damage due to claims for bodily injury or death and/or property damage arising from, or in connection with, operations under this Contract.

25. Project Manager

The Owner may utilize the services of a project manager, whose duties shall be as set forth in an Agreement for Project Manager Services.

SECTION 00300

FORM OF GENERAL BID

Bid of _____ (hereinafter called "Bidder")*

☐ a corporation, organized and existing under the laws of the state of _____

☐ a partnership

☐ a joint venture

☐ an individual
doing business as _____

To the Town of Westford, Massachusetts (hereinafter called "Owner").

A) The undersigned Bidder, in compliance with your invitation for bids for the project known as Culvert Replacement Projects at East Prescott Street and North Main Street over Reed Brook and Acton Road over Unnamed Stream, having examined the plans and specifications and related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents and the plans and specifications within the time set forth below, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this bid is a part.

The Bidder hereby agrees to commence work on or before the date to be specified in written "Notice to Proceed" of the Owner, and the project shall achieve Substantial Completion by October 1, 2026, as specified in Section 00900 General Special Provisions. The Bidder further agrees to pay as liquidated damages the sum of One Thousand (\$1,000) Dollars for each consecutive calendar day beyond the Substantial Completion date that the work is not complete as provided in the contract. Separate damages shall be assessed in accordance with Section 00900 General Special Provisions for each calendar day the maximum allowable road closure period is exceeded.

*Specify corporation, partnership or individual as applicable.

B) Bidder acknowledges receipt of and this bid includes the following addenda:

No. _____ Dated: _____

No. _____ Dated: _____

No. _____ Dated: _____

No. _____ Dated: _____

C) CULVERT #1 – SUBTOTAL:
EAST PRESCOTT STREET AND NORTH MAIN STREET OVER REED BROOK:

The Bidder agrees to perform the bid work described in the specifications and shown on the plans for the East Prescott and North Main Street Culvert for the following price:

\$ _____
(words)

CULVERT #2 – SUBTOTAL:
ACTON ROAD OVER UNNAMED STREAM:

The Bidder agrees to perform the bid work described in the specifications and shown on the plans for the Acton Road over Unnamed Stream for the following price:

\$ _____
(words)

TOTAL CONTRACT BID PRICE:

The total combined contract bid price submitted for this proposal (Culvert #1 subtotal + Culvert #2 subtotal) is as follows:

\$ _____
(words)

CULVERT #1
EAST PRESCOTT STREET AND NORTH MAIN STREET OVER REED BROOK

Bidder agrees to perform all the work described in the Contract Documents for the following unit prices or lump sums. For complete information concerning these items, see the Specifications and Special Provisions.

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
101	0.2	CLEARING AND GRUBBING AT _____ ACRE				
102.51	2	INDIVIDUAL TREE PROTECTION AT _____ EACH				
113.1	1	DEMOLITION OF CULVERT #1 AT _____ LUMP SUM				
120	500	EARTH EXCAVATION AT _____ CUBIC YARD				
141.1	20	TEST PIT FOR EXCAVATION AT _____ CUBIC YARD				
151	350	GRAVEL BORROW AT _____ CUBIC YARD				
156	20	CRUSHED STONE AT _____ TON				
170	900	FINE GRADING AND COMPACTING – SUBGRADE AREA AT _____ SQUARE YARD				
201	3	CATCH BASIN AT _____ EACH				
222.3	3	FRAME AND GRATE (Or COVER) MUNICIPAL STANDARD AT _____ EACH				
223.1	2	FRAME AND GRATE (Or COVER) REMOVED AND STACKED AT _____ EACH				
224.12	3	12 INCH HOOD AT _____ EACH				

CULVERT #1 (continued)

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
252.12	80	12 INCH CORRUGATED PLASTIC PIPE AT _____ FOOT				
258	40	STONE FOR PIPE ENDS AT _____ SQUARE YARD				
302.08	20	8 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET) AT _____ FOOT				
309	250	DUCTILE IRON FITTINGS FOR WATER PIPE AT _____ POUND				
350.081	2	8 INCH INSERTION GATE VALVE AND GATE BOX AT _____ EACH				
390	1	WATER MAIN CULVERT CROSSING AT _____ LUMP SUM				
451	10	HMA FOR PATCHING AT _____ TON				
452	60	ASPHALT EMULSION FOR TACK COAT AT _____ GALLON				
460.23	90	SUPERPAVE SURFACE COURSE – 12.5 (SSC-12.5) AT _____ TON				
460.32	110	SUPERPAVE INTERMEDIATE COURSE – 19.0 (SIC-19.0) AT _____ TON				
460.42	150	SUPERPAVE BASE COURSE – 37.5 (SBC-37.5) AT _____ TON				
482.3	130	SAWCUTTING ASPHALT PAVEMENT AT _____ FOOT				

CULVERT #1 (continued)

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
506	90	GRANITE CURB TYPE VB – STRAIGHT AT _____ FOOT				
514	2	GRANITE CURB INLET – STRAIGHT AT _____ EACH				
570.4	200	HOT MIX ASPHALT CURB – TYPE B AT _____ FOOT				
590	90	CURB REMOVED AND STACKED AT _____ FOOT				
620.12	390	GUARDRAIL, TL-2 (SINGLE FACED) AT _____ FOOT				
627.1	2	TRAILING ANCHORAGE AT _____ EACH				
627.82	2	GUARDRAIL TANGENT END TREATMENT, TL-2 AT _____ EACH				
697.1	3	SILT SACK AT _____ EACH				
702	40	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY AT _____ TON				
721	1	PRECAST CONCRETE WING WALLS AT _____ LUMP SUM				
748	1	MOBILIZATION AT _____ LUMP SUM				
751	50	LOAM FOR ROADSIDES AT _____ CUBIC YARD				

CULVERT #1 (continued)

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
755.46	1	WETLAND RESTORATION AT _____ LUMP SUM				
765	400	SEEDING AT _____ SQUARE YARD				
767.121	500	SEDIMENT CONTROL BARRIER AT _____ FOOT				
767.90	200	MATting FOR EROSION CONTROL AT _____ SQUARE YARD				
768	120	COIR LOG AT _____ FOOT				
769	390	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ FOOT				
850	1	TRAFFIC CONTROLS FOR CONSTRUCTION OPERATIONS AT _____ LUMP SUM				
852	300	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ SQUARE FOOT				
856.12	200	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ DAYS				
860.106	420	6 INCH REFLECTORIZED WHITE LINE (PAINTED) AT _____ FOOT				
861.106	420	6 INCH REFLECTORIZED YELLOW LINE (PAINTED) AT _____ FOOT				
864	40	PAVEMENT ARROW REFLECTORIZED WHITE (PAINTED) AT _____ SQUARE FOOT				

CULVERT #1 (continued)

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
874.2	1	TRAFFIC SIGN REMOVED AND RESET AT _____ EACH				
983	130	DUMPED RIPRAP AT _____ TON				
983.4	40	STREAMBED MATERIAL AT _____ CUBIC YARD				
991.1	1	CONTROL OF WATER, CULVERT #1 AT _____ LUMP SUM				
995.011	1	CULVERT STRUCTURE, CULVERT #1 AT _____ LUMP SUM				
998.1	1	MONTHLY PRICE ADJUSTMENT FOR HMA MIXTURES AT <u>One Thousand Dollars</u> _____ ALLOWANCE	\$1,000	00	\$1,000	00
998.2	1	MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AT <u>One Thousand Dollars</u> _____ ALLOWANCE	\$1,000	00	\$1,000	00
998.3	1	MONTHLY PRICE ADJUSTMENT FOR GASOLINE AT <u>One Thousand Dollars</u> _____ ALLOWANCE	\$1,000	00	\$1,000	00
998.4	1	MONTHLY PRICE ADJUSTMENT FOR REINFORCING STEEL AT <u>One Thousand Dollars</u> _____ ALLOWANCE	\$1,000	00	\$1,000	00
999.1	1	POLICE DETAILS FOR TRAFFIC CONTROL AT <u>Forty Thousand Dollars</u> _____ ALLOWANCE	\$40,000	00	\$40,000	00

CULVERT #1 - SUBTOTAL

_____ dollars
(words)

\$ _____
(figures)

CULVERT #2
ACTON ROAD OVER UNNAMED STREAM

Bidder agrees to perform all the work described in the Contract Documents for the following unit prices or lump sums. For complete information concerning these items, see the Specifications and Special Provisions.

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
101.	0.1	CLEARING AND GRUBBING AT _____ ACRES				
103.	1	TREE REMOVED – DIAMETER UNDER 24 INCHES AT _____ EACH				
120.	50	EARTH EXCAVATION AT _____ CUBIC YARDS				
140.	295	BRIDGE EXCAVATION AT _____ CUBIC YARDS				
145.1	1	DRAINAGE PIPE ABANDONED AT _____ LUMP SUM				
148.01	15	DREDGING AND STOCKPILING OF STREAMBED MATERIAL AT _____ CUBIC YARDS				
151.2	155	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AT _____ CUBIC YARDS				
156.1.	50	CRUSHED STONE FOR BRIDGE FOUNDATIONS AT _____ TON				
170.	105	FINE GRADING AND COMPACTING – SUBGRADE AREA AT _____ SQUARE YARDS				
415.1	140	PAVEMENT STANDARD MILLING AT _____ SQUARE YARDS				
443	1	WATER FOR ROADWAY DUST CONTROL AT _____ MILLION GALLONS				

CULVERT #2 (continued)

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
450.31	25	SUPERPAVE INTERMEDIATE COURSE – 12.5 (SIC – 12.5) AT _____ TON				
450.42	45	SUPERPAVE BASE COURSE – 37.5 (SBC – 37.5) AT _____ TON				
450.61	35	SUPERPAVE BRIDGE SURFACE COURSE – 12.5 (SSC-B-12.5) AT _____ TON				
450.71	15	SUPERPAVE BRIDGE PROTECTIVE COURSE – 12.5 (SPC-B-12.5) AT _____ TON				
452.	70	ASPHALT EMULSION FOR TACK COAT AT _____ GALLONS				
453.	55	HMA JOINT SEALANT AT _____ FOOT				
482.3	55	SAWCUTTING ASPHALT PAVEMENT AT _____ FOOT				
482.31	65	SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES AT _____ FOOT				
620.13	155	GUARDRAIL, TL-3 (SINGLE FACED) AT _____ FOOT				
627.1	1	TRAILING ANCHORAGE AT _____ EACH				
627.83	1	GUARDRAIL TANGENT END TREATMENT, TL-3 AT _____ EACH				
628.25	4	TRANSITION TO THRIE BEAM AT _____ EACH				

CULVERT #2 (continued)

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
630.2	170	HIGHWAY GUARD REMOVED AND DISCARDED AT _____ FOOT				
634.11	85	THRIE BEAM GUARDRAIL AT _____ FOOT				
697.2	20	FLOATING SILT FENCE AT _____ FOOT				
698.1	100	GEOTEXTILE FABRIC FOR STABILIZATION AT _____ SQUARE YARDS				
698.4	50	GEOTEXTILE FOR PERMANENT EROSION CONTROL AT _____ SQUARE YARDS				
748.	1	MOBILIZATION AT _____ LUMP SUM				
751.	20	LOAM FOR ROADSIDES AT _____ CUBIC YARDS				
765.	165	SEEDING AT _____ SQUARE YARDS				
767.121	250	SEDIMENT CONTROL BARRIER AT _____ FOOT				
769.	200	PAVEMENT MILLING MULCH UNDER GUARDRAIL AT _____ FOOT				
852.	485	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ SQUARE FEET				
853.1	2	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH				

CULVERT #2 (continued)

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
853.2	80	TEMPORARY BARRIER (TL-2) AT _____ FOOT				
856.12	160	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ DAY				
859.	680	REFLECTORIZED DRUM AT _____ DAY				
860.106	220	6 INCH REFLECTORIZED WHITE LINE (PAINTED) AT _____ FOOT				
861.106	220	6 INCH REFLECTORIZED YELLOW LINE (PAINTED) AT _____ FOOT				
983.	65	DUMPED RIPRAP AT _____ TON				
983.521	40	STREAMBED RESTORATION AT _____ CUBIC YARDS				
991.1	1	CONTROL OF WATER, CULVERT #2 AT _____ LUMP SUM				
995.011	1	CULVERT STRUCTURE, CULVERT #2 AT _____ LUMP SUM				
998.1	1	MONTHLY PRICE ADJUSTMENT FOR HMA MIXTURES AT <u>One Thousand Dollars</u> ALLOWANCE	\$1,000	00	\$1,000	00
998.2	1	MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AT <u>One Thousand Dollars</u> ALLOWANCE	\$1,000	00	\$1,000	00
998.3	1	MONTHLY PRICE ADJUSTMENT FOR GASOLINE AT <u>One Thousand Dollars</u> ALLOWANCE	\$1,000	00	\$1,000	00

CULVERT #2 (continued)

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
999.01	1	POLICE DETAILS FOR TRAFFIC CONTROL AT <u>Forty Thousand Dollars</u> ALLOWANCE	\$40,000	00	\$40,000	00

CULVERT #2 - SUBTOTAL

_____ dollars
(words)

\$ _____
(figures)

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

The Bidder understands that all bids for this project are subject to the applicable bidding laws of the Commonwealth of Massachusetts, including General Laws Chapter 149 and Chapter 30, Section 39M, as amended.

The Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of bids.

Within 10 days of receipt of the written notice of acceptance of this bid, the Bidder will execute the formal Agreement set forth in Section 00500 CONTRACT.

Bid security is attached in the sum of five percent (5%) of the total bid in accordance with the conditions of Section 00100 INSTRUCTIONS TO BIDDERS. The bid security may become the property of the Owner in the event the contract and bond are not executed within the time set forth above.

The selected Contractor shall furnish a performance bond and a payment bond in an amount at least equal to one hundred percent (100%) of the contract price in accordance with Section 00610 PERFORMANCE BOND, Section 00620 PAYMENT BOND, and as stipulated in the contract.

The undersigned offers the following information as evidence of their qualifications to perform the work as bid upon according to all the requirements of the plans and specifications.

1. Have been in business under present name for ____ years.
2. The names and addresses of all persons interested in the bid (if made by a partnership or corporation) as principals, are as follows:

(attach supplementary list if necessary)

3. The bidder is requested to state below what work of a similar character to that included in the proposed contract he has done and give references that will enable the Owner to judge their experience, skill and business standing (add supplementary page if necessary).

<u>Completion Date</u>	<u>Project Name</u>	<u>Contract Amount</u>	<u>Design Engineer</u>	<u>Reference Name</u>	<u>Telephone No.</u>
a.					
b.					
c.					
d.					
e.					
f.					

Bank reference _____
(Name)

(Bank)

(Address)

(Telephone No.)

Pursuant to G.L. c.62C, §49A, I certify hereby in writing, under penalties of perjury, that the within named Bidder/Contractor has complied with all laws of the commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support.

The undersigned Bidder hereby certifies under penalties of perjury, as follows: (1) that he/she is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

The undersigned bidder hereby certifies, under pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Workforce Development. The undersigned bidder agrees to indemnify the awarding authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

Respectfully submitted:

Date: _____

By: _____
(Signature)

(Type Name of Bidder)

(Title)

(Business Address)

(City and State)

(Telephone Number)

SECTION 00500

AGREEMENT

THIS AGREEMENT, made this _____ day of _____,
20____, by and between the party of the first part, the Town of Westford hereinafter called
"OWNER," acting herein through its _____, and the party of the second part,
_____ doing business as *(an individual) (a
partnership) (a joint venture) (a corporation) located in the *(City) (Town) of
_____, County of
_____, and State of _____, hereinafter called
"CONTRACTOR."

WITNESSETH: That for and in consideration of the payments and agreements
hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby
agrees with the OWNER to commence and complete the project described as follows:

hereinafter called the project, for the sum of _____ Dollars
(\$ _____) and all extra work in connection therewith, under the terms as stated in
the Contract Documents; and at their own proper cost and expense to furnish all the materials,
supplies, machinery equipment, tools, superintendence, labor, insurance, and other accessories
and services necessary to complete the said project in accordance with the conditions and prices
stated in Section 00300 FORM OF GENERAL BID, Section 00700 GENERAL CONDITIONS,
Section 00750 SUPPLEMENTARY GENERAL CONDITIONS and Section 00800
SUPPLEMENTAL GENERAL CONDITIONS, the plans, which include all maps, plates, blue
prints, and the specifications and Contract Documents as prepared by the Owner.

*Strike out inapplicable term.

The CONTRACTOR hereby agrees to commence work under this Contract on or before a date to be specified in written "Notice to Proceed" of the OWNER.

The CONTRACTOR further agrees to achieve Substantial Completion by October 1, 2026 and fully complete the project by November 15, 2026 as specified in Section 00900 General Special Provisions.

The CONTRACTOR further agrees to pay as liquidated damages the sum of \$1,000.00. for each consecutive calendar day thereafter as provided in the Liquidated Damages Paragraph of Section 00700 GENERAL CONDITIONS. The CONTRACTOR further agrees to pay \$5,000.00 per day for every day a road is closed beyond the allowable closure period as specified in Section 00900 General Special Provisions of the contract documents.

The CONTRACTOR agrees not to discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age or national origin; and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.

The CONTRACTOR agrees not to participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue Code of 1954, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in Section 00700 GENERAL CONDITIONS as amended by the supplementary general conditions, and to make payments on account thereof as provided in Section 00700 GENERAL CONDITIONS.

IN WITNESS WHEREOF, the parties to these presents have executed this contract in counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

AGREED:

Town of Westford, Massachusetts
(Owner)

By _____

(Name)

(Title)

(Contractor)

By _____

(Name)

(Title)

(Address)

(City and State)

Approved as to Form:

By _____
(Owner's Counsel)

(Name)

In accordance with M.G.L. C.44, Section 31C, this is to certify that an appropriation in the amount of this contract is available therefor and that the _____ has been authorized to execute the contract and approve all requisitions and change orders.

By _____
(Owner's Accountant)

(Name)

CERTIFICATE OF VOTE
(to be filed if Contractor is a Corporation)

I, _____, hereby certify that I am the duly qualified
(Secretary of the Corporation)

and acting Secretary of _____ and I further certify that a meeting of the

(Name of Corporation)

Directors of said Company, duly called and held on _____, at which
(Date of Meeting)

all Directors were present and voting, the following vote was unanimously passed:

VOTED: To authorize and empower

Anyone acting singly, to execute Forms of General Bid, Contracts or Bonds on behalf of the Corporation.

I further certify that the above vote is still in effect and has not been changed or modified in any respect.

By: _____
(Secretary of Corporation)

A True Copy:

Attest: _____
(Notary Public)

My Commission Expires: _____
(Date)

**CERTIFICATIONS REQUIRED BY LAW
FOR PUBLIC CONSTRUCTION CONTRACTS**

You must COMPLETE and SIGN the following certifications. You must also print, at the bottom of this page, the name of the contractor for whom these certifications are submitted.

TAX COMPLIANCE

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b), I, the undersigned, authorized signatory for the below named contractor, do hereby certify under the pains and penalties of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

NON-COLLUSION

The undersigned certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

PUBLIC CONTRACTOR DEBARMENT

The undersigned certifies under penalty of perjury that the below named contractor is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

OSHA TRAINING

Pursuant to G.L. c. 30, §39S, the Contractor hereby certifies under penalties of perjury as follows:

- (1) Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work;
- (2) All employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and they shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and
- (3) All employees to be employed in the work subject to this contract have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

COMPLETE AND SIGN BELOW:

Authorized Person's Signature

Date

Print Name & Title of Signatory

Name of Contractor

SECTION 00610

PERFORMANCE BOND

KNOW ALL PEOPLE BY THESE PRESENTS: That we

(Name of Contractor)

a _____ hereinafter called "Principal" and
(Corporation, Partnership, Joint Venture or Individual)

(Surety) of _____, State of _____
(City & State)

_____ hereinafter called the "Surety" and licensed by the State
Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are
held and firmly bound to the Town of Westford, Massachusetts, hereinafter called "Owner", in
the penal sum of _____ Dollars
(\$ _____) in lawful money of the United States, for the payment of which
sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and
successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered
into a certain contract with the Owner, dated the _____ day of _____,
20____ (the "Construction Contract"), for the construction described as follows: _____
_____.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties,
all the undertakings, covenants, terms, conditions, and agreements of the Construction Contract
during the original term thereof, and any extensions thereof which may be granted by the Owner,
with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under
the Construction Contract, and shall fully indemnify and save harmless the Owner from all costs
and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the
Owner all outlay and expense which the Owner may incur in making good any default, then this
obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the Surety's obligation under this Bond shall arise after (1)
the Owner has declared the Principal in default of the Construction Contract or any provision
thereof or (2) has declared that the Principal has failed, or is otherwise unable or unwilling, to
execute the work consistent with, and in conformance to, the Construction Contract (collectively
referred to as a "Contractor Default"). The determination of a Contractor Default shall be made
solely by the Owner. The Owner need not terminate the Construction Contract to declare a
Contractor Default or to invoke its rights under this Bond.

When the Surety's obligation under this Bond arises, the Surety, at its sole expense and at the consent and election of the Owner, shall promptly take one of the following steps: (1) arrange for the Principal to perform and complete the work of the Construction Contract; (2) arrange for a contractor other than the Principal to perform and complete the work of the Construction Contract; (3) reimburse the Owner, in a manner and at such time as the Owner shall decide, for all costs and expenses incurred by the Owner in performing and completing the work of the Construction Contract. Surety will keep Owner reasonably informed of the progress, status and results of any investigation of any claim of the Owner.

If the Surety does not proceed as provided in this Bond with due diligence and all deliberate speed, the Surety shall be deemed to be in default of this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner.

After the Surety's obligation under this Bond arises, the Surety is obligated, to the limit of the amounts of this Bond, for (1) the correction of defective work and completion of the Construction Contract; (2) additional design, professional services, and legal costs, including attorneys' fees, resulting from the Contractor Default or from the default of the Surety under this Bond; (3) any additional work beyond the Construction Contract made necessary by the Contractor Default or default of the Surety under this Bond; (4) indemnification obligation of the Principal, if any, as provided in the Construction Contract; and (5) liquidated damages as provided in the Construction Contract, or if none are so specified, actual and foreseeable consequential damages resulting from the Contractor Default or default of the Surety under this Bond.

Any proceeding, legal or equitable, under this Bond shall be instituted in any court of competent jurisdiction in the Commonwealth of Massachusetts.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Construction Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Construction Contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in _____ () counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20____.

ATTEST:

_____	By	_____
(Principal Secretary)		Principal

		(Address-Zip Code)

Witness as to Principal (SEAL)

(Address-Zip Code)

ATTEST:

_____	By	_____
		Surety

		(Attorney-in-Fact)

		(Address-Zip Code)

Witness as to Surety (SEAL)

(Address-Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute Bond.

SECTION 00620

PAYMENT BOND

KNOW ALL PEOPLE BY THESE PRESENTS: That we _____

_____ a _____
(Name of Contractor) (Corporation, Partnership, Joint Venture or Individual)

hereinafter called "Principal" and _____ of _____,
(Surety)

State of _____ hereinafter called the "Surety" and licensed by the State
(City and State)

Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the Town of Westford, Massachusetts, hereinafter called "Owner", in the penal sum of _____ Dollars (\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the _____ day of _____, 20____, for the construction described as follows:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in ____ () counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20__.

ATTEST:

		_____ Surety
_____	By	_____ (Attorney-in-Fact)

		_____ (Address-Zip Code)
_____	(SEAL)	
Witness as to Surety		

		_____ (Address-Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute Bond.

SECTION 00700

GENERAL CONDITIONS

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
- a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
- 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 - 1. Observations by Engineer;
 - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. Use or occupancy of the Work or any part thereof by Owner;
 - 5. Any review and approval of a Shop Drawing or Sample submittal;
 - 6. The issuance of a notice of acceptability by Engineer;
 - 7. The end of the correction period established in Paragraph 15.08;
 - 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

- B. *Change Proposal Procedures*

- 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
- 2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

- 3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
- 4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
 - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 6. Expenses incurred in preparing and advancing Claims.
 - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:* Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance:* Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 00800
SUPPLEMENTAL CONDITIONS

1. Supplementary General Conditions to EJCDC No. C-700, 2018 Edition
2. Prevailing Wage Rates (see Attachment C)
3. Insurance Requirements

Attachments - As referenced in the Table of Contents

SUPPLEMENTARY GENERAL CONDITIONS

AMENDING THE STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT PREPARED BY ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

(EJCDC NO. C-700, 2018 EDITION)

(Sub) Paragraph No.

ARTICLE 1. DEFINITIONS AND TERMINOLOGY

1.01.A.30

Add the following language to the definition entitled "Owner":

Also referred to as “awarding authority” or “contracting authority” in applicable statutory provisions which may be used interchangeably and shall have the same meaning.

1.01.A.51

Add the following definition:

“State” shall mean the Commonwealth of Massachusetts.

ARTICLE 2. PRELIMINARY MATTERS

2.01.C

Delete this paragraph

2.05

Add the following paragraphs immediately after paragraph 2.05.A.4 o which is to read as follows:

2.05.A.5 Before any work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates of insurance (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with the requirements of Article 6.

2.05.A.6 Contractor shall include and identify on the certificate of insurance, indemnification as required by Article 7.18.

ARTICLE 3. DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01

Add the following paragraphs immediately after paragraph 3.01.A which is to read as follows:

3.01.A.1 Each and every provision of law and clause required by law to be inserted in the Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though they were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.

3.01.A.2 Sections of Division 1 - General Requirements govern the execution of the work of all sections of the specifications.

3.02.A.1

Delete the portion of the paragraph starting at “ means” through the end of this sentence and insert the following:

“shall mean the standard, specification, manual, code, or Laws or Regulations in effect and applicable at the time in question, except as may be otherwise specifically stated in the Contract Documents.”

3.03.A.3

Delete Paragraph 3.03.A.3 in its entirety and insert the following:

“CONTRACTOR shall be liable to OWNER and/or ENGINEER for failure to report any such conflict, error, ambiguity or discrepancy if Contractor knew or reasonably should have known thereof.”

ARTICLE 4. COMMENCEMENT AND PROGRESS OF THE WORK

4.01

Delete paragraph 4.01 in its entirety and insert the following in its place:

4.01.A. The Contract Times will commence to run on the day indicated in the Notice to Proceed.

4.03.A

Add a new paragraph at the end of paragraph 4.03.A which is to read as follows:

“4.03.B ENGINEER may check the lines, elevations, reference marks, batter boards, etc., set by CONTRACTOR, and CONTRACTOR shall correct any errors disclosed by such check. Such a check shall not be considered as approval of CONTRACTOR's work and shall not relieve CONTRACTOR of the responsibility for accurate and satisfactory construction and completion of the entire Work. CONTRACTOR shall furnish personnel to assist ENGINEER in checking lines and grades.”

4.05.A

Delete Paragraph 4.05.A in its entirety.

4.05.D.

Delete the second sentence of Paragraph 4.05.D.2.

4.05.E

Delete the first sentence of Paragraph 4.05.E. and replace with the following:

“Contractor shall submit a Change Proposal seeking an increase in Contract Times or Contract Price, which shall be submitted within 30 days of the commencement of the delaying, disrupting, or interfering event, and must be supplemented by supporting data that sets forth in detail the following:”

4.05.H

Add a new Paragraph at the end of Paragraph 4.05G owhich is to be read as follows:

“4.05.H. Delays caused by or within the control of the OWNER: In such event, the CONTRACTOR’S sole remedy shall be an extension of the Contract Time. Notwithstanding anything to the contrary in the Contract Documents, CONTRACTOR shall not be eligible for any increase in the Contract Price on account of any delay in the Work, no matter by whom such delay is caused, and CONTRACTOR shall make no claim for such an increase, whether such claim is styled as a claim for delay damages, acceleration of work, loss of production, or otherwise.”

4.05.G

Add the following new paragraphs after paragraph 4.05.H:

“4.06 Liquidated Damages:

- A. If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner the amount specified in the Contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contract shall be in default after the time stipulated in the Contract for completing the work. Such damages may be retained from time to time by the Owner from progress payments or any amounts owing to the Contractor, or otherwise collected.
- B. The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodical estimates.
- C. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein as definite and certain length of times if fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract; provided, that the Contractor shall not be charged with liquidated damages of any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner.”

ARTICLE 5. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01

Add a new paragraph immediately after paragraph 5.01.A which is to read as follows:

“5.01.A.1 If all lands and rights-of-way are not obtained as herein contemplated before construction begins, CONTRACTOR shall begin the Work upon such land and rights-of-way as

OWNER has previously acquired and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way.

5.01.B

Delete Paragraph 5.01.B in its entirety.

5.03.A

In Paragraph 5.03.A.1 insert the words “known to OWNER” after the word “reports”.

In Paragraph 5.03.A.2 insert the words “known to OWNER” after the word “reports”.

5.03.C

In paragraph 5.03.C insert the word “reasonably” before the word “rely” in the first line and insert the following at the end of the first sentence:

“; the OWNER does not warrant or guarantee the accuracy or completeness of the information therein, and the CONTRACTOR may not so rely to the extent that the CONTRACTOR knows, or reasonably should have known, of any inaccuracy or omission therein.

5.04

Insert the following paragraph before Paragraph 5.04.A

“5.04 Differing Subsurface or Physical Conditions

In accordance with Massachusetts General Laws Chapter 30, Section 39N, if, during the progress of the Work, the CONTRACTOR or the OWNER 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 OWNER may request an equitable adjustment in the Contract Price 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 request to the other party as soon as possible after such conditions are discovered. Upon receipt of such a request from the CONTRACTOR, or upon its own initiative, the OWNER will 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 OWNER will make an equitable adjustment in the Contract Price and the Contract shall be modified in writing accordingly.”

5.04.D

Add the following at the end of Paragraph 5.04.D:

“Any determination and instruction to proceed in accordance with this Paragraph shall be communicated in writing by the Engineer to Owner, which shall include the reasons therefor.”

5.04.E.1

Delete Paragraph 5.04.E.1 in its entirety.

Add a new paragraph immediately after paragraph 5.04.F which is to read as follows:

“5.04.G Adjustments resulting from actual subsurface or latent physical conditions from those indicated will be in accordance with Massachusetts General Law, Chapter 30, Section 39N and the applicable provisions of the Contract Documents.”

5.05.A

Insert the following new paragraph immediately after Paragraph 5.05.A.5:

“6. CONTRACTOR’s attention is directed to the requirements of Massachusetts General Laws Chapter 82, Section 40, regarding the notification of owners of underground facilities.”

5.05.B

Delete the phrase “or was not shown or indicated on the Drawings with reasonable accuracy” following the word “Drawings” in the first sentence of Paragraph 5.05.B.

5.05.E

Add the following at the end of Paragraph 5.05.E:

“Any determination and instruction to proceed in accordance with this Paragraph shall be communicated in writing by the Engineer to Owner, which shall include the reasons therefor.”

5.06.B

Delete Paragraph 5.06.B in its entirety.

5.06.C

Add the following at the end of the first sentence of Paragraph 5.06.C:

“,or unless CONTRACTOR caused or contributed to such Hazardous Environmental Condition.”

5.06.E

Delete the second and third sentences of Paragraph 5.06.E.

5.06.I

Delete Paragraph 5.06.I in its entirety.

5.06.J

Delete the last sentence of Paragraph 5.06.J.

ARTICLE 6. BONDS AND INSURANCE

6.02

Delete Paragraph 6.02.E in its entirety.

Add the new paragraphs immediately after paragraph 6.02.N which is to read as follows:

- "O. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with this Article 6 on the basis of its not complying with the Contract Documents, OWNER will notify CONTRACTOR in writing thereof within thirty days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.01.B CONTRACTOR will provide such additional information in respect of insurance provided by them as OWNER may reasonably request."

6.03

Contractor shall purchase and maintain the following insurance coverages for not less than the following amounts or greater where required by Laws and Regulations:

- 1) General Liability with liability coverage for personal injury, bodily injury and property damage including Products and Completed Operations with limits not less than \$1,000,000 per occurrence and \$3,000,000 aggregate. Such insurance shall be written on an occurrence basis. This policy shall provide coverage on a primary and non-contributory basis and shall name the Town of Westford as an "Additional Insured".
- 2) Automobile Liability (applicable for any automobile operating exposure) with limits of not less than \$1,000,000 covering all owned, non-owned, hired, rented or leased vehicles. The Town of Westford shall be named as an "Additional Insured".
- 3) Workers' Compensation and Employers' Liability Insurance including (i) Workers' Compensation Insurance providing statutory coverage as required by the Commonwealth of Massachusetts, and (ii) Employers' Liability Insurance coverage with limits of not less than \$500,000 per accident. Each contractor, subcontractor, and consultant performing work on or about the Premises shall have similar policies covering their employees.
- 4) Umbrella Liability of at least \$2,000,000 per occurrence with a \$2,000,000 Annual Aggregate. The Town of Westford shall be named as an "Additional Insured".

6.04

Delete Paragraph 6.04.B in its entirety and insert the following in its place:

- "B. CONTRACTOR shall purchase and maintain, until final payment, property insurance upon the Work at the site in an amount equal to the total bid price for the completed construction. This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER's consultants in the Work, shall insure against the perils of fire and extended coverage, shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and shall include damages, losses and expenses rising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). This insurance shall be provided on the completed value form. If not covered under the "all risk" insurance or otherwise provided in these Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment."

6.04.C

Delete Paragraph 6.04.C in its entirety.

6.04.D

Delete Paragraph 6.04.D in its entirety and insert the following:

“OWNER may occupy or use a portion of the Work prior to Substantial Completion.”

6.04.E

Delete the first sentence of 6.04.E in its entirety and insert the following in its place:

“*Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.”

6.04.F

Add the following Paragraph after Paragraph 6.04.E:

"F. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by CONTRACTOR in accordance with Article 6 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER by certified mail and will contain waiver provisions in accordance with paragraph 6.05.B."

6.05.A

Delete the first sentence of Paragraph of 6.05.A and insert the following in its place:

“The insurance policies purchased and maintained in accordance with Article 6 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors”

6.05.B

Delete Paragraph 6.05.B in its entirety and insert the following:

“B. OWNER and CONTRACTOR intend that all policies of insurance purchased in accordance with the provisions of Article 6 will protect OWNER, CONTRACTOR, Subcontractors, and ENGINEER, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and officers, director, members, partners, employees, agents, consultants, and subcontractors or each and any of them) in such policies and will, where required to provided such insurance, provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby.”

6.05.D.

Add the following Paragraph after Paragraph 6.05.D:

“E. The CONTRACTOR shall pay for all costs not covered because of the application of a policy deductible due under any of its insurance policies required hereunder.”

6.06

Delete paragraph 6.06.A in its entirety.

Delete paragraph 6.06.B. in its entirety.

Delete paragraph 6.06.C in its entirety.

ARTICLE 7. CONTRACTOR'S RESPONSIBILITIES

7.01.B

Insert the following at the end of Paragraph 7.01.B:

“Contractor shall not be entitled to any equitable adjustment in Contract Price as a result of such services.”

7.05.A

Insert the following at the end of the third sentence of Paragraph 7.05.A:

“, and in accordance with G.L. c.30, §39M.”

Add a new paragraph 7.05..A.1.c immediately after paragraph 7.05.A.1.b, which is to read as follows:

“c. It shall be CONTRACTOR’s responsibility to coordinate all submittals to ENGINEER for approval to eliminate any conflicts which might arise due to the use of “or equal” items. Any additional costs incidental to the use of “or equal” items shall be paid by CONTRACTOR.”

7.07

Add the following to Paragraph 7.07.A:

“CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom OWNER makes reasonable objection. Acceptance of any Subcontractor, other person or organization by OWNER shall not constitute a waiver of any right of OWNER to reject defective Work.”

7.07.H.1

Add the following paragraph immediately after paragraph 7.07.H:

1. CONTRACTOR shall make payments to Subcontractors in accordance with Massachusetts General Laws Chapter 30, Section 39F.”

Add the following paragraph immediately after paragraph 7.07.I:

“7.07.I.1 OWNER or ENGINEER may furnish to any such Subcontractor, Supplier, or other person or organization, to the extent practicable, information about amounts paid to CONTRACTOR in accordance with CONTRACTOR’s Applications for Payment on account of the particular Subcontractor’s, Suppliers, other person’s, or other organization’s Work.”

7.07.J

Add the following language at the beginning of paragraph 7.06.J:

“Except as otherwise required by Massachusetts General Law, Chapter 149, Section 44F,”

7.08.A

Delete the second sentence of Paragraph 7.07.A.

7.08.B

Delete this subparagraph.

7.10

Add the following language at the end of paragraph 7.10:

“7.10.A.1 The materials and supplies to be used in the Work under this Contract are exempt from the Sales and Use Tax of the Commonwealth of Massachusetts. Contractor shall obtain the proper certificates, maintain the necessary records, and otherwise comply with all applicable requirements governing the exemption from sales tax.”

7.11C

Delete the last sentence of Paragraph 7.11C.

7.12.B – C

Insert the following new paragraphs immediately after Paragraph 7.12.A:

“B. The CONTRACTOR shall return to the ENGINEER one set of the Contract Drawings marked in colored pencil, showing all changes made during construction and including the location, by dimensions and elevations, of installed equipment, and underground facilities that will become concealed or buried by the construction. This shall include ties to all concealed work, etc. measured from permanent structures. Additionally, the CONTRACTOR shall be required to keep marked-up drawings current and on site and to provide mark-ups to the OWNER on a monthly basis.

“C. CONTRACTOR shall comply with all applicable provisions of Chapter 30, Section 39R of the Massachusetts General Laws regarding CONTRACTOR’s records.”

7.13.D

Delete the text in parentheses in Paragraph 7.13.D.

7.16

Add the following new paragraph immediately after paragraph 7.16.F, which is to read as follows:

“7.16.G The accuracy of all such information submitted by the Contractor is the responsibility of the Contractor. In reviewing Shop Drawings, Samples, and similar submittals, the Engineer shall be entitled to rely upon the Contractor’s representation that such information is correct and accurate.”

7.17.F

Add the following new paragraph 7.17.F, immediately after paragraph 7.17.E:

“E. CONTRACTOR shall guarantee all materials and equipment furnished and Work performed for a period of two (2) years from the date of Substantial Completion. CONTRACTOR warrants and guarantees for a period of two (2) years from the date of Substantial Completion that the completed Work is free from all defects due to faulty materials or workmanship and CONTRACTOR shall promptly make such corrections as may be necessary by reason of any such defects including the repairs of any damage to other parts of the Work resulting from such defects. In the event that CONTRACTOR should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, OWNER may do so and charge CONTRACTOR the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.”

7.18.A

Delete the phrase in parentheses: “(other than the Work itself)” in Paragraph 7.18.A.

Change the phrase “negligent act or omission” to “negligent or willful or wrongful act or omission.”

7.18.B

Insert the following at the end of Paragraph 7.18.B:

“If, through the acts or neglect of CONTRACTOR, any other Contractor or any Subcontractor shall suffer loss or damage on the Work, CONTRACTOR shall settle with such other Contractor or Subcontractor by agreement if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against OWNER on account of any damage alleged to have been sustained, OWNER shall notify CONTRACTOR, who shall indemnify and hold harmless OWNER against any such claims.”

ARTICLE 8. OTHER WORK AT THE SITE

8.02

Delete Paragraph 8.02 in its entirety.

8.03

Delete paragraph 8.03.C in its entirety, and insert the following in its place:

“8.03.C Should CONTRACTOR cause damage to the work or property of any separate contractor at the site, or should any claim arising out of CONTRACTOR'S performance of the Work at the site be made by any separate contractor against CONTRACTOR, OWNER, ENGINEER, ENGINEER'S Consultants, or any other person, CONTRACTOR shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER, ENGINEER, and ENGINEER'S Consultants, harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals, and court and arbitration costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any separate contractor against OWNER, ENGINEER, or ENGINEER'S Consultants, to the extent based on a claim arising out of the CONTRACTOR'S performance of the Work. Should a separate contractor cause damage to the Work or property of CONTRACTOR or should the

performance of Work by any separate contractor at the site give rise to any other claim, CONTRACTOR shall not institute any action, legal or equitable, against OWNER, ENGINEER, or ENGINEER'S Consultants or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from OWNER, ENGINEER, or ENGINEER'S Consultants, on such action or claim. If CONTRACTOR is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and OWNER and CONTRACTOR are unable to agree to the extent of any adjustment in Contract Times attributable thereto, CONTRACTOR may make a claim for an extension of times in accordance with Article 11.02. An extension of the Contract Times shall be CONTRACTOR'S exclusive remedy with respect to OWNER, ENGINEER, and ENGINEER'S Consultants, for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from OWNER, ENGINEER, or ENGINEER'S Consultant, for activities that are their respective responsibilities."

ARTICLE 9. OWNER'S RESPONSIBILITIES

9.02.A

Delete the phrase "provided Contractor makes no reasonable objection to the replacement engineer" in Paragraph 9.02.A.

9.06

Delete Paragraph 9.06 in its entirety.

9.09

Insert the following after the first sentence of Paragraph 9.09.A:

"However, the OWNER shall have the right to direct the CONTRACTOR to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto."

ARTICLE 10. ENGINEER'S STATUS DURING CONSTRUCTION

10.01

Add a new paragraph 10.01.B after paragraph 10.01.A, which is to read as follows:

"B. Nothing contained in the Contract Documents shall be construed to create a contractual relationship of any kind (1) between the ENGINEER and CONTRACTOR, (2) between the OWNER and a Subcontractor or Subcontractors, or (3) between any person or entities other than the OWNER and CONTRACTOR. The ENGINEER shall, however, be entitled to performance and enforcement of obligations under the CONTRACT DOCUMENTS intended to facilitate performance of the ENGINEER'S duties."

10.02B

Insert the following at the end of Paragraph 10.02.B:

"However, the ENGINEER shall have the right to direct the CONTRACTOR to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto."

10.03

Delete the last sentence of Paragraph 10.03.A

10.08.B

Insert the following after the first sentence in Paragraph 10.08.B:

“However, the ENGINEER shall have the right to direct the CONTRACTOR to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto.”

10.07.F

Add a new paragraph immediately after paragraph 10.07.E which is to read as follows:

“F. ENGINEER'S interpretations will be made in accordance with Massachusetts General Laws Chapter 30, Section 39P.”

ARTICLE 11. CHANGES TO THE CONTRACT

11.05

Add a new paragraph immediately after paragraph 11.05.A which is to read as follows:

“11.02.A.1 ENGINEER'S interpretations will be made in accordance with Massachusetts General Law, Chapter 30, Section 39P.”

11.05.D

Add the following new paragraph immediately after paragraph 11.05.D, which is to read as follows:

“11.05.D Upon request of the Owner or Engineer, the Contractor shall without cost to the Owner submit to the Engineer, in such form as the Engineer may require, an accurate written estimate of the cost of any such proposed extra Work or change. The estimate shall indicate the quantity and unit cost of each item of materials, and the number of hours of work and hourly rate for each class of labor, as well as the description and amounts of all other costs chargeable under the terms of this Article. Unit labor costs for the installation of each item of materials shall be shown if required by the Engineer. The Contractor shall promptly revise and resubmit such estimate if the Engineer determines that it is not in compliance with the requirements of this Article, or that it contains errors of facts or mathematical errors. If required by the Engineer, in order to establish the exact cost of new Work added or previously required Work omitted, the Contractor shall obtain and furnish to the Engineer bona fide proposals from recognized suppliers for furnishing any material included in such Work, and shall be furnished at Contractor's expense. The Contractor shall state in the estimate any extension of time required for the completion of the Work if the change or extra work is ordered.”

11.07

In paragraph 11.07.C.2.a change “15 percent” to “10 percent”.

Delete paragraph 11.07.C.2.c

ARTICLE 12. CLAIMS

12.01

Add a new paragraph immediately after paragraph 12.01.D.1 to read as follows:

“12.01.D.1.a CONTRACTOR shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings unless otherwise agreed in writing by OWNER and CONTRACTOR.”

ARTICLE 13. COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01

Add the following to the beginning of paragraph 13.01.B to read as follows:

“Following the Notice of Award and prior to the execution of the AGREEMENT the OWNER, prospective contractor and, if any, each prospective filed subbid contractor shall agree on what percentage markup shall be used as direct labor costs in determination of extra work costs.”

In the second sentence of paragraph 13.01.B.1 delete the word "superintendents".

13.01.B.5

Delete subparagraphs a, d, e, f, g, and h of Paragraph 13.01.B.5.

13.03.E

Delete Paragraph 13.03.E in its entirety.

13.02

Delete paragraph 13.02 in its entirety.

13.03.E

Delete Paragraph 13.03.E in its entirety.

ARTICLE 14. TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.02.F

Delete the remainder of Paragraph 14.02.F after the words “Contractor’s expense.”

14.05.C.2

Delete Paragraph 14.05.C.2 in its entirety.

14.06.B

Insert the following new paragraph immediately after Paragraph 14.06.A:

“B. If Owner stops Work under paragraph 14.06.A, CONTRACTOR shall not be entitled to any extension of Contract Time or increase in Contract Price.”

**ARTICLE 15. PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION;
CORRECTION PERIOD**

15.01.B.1

Delete the first phrase prior to the words “Contractor shall” in the first sentence of Paragraph 15.01.B.1 and insert the following:

“On a monthly basis and in accordance with G.L. c.30, §39G,”.

Delete paragraph 15.01.B.3 and insert the following in its place:

"15.01.B.3. Retainage with respect to progress payments will be five percent or, if stipulated, the maximum allowed by law."

15.01.B.4

Insert the following new paragraph immediately after Paragraph 15.01.B.4:

“5. CONTRACTOR shall furnish evidence that payment received on the basis of materials and equipment not incorporated and suitably stored, has in fact been paid to the respective supplier(s) within ten (10) days of payment by OWNER. Failure to provide such evidence of payment may result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment.

15.01.C.1

Delete Paragraph 15.01C.1 in its entirety and insert the following:

“1. Progress Payments shall be made in accordance with Massachusetts General Laws, Chapter 30, Section 39G.”

15.01.D.1

Delete Paragraph 15.01.D.1 in its entirety and insert the following:

“1. Payment shall be made in accordance with G.L. c.30, §39G.”

15.01.E.2

Delete the words “immediate” and “promptly” in the first sentence of Paragraph 15.01.E.2.

15.01.E.3

Delete Paragraph 15.01.E.3 in its entirety.

15.02

Insert the following new paragraphs immediately after Paragraph 15.02.A:

“B. No materials or supplies for the Work shall be purchased by CONTRACTOR or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. CONTRACTOR warrants

that CONTRACTOR has good title to all materials and supplies used by CONTRACTOR in the Work, free from all liens, claims or encumbrances.”

- “C. CONTRACTOR shall indemnify and save OWNER harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. CONTRACTOR shall, at OWNERS request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If CONTRACTOR fails to do so, then OWNER may, after having served written notice on the CONTRACTOR, either pay unpaid bills, of which OWNER has written notice, or withhold from the CONTRACTOR’s unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to CONTRACTOR shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon OWNER to either CONTRACTOR, or CONTRACTOR’s Surety. In paying any unpaid bills of the CONTRACTOR, OWNER’s payment shall be considered as payment made under the Contract by OWNER to CONTRACTOR and OWNER shall not be liable to CONTRACTOR for any such payment made in good faith.”

15.04.A

Delete the phrase “subject to the following conditions” at the end of the first sentence of Paragraph 15.04.A.

Delete Paragraph 15.04.A.2 in its entirety.

15.06

Delete Paragraph 15.06.B.1 and insert the following:

- “1. If, on the basis of ENGINEER’s observations of the Work during construction and final inspection, and ENGINEER’s review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR’s other obligations under the Contract Documents have been fulfilled, ENGINEER will indicate in writing ENGINEER’s recommendation of payment and present the Application for Payment to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 15.07. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

15.06.E

Insert the following at the end of Paragraph 15.06.E:

“Final payment shall be made in accordance with G.L. c.30, §39G.”

15.07.A

Delete paragraph 15.07.A in its entirety and insert the following:

“A. The making of final payment will not constitute a waiver by OWNER of claims or rights against CONTRACTOR. OWNER expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from CONTRACTOR’S failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by OWNER, or from CONTRACTOR’S continuing obligations under the Contract Documents

ARTICLE 16. SUSPENSION OF WORK AND TERMINATION

16.01.A

Delete Paragraph 16.01.A in its entirety and insert the following:

“A. OWNER may suspend the work or any portion thereof in accordance with G.L. c.30, §39O.”

16.02.A.5

Insert new paragraph immediately after Paragraph 16.02.A.4:

“5. If CONTRACTOR abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of OWNER, or if the Contract or any claim thereunder shall be assigned by CONTRACTOR other than as herein specified.”

16.03.A.1

Delete the phrase “including fair and reasonable sums for overhead and profit on such Work” in Paragraph 16.03.A.1.

16.03.A.2

Delete the phrase “plus fair and reasonable sums for overhead and profit on such expenses” in Paragraph 16.03.A.2.

16.03.A.3

Delete Paragraph 16.03.A.3 in its entirety.

16.04.B

Delete the last sentence of Paragraph 16.04.B.

ARTICLE 17. FINAL RESOLUTION OF DISPUTES

17.01.C

Insert a new sub-paragraph after Paragraph 17.01.B:

“CONTRACTOR shall be responsible to carry on the Work and maintain the progress schedule during the dispute resolution proceedings.”

17.02

Add a new paragraph immediately after Paragraph 17.01 which is to read as follows:

“17.02 Venue

Any legal action relating to this Contract shall be filed in the Superior Court for the County in the Commonwealth of Massachusetts in which the Project is located, unless otherwise agreed by CONTRACTOR and OWNER in writing.”

ARTICLE 18. MISCELLANEOUS

18.10

18.10 Headings:

Delete paragraph 18.10.A and replace with the following paragraph:

“18.10.A The headings or titles of any article, paragraph, subparagraph, section, subsection, or part of the Contract Documents shall not be deemed to limit or restrict the article, paragraph, section, or part.”

18.11

Insert the following new paragraph:

“18.11 Wage Rates

- “A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of the Contract Documents. If after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administering the laws mentioned above.”
- “B. The schedule of wages referred to above is minimum rates only, and OWNER will not consider any claims for additional compensation made by CONTRACTOR because of payment by CONTRACTOR of any wage in excess of the applicable, required rates.”
- “C. The said schedules of wages shall continue to be the minimum rates to be paid during the life of this Agreement, unless state laws and regulations require updating the same in which case the Owner shall provide the updated applicable schedule of wages, and a legible copy of said schedules shall be kept posted in a conspicuous place at the site of the work.”

SUPPLEMENTAL CONDITIONS

§ SC 1.1 INTRODUCTION

The following provisions modify, change, delete from or add to Section 00500 Agreement. Where any Subsection of the Agreement is modified or any Article Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplemental Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

§ SC 2.1 PREVAILING WAGE

In accordance with General Laws Chapter 149, Section 26 through 27D, the Contractor is obligated to comply with the prevailing wage rates established by the Commissioner of the Department of Labor and Workforce Development for mechanics, apprentices, chauffeurs, teamsters and laborers employed on the Project. The schedule of applicable prevailing wage rates for the Project, together with a Certificate of Compliance therewith, are set forth in the Attachments herein.

§ SC 3.1 CONTRACTOR'S LIABILITY INSURANCE

Refer to section 6.03.

SECTION 00811
SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES

This provision applies to all projects using greater than 100 tons of hot mix asphalt (HMA) mixtures containing liquid asphalt cement.

Price Adjustments will be based on the variance in price, for the liquid asphalt component only, between the Base Price and the Period Price. Bidders/Contractors shall not include transportation or other charges. Price Adjustments will occur on a monthly basis.

Base Price

The Base Price of liquid asphalt on this project will be equal to the Period Price for the month in which the project was bid (February 2026), as posted on the MassDOT website at <https://www.mass.gov/info-details/massdot-current-contract-price-adjustments>. The Base Price shall be used in all bids.

Period Price

The Period Price is the price of liquid asphalt for each monthly period as determined by MassDOT using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. MassDOT will post this Period Price on its website at <https://www.mass.gov/info-details/massdot-current-contract-price-adjustments> within two (2) business days following its receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted MassDOT the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor. This method of period price determination was formerly called the New Asphalt Period Price Method. Separate website postings using both the New Asphalt Period Price Method and the Old Asphalt Period Price Method were discontinued after June 2013.

Price Adjustment Determination, Calculation and Payment

The Contract Price of the HMA mixture will be paid under the respective item in the Contract. Price Adjustments, as herein provided, either upwards or downwards, will be made after the work has been performed using the monthly period price for the month during which the work was performed.

Price Adjustments will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

The Price Adjustment applies only to the actual virgin liquid asphalt content in the mixture placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M3.11.03.

Price Adjustments will be separate payment items. The pay item numbers are 999.401 for a positive price adjustment (a payment) and 999.402 for a negative price adjustment (a deduction). Price Adjustments will be calculated using the following equation:

Price Adjustment = Tons of HMA Placed X Liquid Asphalt Content % X RAP Factor X (Period Price - Base Price)

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is an Owner-approved extension of time.

***** END OF DOCUMENT *****

SECTION 00812
SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE

This monthly fuel price adjustment is inserted in this Contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.

The Base Price of Diesel Fuel and Gasoline on this project will be the price as indicated on MassDOT's website at <https://www.mass.gov/info-details/massdot-current-contract-price-adjustments> for the month in which the contract was bid (February 2026), which includes State Tax.

The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month.

This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No adjustment will be paid for work done beyond the extended completion date of any Contract.

Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.

The fuel price adjustment will apply only to the following items of work at the fuel factors shown:

ITEMS COVERED	FUEL FACTORS	
	Diesel	Gasoline
Excavation: and Borrow Work: Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 142, 143, 144, 150, 150.1, 151 and 151.1 (Both Factors used)	0.29 Gallons / CY	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply

***** END OF DOCUMENT *****

SECTION 00813
DOCUMENT 00813 SPECIAL PROVISIONS PRICE ADJUSTMENTS FOR STRUCTURAL
STEEL AND REINFORCING STEEL

This special provision applies to all projects containing the use of structural steel and/or reinforcing steel as specified elsewhere in the Contract work. It applies to all structural steel and all reinforcing steel, as defined below, on the project. Compliance with this provision is mandatory, i.e., there are no “opt-in” or “opt-out” clauses. Price adjustments will be handled as described below and shall only apply to unfabricated reinforcing steel bars and unfabricated structural steel material, consisting of rolled shapes, plate steel, sheet piling, pipe piles, steel castings and steel forgings.

Price adjustments will be variances between Base Prices and Period Prices. Base Prices and Period Prices are defined below.

Price adjustments will only be made if the variances between Base Prices and Period Prices are 5% or more. A variance can result in the Period Price being either higher or lower than the Base Price. Once the 5% threshold has been achieved, the adjustment will apply to the full variance between the Base Price and the Period Price.

Price adjustments will be calculated by multiplying the number of pounds of unfabricated structural steel material or unfabricated reinforcing steel bars on a project by the index factor calculated as shown below under Example of a Period Price Calculation.

Price adjustments will not include guardrail panels or the costs of shop drawing preparation, handling, fabrication, coatings, transportation, storage, installation, profit, overhead, fuel costs, fuel surcharges, or other such charges not related to the cost of the unfabricated structural steel and unfabricated reinforcing steel.

The weight of steel subject to a price adjustment shall not exceed the final shipping weight of the fabricated part by more than 10%.

Base Prices and Period Prices are defined as follows:

Base Prices of unfabricated structural steel and unfabricated reinforcing steel on a project are fixed prices determined by the Department and found at <https://www.mass.gov/info-details/massdot-current-contract-price-adjustments> for the month in which the contract was bid (February 2026), which includes State Tax. While it is the intention of the Department to make this table comprehensive, some of a project’s unfabricated structural steel and/or unfabricated reinforcing steel may be inadvertently omitted. Should this occur, the Contractor shall bring the omission to the Department’s attention so that a contract alteration may be processed that adds the missing steel to the table and its price adjustments to the Contract.

The Base Price Date is the month and year of the most recent finalized period price index at the time that MassDOT opened bids for the project. The Base Price Index for this contract is the Steel PPI listed in the Notice to Contractors.

Period Prices of unfabricated structural steel and unfabricated reinforcing steel on a project are variable prices that have been calculated using the Period Price Date and an index of steel prices to adjust the Base Price.

The Period Price Date is the date the steel was delivered to the fabricator as evidenced by an official bill of lading submitted to the Department containing a description of the shipped materials, weights of the shipped materials and the date of shipment. This date is used to select the Period Price Index.

The index used for the calculation of Period Prices is the U.S. Department of Labor Bureau of Labor Statistics Producer Price Index (PPI) Series ID WPU101702 (Not Seasonally Adjusted, Group: Metals and Metal Products, Item: Semi-finished Steel Mill Products.) As this index is subject to revision for a period of up to four (4) months after its original publication, no price adjustments will be made until the index for the period is finalized, i.e., the index is no longer suffixed with a "(P)".

Period Prices are determined as follows:

Period Price = Base Price X Index Factor

Index Factor = Period Price Index / Base Price Index

Example of a Period Price Calculation:

Calculate the Period Price for December 2009 using a Base Price from March 2009 of \$0.82/Pound for 1,000 Pounds of ASTM A709 (AASHTO M270) Grade A36 Structural Steel Plate.

The Period Price Date is December 2009. From the PPI website*, the Period Price Index = 218.0.

The Base Price Date is March 2009. From the PPI website*, the Base Price Index = 229.4.

Index Factor = Period Price Index / Base Price Index = $218.0 / 229.4 = 0.950$
Period Price = Base Price X Index Factor = $\$0.82/\text{Pound} \times 0.950 = \$0.78/\text{Pound}$

Since $\$0.82 - \$0.78 = \$0.04$ is less than 5% of \$0.82, no price adjustment is required.

If the \$0.04 difference shown above was greater than 5% of the Base Price, then the price adjustment would be 1,000 Pounds X \$0.04/Pound = \$40.00. Since the Period Price of \$0.78/Pound is less than the Base Price of \$0.82/Pound, indicating a drop in the price of steel between the bid and the delivery of material, a credit of \$40.00 would be owed to MassDOT. When the Period Price is higher than the Base Price, the price adjustment is owed to the Contractor.

* To access the PPI website and obtain a Base Price Index or a Period Price Index, go to <http://data.bls.gov/cgi-bin/srgate>

End of example.

The Contractor will be paid for unfabricated structural steel and unfabricated reinforcing steel under the respective contract pay items for all components constructed of either structural steel or reinforced Portland cement concrete under their respective Contract Pay Items.

Price adjustments, as herein provided for, will be paid separately as follows:

Structural Steel

Pay Item Number 999.449 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.457 for negative (-) pay adjustments (credits to MassDOT Highway Division)

Reinforcing Steel

Pay Item Number 999.466 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.467 for negative (-) pay adjustments (credits to MassDOT Highway Division)

No price adjustment will be made for price changes after the Contract Completion Date, unless the MassDOT Highway Division has approved an extension of Contract Time for the Contract.

BASE PRICES

The Department's table of Base Prices specified above is updated monthly. The current table is attached to this Document 00813 and included in each new contract.

***** END OF DOCUMENT *****

SECTION 00850

Incorporation of Applicable Provisions of the Massachusetts General Laws

Certain provisions of the Massachusetts General Laws are applicable to Construction contracts including, but not limited to, those contained in Chapter 30 and Chapter 149. All applicable provisions of the Massachusetts General Laws are incorporated into the Contract as if fully set forth herein, and shall prevail over any conflicting provisions of the General or Supplemental Conditions.

SECTION 00900

GENERAL SPECIAL PROVISIONS

SCOPE OF WORK

The proposed culvert replacement projects include the replacement of two separate culverts. The first culvert (Culvert #1) is located on East Prescott Street & North Main Street and the second culvert (Culvert #2) is located on Acton Road. The work consists of removing the existing culverts, installing new precast concrete box culverts, precast retaining walls, guardrail, drainage improvements, curbing, water main relocation, tree removal, asphalt paving, wetland replication, and other miscellaneous work.

All work under this Contract shall be done in conformance with the MassDOT 2025 Standard Specifications for Highways and Bridges, the Supplemental Specifications contained in this book, the Construction Standard Details in effect as of June, 2025, the 1990 Standard Drawings for Signs and Supports, the 2015 Overhead Signal Structure and Foundation Standard Drawings, the 2009 Manual on Uniform Traffic Control Devices (MUTCD) with Revisions 1, 2, and 3 and the November 2022 Massachusetts Amendments to the MUTCD, the latest edition of The American Standard for Nursery Stock, the Plans, Specifications, and Special Provisions.

WORK SCHEDULE

The Contractor shall perform all work in accordance with Westford standard work hours, Monday through Friday (excluding Holidays) 7:00 AM to 5:00 PM, unless otherwise specified herein or approved in writing by the Department of Public Works. Works hours during full road closures and detours shall be as specified in the Prosecution of Work section below.

The Contractor shall submit a construction phasing and sequencing schedule for review and approval by the Department of Public Works at least one week prior to the Pre-Construction Meeting.

The project shall reach Substantial Completion by October 1, 2026, and Final Completion by November 15, 2026. For Substantial Completion, all paving and pavement marking work must be completed.

PROSECUTION OF WORK

To accelerate construction and minimize the impacts to the public, the Contractor will be allowed to close and detour each road as shown on the contract drawings for the maximum time periods as follows:

- Culvert #1 - East Prescott Street and North Main Street - Twelve (12) consecutive calendar days
- Culvert #2 - Acton Road – Five (5) consecutive calendar days

Saturday and Sunday work will be allowed during the road closure and detour time periods specified above. Road closures shall only be permitted while Westford and Chelmsford schools are on summer break, which is scheduled for June 29th to August 22nd. During the road closures, the Contractor will be allowed to work between the hours of 7:00 AM and 9:00 PM unless otherwise approved in writing by the Department of Public Works. Before each road is closed, the Contractor must submit for approval in writing a construction plan that includes materials to be stockpiled prior to road closure, pre-closure work that needs to be completed prior to detour, labor, equipment and materials to be utilized during the road closure, a schedule showing completion within the allotted time, and all backup equipment to be staged on site for unanticipated breakdowns. Work on or near the culvert can continue after the road is re-opened with allowable daily lane closures in accordance with the standard work hours as specified in the Work Schedule section above. Temporary barrier must be used along the culvert until the proposed guardrail is installed.

The Contractor shall furnish adequate labor, materials, and equipment to complete each culvert replacement within the designated road closure period, ensuring that all remaining work can be performed under daily lane closures. If the road is not open to two-way traffic after the maximum closure periods specified above, the Contractor will be assessed **\$5,000 per day** for each additional day the road continues to be closed.

Only one detour shall be in effect at any time. The Contractor may not implement the detour for the second culvert location until all work requiring a detour at the first location is complete and the road has been fully reopened to traffic. Scheduling and coordination must ensure that the two detours do not overlap. The Contractor shall provide the Department of Public Works with a minimum of two weeks' notice prior to closing and detouring any road.

DEFINED TERMS (Supplementing Subsection 1.03)

Throughout the MassDOT Standard Specifications, wherever the term "the Department" appears it shall be replaced with "the Owner", which term shall be defined to mean the Town of Westford, acting through its Department of Public Works.

ORDER OF PRECEDENCE (Supplementing Subsection 5.04)

The General Conditions, Supplemental Conditions, and Special Provisions shall take precedence over the General Requirements of Division I of the MassDOT Standard and Supplemental Specifications.

SECTION 6.00: CONTROL OF MATERIALS

Subsection 6.01: Source of Supply and Quality
Replace this subsection with the following:

The Engineer may approve material at the source of supply before delivery to the project.

The Department reserves the right to require approval of the source of supply for any material to be incorporated into the work prior to delivery or manufacture.

The Engineer reserves the right to prohibit the use of materials, products, or components which, in their opinion, may be supplied in a manner not reasonably consistent with contract requirements.

The determination of the Engineer shall be final upon all questions which pertain to supplier approval.

The Contractor shall furnish all materials required for the work specified in the Contract. Said materials shall meet the requirements of the specifications for the kind of work involving their use. For any materials named or described in these specifications, an approved equivalent to that named or described in the said specifications, may be furnished upon approval from the Department of Public Works.

Chapter 7, Section 22, Clause 17, of the General Laws, as amended, shall apply to the purchase by the Contractor of supplies and materials to be used in the execution of this Contract.

The rules referred to require 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 within the United States.

In Contracts requiring structural steel, precast, or prestress concrete, the Contractor shall furnish approved shop drawings, and fabrication procedures to the Department of Public Works inspector at the supply source or fabrication site. Materials for permanent construction shall be new, shall conform to the requirements of these specifications, and shall be approved by the Engineer.

Materials for temporary structures or supports adjacent to traveled ways, the failure of which would compromise the safety of the public or the traveled ways, need not be new but the Contractor shall be required to submit certification by a Structural Professional Engineer that the material meets the requirements for the intended use and shall be approved by the Engineer. Any fabrication shall conform to the requirements of these specifications. These requirements shall not apply to gantry systems and supports as well as other mechanized systems.

If testing finds that an approved supplier does not furnish a uniform product, or if the product from such source proves unacceptable at any time, the Contractor shall, at their own expense, take any and all steps necessary to furnish approved materials.

Subsection 6.03: Delivery and Storage of Materials

Replace this Subsection with the following:

Materials and equipment shall be progressively delivered to or removed from the site so that there will be neither delay in the progress of the work nor an accumulation of materials that are

not to be used or removed within a reasonable time. All materials shall be stored in pre-approved locations per the conditions of the property owner.

Delivered materials and materials originating from the site, shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection.

Municipal, private, or other state-owned property shall not be used for storage purposes without written permission of the owner or lessee, and copies of such written permission shall be furnished to the Engineer.

TEMPORARY TRAFFIC CONTROL

The Contractor shall implement and maintain throughout the construction period all temporary traffic control signs, devices, and setups in accordance with the latest edition of the MassDOT Traffic Management Plans and Detail Drawings, the design plans, and as required by the Engineer.

Temporary construction signing and all other traffic control devices shall be in place prior to the start of any work.

NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

GAS:

Emergency: 1-800-233-5325

New Service: 1- 877-696-4743

Customer Support: 1-800-732-3400

ELECTRIC:

Outage/ Emergency: 1-800-465-1212

New Service: 1-800-375-7405

Customer Support: 1-800-322-3223

PROTECTION OF UNDERGROUND FACILITIES

The Contractor's attention is directed to the necessity of making their own investigation in order to ensure that no damage to existing structures, drainage lines, traffic signal conduits, etcetera, will occur.

The Contractor shall notify Massachusetts DIG SAFE and procure a Dig Safe Number for each location prior to disturbing existing ground in any way. Contact the Dig Safe Call Center by dialing 811 or 1-888-344-7233 or online at www.digsafe.com.

NOTICE TO OWNERS OF UTILITIES

(Supplementing Subsection 7.13)

Written notice shall be given by the Contractor to all public service corporations or municipal and State officials owning or having charge of publicly or privately owned utilities of their intention to commence operations affecting such utilities at least one week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

UTILITY CONTACTS

National Grid (Electric)
55 Bearfoot Road
Northborough, MA 01532

Manny Munoz
401-895-9726
manuel.munoz@nationalgrid.com

National Grid (Gas)
170 Data Drive
Waltham, MA 02451

Melissa Owens
781-907-2845
Melissa.Owens@nationalgrid.com

Tennessee Gas Pipeline Company (Gas)
8 Anngina Drive
Enfield, CT 06082

David Wood
860-763-6005
KMEncroachmentsNorth@kindermorgan.com

Verizon (Telephone)
385 Miles Standish Boulevard
Taunton, MA 02780

Paul Diamantopoulos
978-323-0282
paul.e.diamantopoulos@verizon.com

Westford Water Department
60 Forge Village Road
Westford, MA 01886

Mark Warren
978-399-2457
mwarren@westfordma.gov

Westford Assistant Town Engineer
28 North Street
Westford, MA 01886

Jeremy Downs, P.E.
978-692-5520
jdowns@westfordma.gov

CSX Transportation
2000 West Cabot Boulevard – Suite 130
Langhorne, PA 19047

Michael Sliper
518-767-6081
Michael_Sliper@csx.com

Comcast Cable Corporation
PO Box 6505, 5 Omni Way
Chelmsford, MA 01824

Wendy Brown
978-848-5163
Wendy_Brown@comcast.com

AT&T
50 Mall Road – Suite 203
Burlington, MA 01803

Erica Hudson
781-221-8400, Ext. 7041
erica.hudson@sienaengineeringgroup.com

Lumen
1025 Eldorado Boulevard
Broomfield, CO 80021
Crown Castle
80 Central Street
Boxborough, MA 01719

Renoy Thomas
516-712-3041
relocations@lumen.com
Mark Bonanno
508-616-7818
mark.bonanno@crowncastle.com

MCI-Verizon Business
P.O. Box 600
Charlton, MA 01507

Stephen Parretti
508-248-1305
stephen.parretti@verizon.com

Verizon Wireless Small Cell
20 Alexander Drive
Wallingford, CT 06492

Elizabeth Glidden
elizabeth.glidden@verizonwireless.com

NATIONAL GRID GAS MAIN RELOCATIONS

National Grid will relocate the existing gas mains as necessary to prevent conflicts with the construction of the new precast concrete box culverts. The relocation process will include: cutting and capping the existing mains, installing new mains using horizontal directional drilling methods, and reconnecting the new gas mains to the existing gas system. National Grid intends to abandon the old gas main in place. The gas main relocation work is scheduled to be completed by National Grid prior to the Contractor installing the new culverts. The relocated gas mains will be installed at a minimum of three feet below the proposed bottom elevation of each culvert to prevent conflict or exposure during the culvert excavation work.

Prior to culvert construction, National Grid will provide the Contractor with as-built information documenting the horizontal alignment and top of pipe elevations of the relocated gas mains. This as-built information will also be painted on each roadway as part of the Dig Safe process. The Contractor must notify National Grid a minimum of one week in advance of any excavation work.

The Contractor shall remove and dispose of any abandoned gas mains encountered during the excavation work that would result in a conflict with the new culverts; otherwise, the old gas main may remain in place. Abandoned gas main to remain in place must be properly capped and sealed using a method approved by the Department of Public Works. This work, as well as any required coordination with National Grid, is considered incidental to the project, and no separate payment will be made.

ORDER OF CONDITIONS

Order of Conditions permits were issued for both culvert replacements by the Westford Conservation Commission and are part of the contract documents. Copies of each Order is provided in this manual under the Attachment section. All labor, materials, equipment, and other

costs associated with complying with the conditions and requirements of each Order of Conditions shall be considered incidental to the contract and no separate payment shall be made unless otherwise stipulated in the contract documents.

MASSDOT PREQUALIFICATION

MassDOT prequalification of contractors with the class of work as, Bridge - Culverts, for the project with an estimated value of \$1,541,910.00 will be required.

ATTACHMENT A

Culvert #1 - East Prescott Street and North Main Street over Reed Brook

A1. Special Provisions

A2. Order of Conditions issued by Westford Conservation Commission

Culvert #1
East Prescott Street and North Main Street over Reed Brook

A1. Special Provisions

SPECIAL PROVISIONS**TOWN OF WESTFORD
DEPARTMENT OF PUBLIC WORKS****EAST PRESCOTT STREET & NORTH MAIN STREET OVER
REED BROOK CULVERT REPLACEMENT**

All work done under this contract shall be in conformance with the Massachusetts Department of Transportation *Standard Specifications for Highways and Bridges* dated 2025, as amended; the MassDOT *Construction Standard Details*; the Massachusetts Highway Department 1996 *Construction and Traffic Standard Details* (as related to traffic standard details only); The Federal Highway Administration *Manual on Uniform Traffic Control Devices for Streets and Highways* with 2022 Massachusetts Amendments; the Commonwealth of Massachusetts Department of Public Works 1990 *Standard Drawings for Signs and Supports*; the Commonwealth of Massachusetts 1968 *Standard Drawings for Traffic Signs and Highway Lighting*; the latest edition of *American Standard for Nursery Stock*; the *Drawings* and these *Special Provisions*.

When guidance from these *Special Provisions* overlaps with any design documents listed above, the most conservative interpretation shall govern between the two.

All Massachusetts Department of Transportation (MassDOT) documents can be found online at:
<https://www.mass.gov/massdot-highway-division-manuals-and-publications>

Material and technical specifications of the Project Manual superseded with Division II and III of the MassDOT Highway Division Standard Specifications for Highways and Bridges dated 2025 as currently amended by these Special Provisions.

DISPOSAL OF SURPLUS MATERIALS

Surplus material obtained from any type of excavation, including dredging within the limits of the Brook, and not needed for further use as determined by the Engineer shall become the property of the Contractor and shall be removed from the site during the construction period and disposed of legally. The removal and disposal of surplus material shall adhere to the regulations and requirements of local authorities governing the disposal of such materials, at no additional compensation.

MATERIAL REMOVED AND STACKED

The Contractor shall carefully remove, transport and stack all material that, in the opinion of the Engineer, is salvageable. The material shall be stacked at the DPW facility. The Contractor shall coordinate with the Town to schedule drop-off time.

DRAINAGE

It shall be the Contractor's responsibility to maintain drainage functioning properly in the areas under construction prior to the time when the final system is put into use. All pipes and structures within the limits of this Contract shall be left in a clean and operable condition at the completion of the work. All work shall be included under the relevant drainage item without additional compensation. Any adjustments made to new drainage structures will be included under the Contract unit price for each respective structure.

BORROW MATERIAL TESTING

In accordance with MassDOT requirements and the following:

Contractor shall provide representative samples of borrow materials taken from the source. Tag, label, and package the Samples as requested by Engineer. Provide access to the borrow site for field evaluation and inspection.

Provide sieve analysis (ASTM C136) from certified soils testing laboratory for all borrow materials. Take and test a sample, at no additional cost to the Owner for each 100 CY of borrow material placed. The Engineer reserves the right to require more frequent testing than that which is specified above should the borrow characteristics change.

Contractor shall provide modified proctor analysis (ASTM D1557) and soil classification (ASTM D2487) from certified soils testing laboratory for all borrow or backfill materials at the frequency specified above at no additional cost to the Owner.

COMPACTION TESTING

In accordance with MassDOT requirements and the following:

Contractor shall provide compaction test results (i.e. ASTM D6938 or ASTM D1556) at a frequency of one test for every 50 cubic yards of material backfilled or at a minimum of one test per lift. The Engineer will determine the locations and lifts to be tested. Additional compaction testing may be required when there is evidence of a change in the quality of moisture control or the effectiveness of compaction.

ITEM 101.**CLEARING AND GRUBBING****ACRE**

The work under this item shall conform to the relevant provisions of Section 100 of the Standard Specifications and the following:

The work shall include removal and legal disposal of all materials obtained during clearing and grubbing. Clearing and grubbing material cannot be disposed of on site. Stumps, brush, and major roots in all fill areas must be removed regardless of fill depth. Material may not be left in adjacent lot areas. Clearing and grubbing includes removal of all vegetative material, stumps, and major roots within the clearing limits, regardless of size.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Clearing and grubbing will be measured by the acre, based on the limits shown on the Drawings unless additional areas are approved by the Engineer.

Clearing and grubbing will be paid for at the Contract unit price per acre, which price shall include all labor, materials, equipment and incidental costs required to complete the work. No separate payment will be made for removal of trees, stumps including major roots, regardless of size. Individual trees identified on the drawings for removal will not be measured separately and are inclusive to Item 101.

ITEM 102.51**INDIVIDUAL TREE PROTECTION****EACH**

The work under this item shall conform to the relevant provisions of Sections 771 and shall be for furnishing and installing temporary tree trunk protection and for limb pruning to prevent injury to the tree from construction equipment and activities.

Trunk armoring is for instances where construction activity (the use of heavy equipment) comes close enough to potentially damage the tree trunk or limbs. It is to be used where shown on the plans and as directed by the Engineer.

REFERENCES

If requested, the Contractor shall provide to the Engineer one copy of the latest edition of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance: Part 1-Pruning and Part 5-Construction Management Standard. Provision of reference shall be incidental to this item.

MATERIALS

Trunk armoring shall be such that it prevents damage to the trunk from construction equipment. Selected material shall be such that installation and removal will not damage the trunk.

Acceptable materials include 2x4 wood cladding with wire or metal strapping, or, for instances when duration of construction activities is less than three months, corrugated plastic pipe mounted with duct tape. Height of cladding shall be from base of tree (including root flare) to the bottom of the first branch. Material and methods shall be approved by the Engineer.

METHODS OF WORK

Prior to construction activities, the Engineer, the Contractor, and the Owner shall review trees noted on the plans to be protected. Final decision as to which trees armored and/or pruned shall be per the Owner.

Care shall be taken to avoid damage to the bark during installation and removal of armoring. Trunk armoring shall be replaced and maintained such that it is effective for as long as required and shall be removed immediately upon completion of work activities adjacent to trees.

Pruning of limbs shall conform to the techniques and standards of the most recent ANSI A300 standards.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Individual tree protection will be measured and paid at the contract unit price per each.

Individual tree protection will 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 113.1**DEMOLITION OF CULVERT NO. 1****LUMP SUM**

The work under this Item shall conform to the applicable provisions of Section 112 of the Standard Specifications and the following:

GENERAL

The Contractor will make their own investigation of the structure to be demolished including the materials that are part of, or may be stored in the structure. No increase will be made to the bid price due to the nature of the materials involved in the demolition. All costs for permits, dump fees, sawcuts, special handling of hazardous materials, shall be included in the bid price of the demolition item.

The work to be done under this Item shall consist of the demolition and satisfactory removal of the pipe and stone headwalls.

All materials removed under this Item shall become the property of the Contractor and shall be disposed off-site.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for this Item shall be at the contract lump sum bid price for Items 113.1, Demolition of Culvert No. 1, which price shall include all materials, tools, equipment, disposal and labor incidental thereto that is required to complete the work in a satisfactory manner.

ITEM 120.**EARTH EXCAVATION****CUBIC YARD**

The work under this item shall conform to the relevant provisions of Section 120 of the Standard Specifications and the following:

The work shall include removal and legal disposal of all materials obstructing the execution of scheduled road work as shown on the Drawings and/or as directed by the Engineer, except those materials for which payment is made as part of other items of this Contract. The work also includes removal and legal disposal of posts and stone walls as shown on the Drawings and/or as directed by the Engineer. Excavation for utilities, culverts, and installation of stream bed material and slope stabilization will not be measured for payment as earth excavation. All excavation shall be considered incidental to utility, culvert, stream bed, and slope stabilization items.

Should unsatisfactory subgrade material be encountered, the Engineer may direct that excavation be carried to the depth of satisfactory material and be backfilled with suitable borrow.

METHOD OF MEASUREMENT

Earth excavation will be measured by the cubic yard, from existing grades to the bottom of the required subgrade. Depth of excavation shall be limited to the depths required to install the work unless additional depths to remove unsuitable material is approved by the Engineer.

BASIS OF PAYMENT

Payment will be paid for at the Contract unit price per cubic yard, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 151.**GRAVEL BORROW****CUBIC YARD**

This item shall conform to the requirements of Section 150 of the Standard Specifications and the following:

SUBMITTALS

Contractor shall provide representative samples of borrow materials taken from the source. Tag, label, and package the Samples as requested by Engineer. Provide access to the borrow site for field evaluation and inspection.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Gravel borrow will be measured for payment per cubic yard to the lengths, widths, and depths approved by the Engineer. All depth measurements shall be compact in place and no swell factor will be applied. Tonnage receipts will not be accepted for measurements. All gravel borrow for piping, culverts, walls, and structures shall be considered inclusive to those items and will not be measured for payment under Item 151.

Gravel borrow will be paid for at the Contract unit price per cubic yard, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 156.**CRUSHED STONE****TON**

The work under this item shall conform to the relevant provisions of Section 150 of the Standard specifications and the following:

METHOD OF MEASUREMENT

Crushed stone will be measured and paid for payment per ton, complete in place. Only crushed stone installed to replace unsuitable material as directed by the Engineer shall be measured for payment under Item 156. All crushed stone for piping, culverts, walls, and structures shall be considered inclusive to those items and will not be measured for payment under Item 156.

BASIS OF PAYMENT

Crushed stone will be measured and paid for at the Contract unit price per ton, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 170. FINE GRADING AND COMPACTING-SUBGRADE AREA**SQUARE YARD**

The work under this item shall conform to the relevant provisions of Section 170 of the Standard specifications and the following:

METHOD OF MEASUREMENT

Fine Grading and Compacting will be measured and paid for payment per square yard. Measurement includes roadway, sidewalks, and driveways. Loam, stream bed, and slope stabilization areas will not be measured for payment under Item 170.

BASIS OF PAYMENT

Fine Grading and Compacting will be measured and paid for at the Contract unit price per square yard, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 201.
ITEM 224.12**CATCH BASIN**
12 INCH HOOD**EACH**
EACH

The work under this item shall conform to the relevant provisions of Section 201 of the Standard Specifications and the following:

GENERAL

Proposed catch basin with deep sumps (minimum depth of 4 feet) will be installed per the Standard Specifications for Highways and Bridges, the Construction Standard Details, the Contract drawings, and these Special Provisions.

MATERIALS

Material for this item shall conform to Section 201 and Construction Standard Details. All new structures shall be precast concrete.

Catch basin hoods shall be The Eliminator manufactured by Ground Water Rescue, Inc, BMP SNOUT manufactured by BMP Inc., PPF Catch Basin Hood manufactured by Plastic Pipe Fabrication, or approved equal.

CONSTRUCTION METHODS

The contractor shall excavate and install the catch basins, firmly bedded in crushed stone, in close conformity with the lines and grades of the location and as shown in the Drawings. Drainage piping shall be extended from the proposed structures as shown on plans. Pipe invert elevations shall be built for the drainage systems to operate with gravity flow. The work shall include all necessary cutting and removal of existing piping and structures. Piping shall be cut to provide a smooth uniform face flush with the inside wall surface.

METHOD OF MEASUREMENT

Catch basins and hoods will be measured for payment per each, regardless of depth, complete in place.

BASIS OF PAYMENT

Catch basins and hoods will 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. No separate payment will be made for sawcutting, excavation, dewatering, fittings, connection to existing pipes, crushed stone, replacing existing pipe damaged during construction, removal and disposal of existing pipe, or plugging abandoned pipe ends, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 222.3 FRAME AND GRATE (OR COVER)– MUNICIPAL STANDARD EACH

The work under this item shall conform to the relevant provisions of Section 220 of the Standard Specifications and the following:

All catch basin frames and grates shall be as manufactured by East Jordan Iron Works or approved equal.

Catch basin frames shall be 24" x 24" x 8" nominal size. Frame shall be three flange when adjacent to granite curb or granite inlet, and four flange in all other cases. Six-inch or four-inch versions may be substituted only when installation of the 8" frame is impractical and when approved by the Engineer.

All catch basin frames and grates shall conform to Town of Westford Department of Public Works standards and the detail included on the Drawings. Catch basin frames shall have a minimum weight of 265 pounds for 3-flange and 295 pounds for 4-flange. Catch basin grates shall be approximately 23-7/8 inches square, with a minimum weight of 190 pounds and have square openings of approximately 2-1/4 inches. The assembly shall be a non-locking type.

METHOD OF MEASUREMENT

Frame and grate – municipal standard will be measured for payment per each, complete in place.

BASIS OF PAYMENT

Frame and grate – municipal standard will 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 252.12**12 INCH CORRUGATED PLASTIC PIPE****FOOT**

Work performed under this item shall conform to the relevant provisions of Section 230 of the Standard Specifications and the following:

REFERENCES

- A. AASHTO M252 –Corrugated Polyethylene Drainage Pipe
- B. AASHTO M294 – Corrugated Polyethylene Pipe
- C. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- D. ASTM D2412 – Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- E. ASTM D3212 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- F. ASTM F1417 – Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air

SUBMITTALS

Submit specifications and shop drawings for materials and equipment furnished under this Section.

Prior to first shipment of pipe, submit certified test reports that the pipe for this Contract was manufactured and tested in accordance with the ASTM Standards specified herein.

QUALITY ASSURANCE

Corrugated plastic pipe and fittings shall be from a single manufacturer. Alternatively, the pipe manufacturer shall provide certification that the fittings are suitable for installation with the pipe.

Inspection of the pipe will also be made by the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the Specification requirements. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job site.

MATERIALS

- A. The polyethylene pipe and fittings shall comply with AASHTO M294, Type S (smooth wall interior).
- B. Piping shall be manufactured by Advanced Drainage Systems, Inc., or equal.
- C. Pipe material and fittings shall be high density polyethylene meeting ASTM D3350 minimum cell classification 324420C (4"-10") or 325420C (12"-60").
- D. Installation shall be in accordance with ASTM D2321.
- E. Pipe shall be joined with the bell-and-spigot joint. Gaskets and joint lubricant shall be utilized.
- F. Minimum parallel plate pipe stiffness shall be as recommended for each specified diameter pipe per ASTM Test Method D2412.
- G. The pipe and fittings shall be free of foreign inclusions and visible defects. The ends of the pipe shall be cut squarely and cleanly so as not to adversely effect joining.
- H. The nominal size of the pipe and fittings is based on the nominal inside diameter of the pipe. Corrugated fittings may be either molded or fabricated by the manufacturer. Fittings and gaskets

supplied by manufacturers other than the supplier of the pipe shall not be permitted without the approval of the Engineer.

Joints For Corrugated Piping

- A. Provides superior watertight performance.
- B. Meets ASTM D3212 requirements of 10.8 PSI for 10 minutes with no leakage.
- C. Shall be ADS, N-12 IB WT (watertight joint type) piping, or equal.

Manhole Boot Connection

- A. Watertight seal made with rubber manhole boot as manufactured by Press Seal, or equal.
- B. Alternatively, watertight seal made by Alok, or equal, in which case maximum insertion angle is 7 degrees.
- C. Watertight Seals for Corrugated HDPE Pipe - Shall be NPC Corrugated Pipe Adapter compatible with Kor-N-Seal manhole connector.

INSTALLATION

No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16 inch per foot of length. If a piece of pipe fails to meet this required check for straightness, it shall be rejected and removed from the site. Laying instructions of the manufacturer shall be explicitly followed.

Install piping and fittings true to alignment and grade. If necessary, each length of pipe shall be cleaned out before installation.

Excavation, trenching and back filling procedures shall be in accordance with Sections 120, 140, 150, 170, and 230.

All corrugated plastic pipe shall be installed on a 6-inch-deep bed of 3/4-inch crushed stone borrow meeting the requirements of Section M2.01.4. A 6-inch envelope of 3/4-inch crushed stone borrow shall also completely encase the pipe for the entire width of the trench. Bell holes shall be made in the crushed stone such that the pipe shall be uniformly supported over its entire length.

DEFLECTIONS IN PIPE ALIGNMENT

Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, to avoid obstructions or where long-radius curves are permitted, the amount of deflection allowed shall not exceed that required for satisfactory making of the joint, and shall be approved by the Engineer.

Prior to deflecting the pipeline, the spigot of the pipeline should be marked flush with the bell end to assure that the spigot is not withdrawn excessively as the result of the deflection. After the pipe is deflected, an adequate depth of jointing material must remain on the side where the spigot is away from home and an adequate width of caulking space must remain on the opposite side of the pipe at the face of the bell.

The maximum deflection recommended by the manufacturer when using any pipe system must be observed when deflecting a pipeline.

METHOD OF MEASUREMENT

Corrugated plastic pipe will be measured for payment per foot, complete in place. All measurements shall be taken in the horizontal plane.

BASIS OF PAYMENT

Corrugated plastic pipe will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for sawcutting, excavation, dewatering, fittings, connection to existing structures, crushed stone, replacing existing pipe damaged during construction, removal and disposal of existing pipe, or plugging abandoned pipe ends, but all costs in connection therewith shall be included in the Contract unit price bid.

<u>ITEM 302.08</u>	<u>8 INCH DUCTILE IRON WATER PIPE</u>	<u>FOOT</u>
	<u>(RUBBER GASKET)</u>	
<u>ITEM 309.</u>	<u>DUCTILE IRON FITTINGS FOR WATER PIPE</u>	<u>POUND</u>
<u>ITEM 350.081</u>	<u>8 INCH INSERTION GATE AND GATE BOX</u>	<u>EACH</u>
<u>ITEM 390.</u>	<u>WATER MAIN CULVERT CROSSING</u>	<u>LUMP SUM</u>

Work performed under these items shall conform to the relevant provisions of Section 300, the Westford Water District Specifications and the following:

MATERIALS

All materials shall be made in North America (USA, Canada, Mexico) unless otherwise specified.

All materials must be manufactured and supplied in accordance with applicable ANSI/AWWA standards latest revisions and must be American Made. All products that may have contact with drinking water must be certified to be in compliance with NSF/ANSI Standard 61(NSF 61) Annex G and must meet the weighted average lead content requirement and meet the new low lead requirements of the U.S. Safe Drinking Water Act. Note: NSF/ANSI Standard 61, Annex G (NSF 61- G) references NSF 372. Proof of certification must be furnished upon request.

Ductile Iron Pipe

Ductile iron pipe shall be designed in accordance with AWWA C150 and shall be manufactured in accordance with AWWA C151. Pipe shall be double cement-lined with seal coat inside and out, confirming to ANSI A21.4/AWWA C104.

Unless otherwise indicated or specified in the Contract Documents, buried ductile iron pipe and fittings shall be Class 52 with push on joints. All joints including push on joints shall be restrained.

Unless otherwise indicated or specified, buried pipe shall have an asphaltic exterior coating in accordance with AWWA C110, C151 or C153, as applicable.

Unless otherwise indicated or specified in the Contract Documents, buried fittings shall be ductile iron or gray iron with mechanical joints. Gaskets shall meet the material requirements of ANSI/AWWA C111 for mechanical joint gaskets.

All ductile iron pipe shall be manufactured in the United States.

All ductile iron pipe shall have a nominal length no less than 18 feet.

Pre-Insulated Pipe

All pre-insulated pipe, fittings, insulating materials, and technical support shall be provided by the Pre-insulated Piping System manufacturer.

The pre-fabricated, pre-insulated piping system shall be:

1. "Ferro-Therm DI", as manufactured by Thermacor Process, L.P.; 1670 Hicks Field Road East; Fort Worth, TX 76179-5248; (817) 847-7300;
2. "Insul-Tek Ductile Iron", as manufactured by Preinsulated Piping Systems, Inc.;
3. "Lo-Temp Hi-Gard" as manufactured by Perma-Pipe, Inc.
4. or equal.

Pipe shall be 8-inch diameter ductile iron, Class 52, meeting the requirements of this Section. Nominal lengths shall be either 18 feet or as required to span Culvert Crossing with a single piece of pipe.

Insulation shall be rigid, 90-95% closed cell polyurethane with a 2.0 to 3.0 pounds per cubic foot density per ASTM D1622 and ASTM D2856. The coefficient of thermal conductivity (K-Factor) of 0.14 to 0.16

BTU/hr. in/sf/oF @ 73oF per ASTM C518, and also conforming to ASTM C591. Maximum operating temperature shall not exceed 250°F. Insulation thickness shall be 2 inches minimum.

Jacketing Material

1. Outer casing jacketing material shall be high density polyethylene (HDPE). FRP, HDUP, and tape jacket will not be allowed.
2. The thickness of the HDPE jacket shall be per manufacturer's recommendations
3. Black HDPE resin Type III, Grade P34 under ASTM D1248
4. Tensile yield strength of 3,300 psi per ASTM D638
5. Ultimate elongation of 850% per ASTM D638
6. Tangent flexural modulus of 175,000 psi per ASTM D790

Moisture Barrier End Seals

1. A factory-applied mastic moisture barrier layer shall be sealed to the jacket and carrier pipe. The heat shrinkable end seal shall be as manufactured by Raychem, or equal.
2. End seals shall be certified as having passed 20 foot head pressure test.
3. End seals shall be mastic completely sealing the exposed end of the insulation.
4. Field applied end seals shall be installed at each field cut to the piping before continuing with the installation.

Straight Run Joints

1. To be mechanical-joint type straight field joints.
2. Joints may be jacketed with a split sleeve, sealed with a heat shrink sleeve to prevent the ingress of water or debris.

Fittings

1. Under all conditions, fittings shall be ductile iron mechanical-joint style fittings insulated with poured in place urethane foam insulation, sealed and jacketed with a HDPE jacketing in the same manner as used on the straight lengths of pipe.

Pipe Joints (All Joints Restrained)

Push-on-joints and mechanical joints shall conform to ANSI/AWWA C111/A21.11.

Provide restrained joints for all pipe connections. Gaskets shall meet the material requirements of ANSI/AWWA A21.11/C111 for mechanical joint gaskets.

Restrained joints for rubber-type push-on joint pipe shall be Megalug Series 1700 as manufactured by EBAA Iron, or approved equal.

Pipe Fittings

Fittings shall be ductile iron Class 350 Mechanical Joint, conforming to ANSI/AWWA C153/A21.53 and shall have a 350 psi pressure rating. Fittings shall be manufactured in the United States.

Couplings

Couplings are to be used in connecting two plain ends of cast, ductile iron, or asbestos cement pipe and shall be the stab type with compression ends, conforming to AWWA Standard C219.

Center sleeves shall be carbon steel tubing conforming to ANSI/AWWA C200.

Gaskets shall be multi-range two layered chloramine resistant EPDM gaskets, NSF-61 approved.

One or two type 304 stainless steel bolts and nuts conforming to AWWA C219 shall be provided with each coupling, depending on the size.

The interior and exterior surfaces shall be coated with an NSF-61 approved fusion bonded epoxy coating conforming to AWWA C213 section 4.5.

The coupling shall provide a minimum deflection of 8 degrees (4 degrees per end), and up to a working pressure of 250 psi with zero leakage.

Couplings shall be Hymax models 2000/2100, Romac Industries, Inc. Macro HP, Smith-Blair 421 Series or approved equal. Transition couplings for pipe less than or equal to 12 inches in diameter shall be Dresser Style 162, Rockwell Type 441, Smith Blair Omni Style 442, or approved equal.

Gaskets, Glands, Nuts, and Bolts

Gaskets, glands, nuts, bolts and accessories shall conform to ANSI/AWWA C111/A21.11 or C153/A21.53, as appropriate.

Gaskets shall be of plain tipped rubber, suitable for exposure to the liquid within the pipe.

Lubricants must be suitable for the type of fluid to be carried by the pipeline and shall be NSF approved for water service.

Glands shall be ductile or cast iron.

Bolts shall be high strength, low alloy.

Thrust Blocks/Anchor Blocks/Joint Restraints

Joint restraints shall be used at all bends, fittings, push on joints, hydrants, valves and piping as specified in the paragraphs mentioned below and in accordance with restraint as indicated on the Drawings. Where indicated on the Drawings, provide restrained joints suitable for a 350-psi working pressure. Gaskets shall meet the material requirements of ANSI/AWWA A21.11/C111 for mechanical joint gaskets

Mechanical joint retainer glands shall be installed on all mechanical joints, except where rodding is used. Retainer glands shall be specifically designed to fit standard mechanical joint bells with corrosion resistant, high strength, low-alloy T-head bolts conforming to ANSI/AWWA A21.11/C-111 and ANSI/AWWA A21.53/C-153. Retainer glands shall be manufactured of ductile iron conforming to ASTM A536-80 grade 60-42-10. Wedges shall be of hardened ductile iron and require the same torque in all sizes. These devices shall have a minimum 350 psi pressure rating with a minimum safety factor of 2:1 and shall be EBAA IRON, Inc., series 1100, or approved equal. Glands shall be listed with Underwriters Laboratories and/or approved by Factory Mutual.

Evidence of joint restraint materials shall be the manufacturer's certification or certified test results indicating conformance with the requirements of these Specifications.

Rods, clamps with washers, straps and other harnessing hardware shall be stainless steel type 304 or 316 and installed in accordance with the manufacturer's recommended installation procedures, as approved.

After each "locking" joint is assembled, the pipe shall be extended until the locking system "bottoms out" in order to avoid accumulated joint movement when the system is pressurized.

Retainer glands, such as Megalugs, shall be installed in accordance with the manufacturers' written instructions. All retainer glands shall be manufactured in the United States.

Thrust blocks and anchor blocks, shall be installed in addition to the above-mentioned joint restraints and shall be used at all hydrants and bends. Minimum bearing area of thrust blocks shall be as indicated on the drawings. Anchor block sizes shall be as shown on the Drawings. Felt roofing paper shall be placed to protect pipe joints. Concrete shall not be placed over bolts, nuts or to prevent the removal of joints.

Concrete for thrust blocks and anchor blocks shall have a minimum strength of 3,000 psi. All cement concrete must be from an approved ready-mix producer listed on the QCML. Transit mix concrete may be used subject to approval. Straps and anchors shall be cold-rolled steel, painted with bitumastic.

Test Connections

Install air release, test connections, and blow offs in the piping for pressure testing and disinfection at locations to be determined by the Contractor and approved by the Engineer.

Corporation cocks shall be in accordance with ANSI/AWWA C800 and shall be Open Left, ball style and have an operating nut 3/8 inches by 1-1/2 inches long (no square head type). Corporation stops shall be Forder Meter Box Company, Inc. FB1000 Ballcorp or approved equal.

Copper tubing shall be annealed Type K soft tubing and shall conform to the requirements of ASTM B88.

Upon completion of testing and disinfection, remove the corporation cock and replace with a brass plug and the copper tubing removed. Field swab the brass plug for disinfection in accordance with AWWA C651.

Damaged/Defective Pipe

Defective pipe or fittings will be rejected for use on this project. Defective pipe is classified as follows:

- Damage to interior lining
- Insufficient lining thickness
- Pipe out of round
- Damaged pipe barrel area
- Damaged pipe bells or spigots
- Missing, misplaced or illegible marking and identification
- Outside pipe diameter exceeding allowable tolerance

If defective pipe is discovered after it has been installed, it shall be removed and replaced with sound pipe, at no additional cost to the Owner.

Valves General

Valves, hydrants, and appurtenances shall have the name of the manufacturer, flow directional arrows, and the working pressure for which they are designed cast in raised letter upon some appropriate part of the body.

Valves for water distribution systems shall be certified to NSF 61 and NSF 372.

Provide buried valves with standard valve box with tee-handle operator.

All valves shall open left (counter clockwise).

Insertion Gate Valve

Insertion Gate Valves shall meet or exceed all pertinent requirements of ANSI/AWWA C515-15 gate valve standard. They shall be ANSI/NSF 61 & 372 certified for drinking water components.

Valves shall have an AWWA working pressure rating 4"-12" 350PSIG. After manufacture, each gate valve shall be subjected to operation and hydrostatic tests at the manufacturer's facility.

The valve body, bonnet, stuffing box and operating nut shall be made of ASTM A536 ductile iron. The body and bonnet shall adhere to the minimum wall thickness as set forth in AWWA C515-15 Table 3, section 4.4.1.2. Wall thicknesses that do not meet AWWA minimums are not acceptable.

Valve type shall be NRS (Non-Rising Stem) with the MJ x MJ (Mechanical Joint) end connection. The stem diameter and number of turns to open shall be as set forth in AWWA C515-15 Table 8, section 4.4.5.7.

6. Valve stems shall be made of bronze ASTM B98 alloy C66100 H02 bar stock material. The bronze stem collar is to be hot forge upset; collars not integral with the stem are not acceptable. The stem material shall provide a minimum 70,000psi tensile strength, yield strength of 38,000psi and 20% minimum elongation.

The insertion valve process shall remove a full section of pipe to allow for the valve gate to seat on the precision cast surface that is an integral part of the removable valve body. To assure for service with long-term capability of repeat watertight shutoff no recess/pocket is allowed in bottom of seat area to trap sediment or debris.

Valve stems shall have “anti-friction” thrust washers, one above and one below the stem thrust collar to reduce operating torque. Valve stem design shall be such that if excessive input torque is applied, stem failure shall occur above the stuffing box at such a point as to enable the operation of the valve with a pipe wrench or other readily available tool.

The NRS valves shall be provided with a 2” square operating nut or handwheel with the cast arrow showing operating direction. The bolt that attaches the operating nut to the stem shall be recessed into the operating nut so as not to interfere with valve wrench operation. Bolt (operating nut) shall be 316 stainless steel.

Valves shall have a stuffing box with bolts in line with flow and be O-ring sealed. Two O-rings shall be placed above and one O-ring below the stem thrust collar. The thrust collar shall be factory lubricated. The thrust collar and its lubrication shall be isolated by the O-rings from the waterway and from outside contamination providing permanent lubrication for long term ease of operation. Valves without a stuffing box are unacceptable. Valves without at least three stem O-rings are also unacceptable.

The valve disc and guide lugs shall be composed of ASTM A536 ductile iron and fully encapsulated in EPDM ASTM D2000 rubber.

Valves shall have all internal and external ferrous surfaces coated with a fusion bonded thermosetting powder epoxy coating of 10 mils nominal thickness. The coating shall conform to AWWA C550.

Valves shall have Type 316 stainless steel bolts and nuts for the stuffing box, bonnet, and body. Valves shall be cast, machined, assembled, and tested in the USA and be warranted by the manufacturer against defects in materials or workmanship for a period of ten (10) years from the date of manufacture. The manufacturing facility for the valves must have current ISO certification.

Insertion valves shall be Mueller Permaseal H-2361 Series.

Valve Boxes

Provide a valve box of the adjustable type of heavy pattern, constructed of cast iron and provided with a 6 inch cast iron cover for each buried valve.

Valve boxes shall be manufactured by Mueller Co., Bingham & Taylor, or approved equal.

Valve boxes shall be round, 2-piece, sliding type, cast iron. The upper section of each box shall have a flange on top having sufficient bearing area to prevent settling. The bottom of the lower section shall be belled to enclose the operating nut of the valve. The barrel shall be 5-1/2 inch O.D. minimum.

Boxes shall be of lengths consistent with pipe depths. Boxes shall be adjustable, with a lap of at least 6 inches when in the most extended position with an overall assembly height of 39-60 inches.

Slot covers for easy removal.

Covers for valve boxes on water mains shall have the word “WATER” cast in the top. Covers shall have a minimum skirt of 2 inches and a minimum weight of 14 pounds.

Coat valve boxes with coal-tar pitch enamel or other approved coating.

Valve boxes shall be suitable for the size valve on which they are used. The length of the lower section shall be adequate for trench adjustment, no top or mid-section adapters.

Gate valve boxes shall be manufactured in North America only. Gate box risers and extensions may be manufactured in North America or India.

CLEANING PIPE AND FITTINGS

Clean and remove foreign matter from the interior of each pipe and fitting before placing in the trench. Remove pipe and fittings whose interior has been contaminated with oil, gasoline or kerosene and replace at no additional cost to the Owner. Remove pipe and fittings whose interior has been contaminated with any material which is a regulated drinking water contaminate or which damages the cement and replace at no additional cost to the Owner. Should foreign material or contaminants be observed in previously installed pipe, cease work until foreign material or contaminated pipe is decontaminated or removed.

Remove all lumps, blisters, and excess asphaltic coating from the bell and spigot ends of each pipe or fitting. The outside of the spigot and the inside of the bell shall be wire-brushed and wiped clean and be dry and free from oil and grease before the pipe or fitting is laid.

On all ductile iron pipe or fittings, the bell of the pipe and the spigot of the adjacent pipe or fitting shall be wire-brushed and cleaned of rust and dirt. The bell of the pipe or fitting and the spigot of the adjacent pipe shall then be lubricated with the joint lubricant furnished with the pipe, and used in accordance with the manufacturer's directions.

INSTALLATION

Pipe Alignment

Lay and maintain the pipe at the required lines and grades as shown on the Drawings. Fittings shall be at the locations indicated on the Drawings with joints centered, and spigots properly fitted. No deviation shall be made from the line and grade indicated on the Drawings, except with the approval of the Engineer.

Joint Openings and Deflection:

The maximum allowable joint openings and deflection for push-on joint pipe and restrained joint pipe shall be one-half the manufacturer's maximum allowable opening and deflection.

Radius curves indicated on the Drawings or approved during Shop Drawing review shall be made using full lengths of pipe. The use of short lengths of pipe and extra joints in order to make a smaller radius turn will not be allowed without the written approval of the Engineer.

Line or Grade Conflicts with Other Structures:

Wherever obstructions not shown on the Drawings are encountered during the progress of the Work and interfere to such an extent that an alteration in the pipe layout is required, the Engineer will order a deviation from the line and grade at locations where obstructions such as culverts, ducts, wire and/or pipes are encountered. The pipe shall be laid over or under such obstacles with a minimum clearance of 6 inches. The Engineer reserves the right to make the decision to go over or under obstructions during construction.

Where underground conditions indicate a change of alignment or grade, such change shall be made only with the written consent of the Engineer.

Except at locations indicated on the Drawings by the profile, do not establish high points where air can accumulate.

Pipe Installation

Keep trenches dewatered while installing pipe until all required pipe joints have been made and the trench has been backfilled above the water table to a point where pipe uplift will not occur when the pipe is empty.

Carefully lower pipe and fittings into the trench piece by piece by means of a crane, ropes or other tools or equipment, in such a manner as to prevent damage to pipeline materials and protective coatings and linings. Under no circumstances shall pipeline materials be dropped or dumped into the trench.

Carefully inspect pipe and fittings for cleanliness and defects prior to placing them in the trench.

Install underground warning tape over the pipe.

Prevent foreign material from entering the pipe while it is being placed in the line. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe.

When laying pipe, the spigot end shall be centered in the bell, the pipe forced home and the joint completely assembled. The pipe shall be adjusted to correct line and grade and secured in place with approved backfill material, properly tamped under and around the pipeline.

Cutting Pipe

Furnish pipe in full lengths. Cut ductile iron pipe without damage to the pipe or cement lining. The cutting shall be done to leave a smooth end at right angles to the axis of the pipe.

Cut ductile iron pipe either by the use of compression-type chain cutters which exert an even continuous force on the wall of the pipe or by power driven abrasive wheels.

On ductile iron pipe using rubber joints, the outside edge of the cut end must be tapered back approximately ¼ inch at an angle of about 30 degrees so as to provide for the proper assembly of this joint.

Restrained Joints, Mechanical Joints, and Thrust Blocks

Thrust blocks and restraining joint assemblies shall be installed in conformance with Drawings and/or the manufacturer's specifications and Section 301.60 I of the Standard Specifications.

THERE IS NO SEPARATE PAY ITEM FOR THRUST BLOCKS, AND JOINT RESTRAINTS. THE COST OF MATERIALS AND THE INSTALLATION SHALL BE AT THE CONTRACTOR'S EXPENSE.

Minimum depth of cover over the top of the water pipe shall be five (5) feet unless otherwise directed by the Engineer. Maximum depth of cover to the top of the water pipe shall be six (6) feet unless otherwise directed by the engineer or as indicated on the Drawings.

Prevent foreign material from entering the pipe while it is being placed in the line. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe.

When laying pipe, the spigot end shall be centered in the bell, the pipe forced home and the joint completely assembled. The pipe shall be adjusted to correct line and grade and secured in place with approved backfill material, properly tamped under and around the pipeline.

When laying the pipe, remove and replace fittings that do not allow a sufficient and uniform space for joints at no additional cost to the Owner.

Furnish pipe in full lengths. Cut ductile iron pipe without damage to the pipe or cement lining. The cutting shall be done to leave a smooth end at right angles to the axis of the pipe.

Cut ductile iron pipe either by the use of compression-type chain cutters which exert an even continuous force on the wall of the pipe or by power driven abrasive wheels.

On ductile iron pipe using rubber joints, the outside edge of the cut end must be tapered back approximately ¼ inch at an angle of about 30 degrees so as to provide for the proper assembly of this joint.

Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, to avoid obstructions or where long-radius curves are permitted, the maximum amount of deflection allowed shall not exceed that of what is included in AWWA C600 and shall be approved by the Engineer.

Radius curves indicated on the Drawings or approved during Shop Drawing review shall be made using full lengths of pipe. The use of short lengths of pipe and extra joint in order to make a smaller radius turn will not be allowed without the written approval of the Engineer.

Push-on joints shall be made in accordance with the manufacturer's instructions. Install gaskets in the pipe bell after lowering the pipe into the trench for installation. Thoroughly clean the bell and spigot of dirt and tar blisters in the trench utilizing a wire brush or bristle brush. Insert rubber gasket in the groove of the bell end of the pipe beginning at the bottom of the bell and working to the top of the bell. Apply lubricant per the manufacturer's recommendations utilizing a paint brush to the pipe gasket and the pipe spigot to be joined. Place a clean rag under the joint to protect the joint from dirt caused by unintentional grounding of the pipe during jointing. Upon completion, remove the rags. Align the plain end of the pipe to be laid and insert in the bell of the pipe to which it is to be joined and push home with a jack or by other means. After joining the pipe use a metal feeler to make certain that the rubber gasket is correctly located.

Valve Installation

Refer to the Drawings and piping system specification Sections for specific valve applications and arrangements.

Locate valves for easy access and provide separate support where necessary.

Install valves and unions for each fixture and item of equipment arranged to allow equipment removal without system shutdown. Unions are not required on flanged devices.

Install valves in horizontal piping with stem at or above the center of the pipe.

Install valves in a position to allow full stem movement.

Install valves and actuators to be plumb in the vertical direction.

DEACTIVATION OF WATER MAINS

Excavate and remove sections of the existing water main as shown on the Drawings. Repairs and capping of the main shall be in accordance with the Drawings.

After the pipe has been capped, the top sections of all gate boxes shall be removed and stacked, the holes filled in with suitable backfill material and patched with bituminous concrete in the area of the gate box.

The deactivation of the water mains shall be done upon completion of:

Installation and successful testing of the new pipeline, including all hydrants and appurtenances, and Removal and reconnection of all building services from the existing pipelines to the new pipelines.

Surface repair methods shall meet the requirements of the applicable surface repair items.

DISINFECTION AND TESTING

General

The Contractor shall employ trained personnel aware of the need to carefully observe prescribed construction practices and disinfection procedures in order to prevent contamination to the distribution system.

The competent person(s) responsible for the disinfection processes and bacteriological sampling shall be familiar with AWWA C651- Standards for Disinfecting Water Mains and experienced with the Continuous Feed Method of disinfection. The Engineer shall approve disinfection procedures in advance.

Bacteriological sampling shall be made in full accordance with AWWA C651 and under the supervision of the Engineer.

An independent commercial laboratory certified for analyzing public drinking water supplies by the State Department of Environmental Protection and U.S. Environmental Protection Agency shall analyze all bacteriological samples and provide certified results to the Engineer and/or Owner for review prior to restoring or placing the system into service.

Water Main Pipe

Before being placed into service, all new water pipelines shall be chlorinated using the Continuous Feed Method specified in AWWA C651 – Section 4.4.3. The Engineer shall approve the procedure in advance.

The Contractor will determine the location of the chlorination and sampling points in the field. The Contractor shall install taps for chlorinating, sampling and expulsion of air and shall uncover, backfill and plug the taps as required.

Prior to disinfecting the water main, the main shall be completely filled to remove all air pockets and then flushed to remove particulate. The flushing velocity in the main shall not be less than 3.0 ft/s unless the Engineer and/or Owner determine that the conditions do not permit the required flow to be discharged to waste.

TABLE 1

Required Flow to Flush Pipelines (40 psi residual pressure in water main)*

Pipe Diameter (in)	Flow Required to Produce 2.5 ft/s (Approximate) Velocity in Main	Number of 2 ½ inch Hydrant Outlets
6	260 gpm	1
8	470 gpm	1
10	730 gpm	1
12	1,060 gpm	2
16	1,880 gpm	2

**AWWA C651, AWWA Standard for Disinfecting Water Mains*

At a point not more than 10 feet downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will not have less than 25 mg/L (PPM) free chlorine throughout the entire section of pipe to be chlorinated.

TABLE 2

Chlorine Required to Produce 25-mg/L Concentration in 100 Feet of Pipe – By Diameter*

Pipe Diameter (in)	100 % Chlorine (Pounds)	1% Chlorine Solution (Gals.)
6	0.030	0.36
8	0.054	0.65
10	0.085	1.02
12	0.120	1.44
16	0.217	2.60

**AWWA C651, AWWA Standard for Disinfecting Water Mains*

The chlorinated water is to remain in the new pipeline for at least 24-hours. After a contact time of 24-hours there should be a free chlorine concentration of not less than 10 mg/L (PPM). During this period, proper precautions are to be taken to prevent this chlorinated water from flowing back into the existing system.

All valves and hydrants within the treated section shall be operated to ensure disinfection of the appurtenances.

The Tablet Method consisting of placing calcium hypochlorite granules or tablets in the water main as it is being installed and then filling the main with potable water and allowing it to set for a contact period is not acceptable.

The interior of all pipe, fittings and valves used in making a repair or tie-in shall be swabbed or sprayed with a one percent (1%) hypochlorite solution before they are installed.

Final Flushing

Following the chlorination period, all treated water shall be flushed from the lines at their extremities and replaced with water from the distribution system.

Flushing the main is to be accomplished at as high a velocity as possible consistent with the ability of the Contractor to collect the discharge water for proper disposal.

All treated water flushed from the lines shall be disposed of by discharging to the nearest sanitary sewer or by other approved means provided in AWWA C651 and acceptable to the City.

Flushing shall be done in strict conformance with all applicable local, state and federal regulations. No discharge of chlorinated water to any storm sewer or natural watercourse will be allowed.

Bacteriological analyses

After the 24-hour disinfection period and all chlorine solution has been thoroughly flushed, the bacteriological sampling and analysis of the replacement water may then be performed.

Bacteriological sampling shall be made by the Contractor's competent person(s) in full accordance with AWWA C651- Section 5, *Bacteriological Tests* and under the supervision of the Engineer.

Analysis shall be performed by an independent commercial laboratory certified by the State Department of Environmental Protection and U.S. Environmental Protection Agency for analyzing public drinking water supplies. All results shall be provided to the Engineer for review.

Two consecutive sets of acceptable samples, taken at least 16-hours apart are required prior to placing the main into service. Samples shall be collected every 1,200 ft of the new water main, plus one set from the end of the line and at least one from each branch greater than one pipe length. Failure of any one of the bacteriological test samples shall require rechlorination and retesting by the Contractor.

The line shall not be placed in service until the bacteriological requirements of AWWA C651 are met.

Hydrostatic Testing

The Contractor shall complete interim pressure testing of the pipelines prior to tapping for services. The Contractor shall pressure test again up to the closed curb stops after installing services and prior to final acceptance. Both pressure tests are required to pass.

For water mains, the pressure test shall not be conducted until the new main has been flushed clean, disinfected and the chlorinated water properly disposed of. After acceptable completion of the water system disinfection, the Contractor may commence pressure testing of the new water main.

Run pressure test and leakage test simultaneously in accordance with ANSI/AWWA C600.

Test pressure shall be 200 psi for the first five minutes of the test followed by 150 psi for the next 2-hours. No leakage shall be allowed. Test pressure shall not exceed pipe or thrust-restraint design pressures.

The hydrostatic test shall be of at least 2-hour duration or until such time as the Engineer indicates acceptance of the pipeline.

Test pressure shall not vary during the duration of the test.

On pipelines where the elevation along the route of construction varies substantially, the Engineer reserves the right to valve off and test portions of the line.

On extensive construction jobs, the Engineer reserves the right to require the testing of individual portions of the line as construction proceeds rather than await completion of the entire project in order to undertake a pressure or leakage test.

Do not operate valves in either direction at differential pressure exceeding the rated valve working pressure. Use of a test pressure greater than the rated valve pressure can result in trapped test pressure between the gates of a double-disc gate valve. For tests at these pressures, the test setup should include a provision, independent of the valve, to reduce the line pressure to the rated valve pressure on completion of the test. The valve can then be opened enough to equalize the trapped pressure with the line pressure, or fully opened if desired.

Test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

If cast-in-place thrust blocks are installed, no pipeline is to be placed under pressure or subjected to hydrostatic pressure until at least 5 days have elapsed after the concrete thrust blocks have been installed. If high early strength concrete is used in the concrete thrust blocks, the hydrostatic pressure can be applied to the main after 2 days have elapsed from time of construction of the thrust blocks.

The Contractor will be allowed to complete backfilling as hereinbefore specified, prior to undertaking the leakage and pressure tests. Backfilling prior to conducting tests will be at the option of the Contractor with the exception of intersections, driveways, crosswalks and other such locations where holding open the trench may adversely affect the public.

Pipelines may be subjected to hydrostatic pressure and inspected for leakage at any convenient time after the trench has been partially backfilled. Partial backfilling shall consist of filling along the center of the pipe length and leaving the joint open for inspection.

The Contractor shall complete interim pressure testing of the pipelines prior to tapping for services. The Contractor shall pressure test again up to the closed curb stops after installing services and prior to final acceptance. Both pressure tests are required to pass.

Operation of Existing Water System

Do not operate any valve or other control device on the existing water system for any purpose. Do not make any tap or cut-ins to the existing water system without the approval of the Engineer and unless an authorized representative of the Owner is present.

When the Contractor's operations require the adjustment of any hydrant, valves, or other control device on the existing system, the Owner will provide authorized personnel for the purpose of supervising the operation of these control devices. Provide the personnel for the operation of these devices.

Preparation

Conduct connections to the existing system under the Engineer's direction.

To allow for proper filling, venting, testing, etc., install any corporation stops and/or special fittings which may be required. All such installation will be subject to the Engineer's approval.

Foreign materials left in pipelines during installation often results in valve or hydrant seat leakage during pressure tests. Thorough flushing is recommended prior to a pressure test by partially opening and closing

valves and hydrants several times under expected line pressure, with flow velocities adequate to flush foreign material out of the main, valves and hydrants.

Procedure

On completion of the pipeline or any valved section thereof, fill pipeline with water and test. Draw water from the existing water system under the direction of the Engineer and the Huntington Water Department.

The Contractor shall complete interim pressure testing of the pipelines prior to tapping for services. The Contractor shall pressure test again up to the curb stops after installing services and prior to final acceptance.

Before applying the specified test pressure, expel air completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high points, install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, close the corporation cocks and apply the test pressure. At the conclusion of the pressure test, either remove and plug or leave in place the corporation cocks at the discretion of the Owner.

Slowly fill each valved section of pipe with water, and apply the specified test pressure as described in this section by means of a pump connected to the pipe in a manner satisfactory to the Engineer. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. The system shall be stabilized at the test pressure before conducting the leakage test.

Examination Under Pressure

Examine exposed pipes, fittings, valves, hydrants, and joints carefully during the test.

Repair or replace any cracked or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure tests with sound material and repeat the test until it is satisfactory to the Engineer.

Leakage Test

Leakage is defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof to maintain pressure after the pipe has been filled with water and the air has been expelled. Testing shall include all hydrants, hydrant branches, and services to the curb stop. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

No pipe installation will be accepted if the leakage occurs.

When hydrants are in the test section, the test shall be made against the closed main valve in the hydrant.

Acceptance of Installation - If any test of laid pipe discloses leakage, locate and make approved repairs as necessary until there is no leakage, at no additional cost to the Owner.

Visible leaks are to be repaired, regardless of the amount of leakage.

METHOD OF MEASUREMENT

Ductile iron pipe will be measured for payment by the foot, the measurement will be taken along the axis of the pipe without deduction for the space occupied by valves and fittings, complete in place. Ductile iron pipe identified within the pay limits of the Water Main Culvert Crossing (Item 390.) will not be measured under Item 302.08. Only ductile iron water pipe beyond the pay limits of Item 390. will be measured for payment under Item 302.08.

Ductile iron fittings will be measured for payment by the pound, complete in place. Only ductile iron fittings, which are ordered by the Engineer and not indicated on the plans, or part of other work of this contract, will be paid for at the contract unit price per pound. The fittings (excluding accessories comprising of rings, gaskets, bolts, nuts, washers and clamps) will be measured by the pound and the quantity to be paid for shall be the weight stated on the invoice of the supplier or the manufacturer's rated weight as listed in the catalog, whichever is lesser. Fittings identified on the plans shall be included in the per foot cost of ductile iron pipe.

No Ductile Iron Fittings beyond those shown on the plans are anticipated in the prosecution of the work; however, this item is included in the Contract to establish a unit bid cost in the event that unanticipated fittings are required for a complete job. If no Ductile Iron Fittings are required in the prosecution of the work, the Contractor shall, in this case, have no redress against the Town for any loss in anticipated profit.

Gate valves and boxes will be measured for payment per each, complete in place.

Corporations and curb stops required for testing and disinfection of water mains will not be measured for payment under these items but shall be considered inclusive to ductile iron water mains.

BASIS OF PAYMENT

Ductile iron pipe will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for the following work, but all costs in connection therewith shall be included in the Contract unit price bid:

- Test connections, blow offs and air release valves shall be installed in the piping for pressure testing and disinfection at locations ordered by the Engineer
- Couplings, fittings, plugs, caps, thrust blocks and/or mechanical joint restraint identified on the plans
- Cutting of pipes, connection to existing pipes, all excavation, dewatering, pipe bedding, warning tape, backfill, common fill, testing, and disinfection and associated work
- Abandonment or of the existing water mains
- Flushing, chlorination, and all testing of water mains

Ductile iron fittings will be paid for at the Contract unit price per pound, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for thrust blocks and connection to existing pipes, but all costs in connection therewith shall be included in the Contract unit price bid.

No separate payment will be made for excavation, sand borrow, screened gravel and backfill, and warning tape, but all costs in connection therewith shall be included in the Contract unit price bid.

Gate valves and gate boxes will 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.

Water Main Culvert Crossing will be paid for at the Contract lump sum price, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work. All work to complete the water main crossing over the culvert within the "Pay Limits" identified on the drawings shall be included in the costs for Item 390.

ITEM 451.**HMA FOR PATCHING****TON**

The work under this item shall conform to the relevant provisions of Section 450 of the Standard Specifications and the following:

The work under this Item includes furnishing and placing Hot Mix Asphalt by hand to construct ramps and to protect the joints at cold planed areas, for trench surface repairs in paved areas, to fill potholes prior to paving and for patching. This work shall be done as directed by the Engineer. Hot mix asphalt used for trench repairs shall be placed at a depth as indicated on the contract Drawings.

The road only requires daily patching of the road when the road is open to traffic. Daily patching of the road will not be required if the road is closed and traffic is detoured.

The HMA for patching shall be maintained for a minimum of 60 days from the last excavation in the roadway. Final roadway repairs may not commence until the 60 day settlement period has completed.

METHOD OF MEASUREMENT

HMA for patching will be measured for payment per ton, complete in place. The tonnage of hot mix asphalt for trench patching shall not exceed the calculated tonnage based upon the following actual area of repair, thickness of the repair identified on the Drawings or as directed by the Engineer, and a density of 0.06 tons per square yard inch.

BASIS OF PAYMENT

HMA for patching will be paid for at the Contract unit price per ton, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

<u>ITEM 460.23</u>	<u>SUPERPAVE SURFACE COURSE – 12.5 (SSC – 12.5)</u>	<u>TON</u>
<u>ITEM 460.32</u>	<u>SUPERPAVE INTERMEDIATE COURSE – 19.0 (SIC – 19.0)</u>	<u>TON</u>
<u>ITEM 460.42</u>	<u>SUPERPAVE BASE COURSE – 37.5 (SBC – 37.5)</u>	<u>TON</u>

The work under this item shall conform to the relevant provisions of Section 460 – Hot Mix Asphalt Pavement for Local Streets of the Standard Specifications and the following:

The work to be done under Item 460. shall consist of furnishing, placing, and compacting HMA mixtures as shown in the design drawings for the proposed roadway reconstruction. Where directed by the Engineer, the work under this item shall also include placement of HMA for a shimming course to correct surface deficiencies prior to the placement of the top course. The tack coat application between courses will be at a rate of 0.07 gallons per square yard.

The top course of hot mix asphalt shall be paved such that there are no longitudinal joints within the limits of the travel lanes. All longitudinal joints shall be wedge joints.

Quality assurance requirements shall follow the Category E (Minor Lot) procedures.

When placing permanent HMA, in-place density shall be evaluated by comparing the in-place density to the theoretical maximum density (TMD). A nuclear density gauge may be used for spot checking density. Acceptance testing shall prove density of the HMA to be 95% +/- 2.5% of the TMD.

Material transfer vehicles will not be required for this project.

METHOD OF MEASUREMENT

Hot mix asphalt pavement will be measured by the ton, complete in place.

BASIS OF PAYMENT

Payment will be paid for at the Contract unit price per ton, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made milled transitions for surface course paving, sweeping of roadways, but all costs in connection therewith shall be included in the Contract unit price bid.

Tack coats between paving layers will be measured and paid for separately under Item 452.

ITEM 506.**GRANITE CURB TYPE VB - STRAIGHT****FOOT**

The work under this item shall conform to Section 500 of the Standard and Supplemental Specifications and the following:

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

New granite curbing will be measured for payment by the foot, complete in place. All granite curbing type VB, including straight, curved, and transition curb, will be measured under item 506.

Granite curbing will be paid at the contract unit price per foot, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for excavation, sawcutting, or cement concrete, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 697.1**SILT SACK****EACH**

Work under this item shall conform to the relevant provisions of Sections 227 and 670 of the Standard Specifications and the following:

The work under this item includes the furnishing, installation, maintenance and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

Silt sacks shall be installed in retained existing and proposed catch basins and drop inlets within the project limits and as required by the Engineer.

The silt sack shall be as manufactured to fit the opening of the drainage structure under regular flow conditions, and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as directed by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and disposed of accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Owner.

When emptying the silt sack, the contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

All debris accumulated in silt sacks shall be handled and disposed of as specified in Section 227 of the Standard Specifications

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Silt sacks will be measured and paid at the Contract unit price per each, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work. No separate payment will be made for removal and disposal of the sediment from the insert, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 698.3**GEOTEXTILE FABRIC FOR SEPARATION****SY**

This item shall conform to the requirements of M9.50.0 of the Standard Specifications and the following:

GENERAL

The purpose of this item is to provide a geotextile fabric for separation to wrap crushed stone.

MATERIALS

Materials shall meet the requirements specified in the Standard Specifications, Division 3, Materials, M9.50.0: Geotextile Fabrics, for Separation.

SUBMITTALS

Submit to the Engineer for review and approval:

1. Product samples and data for all geosynthetics proposed for use on this project.
2. Manufacturer-approved construction quality assurance/quality control manual for all of the geosynthetics proposed for use on this project.
3. Manufacturing quality control testing data specified. Submit certification of required performance testing on all geosynthetics by an independent laboratory and label and identify all geosynthetic products delivered to the site.

CONSTRUCTION METHODS

Inspect all products prior to the installation for any defects that may have been the result of storage and handling. The Engineer reserves the right to reject and require replacement of any damaged product, at no additional cost to the Owner.

Install geosynthetic products in accordance with the approved manufacturer's QA/QC manuals, project details, and pertinent sections of Standard Specifications and these Special Provisions.

METHOD OF MEASUREMENT

Geotextile fabric for separation will not be measured separately for payment. Instead, fabric shall be considered inclusive under separate pay items including walls, culvert, and stone products.

ITEM 721.**PRECAST CONCRETE WING WALLS****LUMP SUM**

This item shall conform to the requirements of Section 901 and Section M4 of the Standard Specifications and the following:

GENERAL

The work under this Item includes the design, purchase, fabrication, furnishing, and transportation of all materials and excavation for and construction of precast wing walls, in accordance with these specifications and in conformity with the lines and grades shown on the contract drawings and approved shop drawings, or as established by the Engineer.

This work does not include any items listed separately in the specifications. Payment for materials shown on the drawings as being part of this precast wing walls or which may be incidental to its construction and are not specifically included for payment under another item shall be considered incidental to the work performed under this Item and shall be included in the unit price.

No operation is to be started unless all materials and services needed for the work will be delivered in such an order that there will be no interruption to the continuous and efficient progress in the completion of the project.

The use of a geogrid system for lateral support of the wing walls shall not be used.

The Contractor shall submit design computations for the wing walls to the Engineer for review and approval. The computations shall be prepared in accordance with the latest AASHTO LRFD Bridge Design Specifications, the MassDOT Bridge Manual (Hundreth Anniversary Edition), and the Plans using English units. The design computations shall consider all Strength, Extreme Event and Service Limit States, including global stability computations as are appropriate for each stage of fabrication, shipment, construction, and for the final in-service condition. Hydraulic forces shall be considered in the design of the wing walls. Design computations and shop drawings shall be prepared and stamped by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts. The shop drawings shall be prepared and submitted in accordance with M4.09.2B.

SUBMITTALS

Contractor shall provide complete design drawings and calculations prepared, stamped and signed by a registered Professional Engineer in the Commonwealth of Massachusetts.

Drawings will be reviewed by the Engineer to confirm dimensional conformance and site-specific application suitability. The contractor is responsible for design and conformance with applicable standards for design and fabrication.

Shop drawings shall include:

1. Fully and accurately dimensioned views showing the geometry of the walls including all projections, recesses, notches, openings, blockouts, etc.
2. Details and bending schedules of steel reinforcing showing clearly the size, spacing and location including any special reinforcing required but not shown on the contract plans in the proposal. Reinforcing or ties provided under lifting devices shall be shown in detail.
3. Details and locations of all items to be embedded in the units such as inserts, lifting devices, etc.
4. Quantities for each unit (concrete volume, reinforcing steel weight and total weight of unit).
5. Description of method of curing, damp-proofing, handling, storing, transporting and erecting the units.

The block face rustication shall approximate a fractured exposed natural aggregate which creates a natural "rock-like" surface. Other face finishes will not be allowed without written approval of the Engineer.

Observation and Rejection: The quality of materials, process of manufacture and finished units shall be subject to

observation by the Engineer prior to shipment. Precast units may be subject to rejection on account of failure to conform to this specification. Individual units may be rejected because of any of the following:

1. Variations in the exposed face that substantially deviate from the approved architectural model as to color, texture, relief and reveals in accordance with industry standards.
2. Free from defects indicating honeycombed or open texture.
3. Defects which would affect the structural integrity of the unit including cracked or severely chipped blocks.
4. All units shall be handled, stored and shipped in such a manner as to eliminate the dangers of chipping, discoloration, cracks, fractures, an excessive shearing stresses. Blocks showing signs of chipping, cracking, fracturing and discoloration shall be rejected and removed from the project site. Block repair will not be allowed.

MATERIALS

Materials shall meet the requirements specified below and relevant Subsections of Division III, Materials Specifications of the MassDOT Standard Specifications for Highways and Bridges.

Materials shall conform to M4.09.1 and the following:

Non-Shrink Grout Products	M4.04.5
Welded Steel Wire Fabric	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Lifting Devices	PCI MNL-116

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for this Item shall be at the contract lump sum bid price for Item 721., Precast Concrete Wing Walls, which price shall include all materials, tools, equipment, installation, disposal, and labor incidental thereto that is required to complete the work in a satisfactory manner.

No separate payment will be made for excavation, wall design, backfill, leveling pad, crushed stone, geotextile fabric, drainage pipe, damp-proofing and wall sealant, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 755.46**WETLAND RESORATION****LUMP SUM**

The work under this item shall conform to the relevant provisions of Sections 120, 770, 771 of the Standard Specifications and the following:

Work under this item shall include furnishing material and the construction and maintenance of inland wetland replication areas as shown on the drawings and as required by the Engineer. Inland Wetland Replication Area shall hereafter be referred to as Replication Area. All work shall be in coordination with an approved Wetland Specialist as specified under that item.

The Replication Area shall be constructed prior to wetland impacts unless otherwise approved by the Engineer, specified herein, or specified in permit conditions and approvals. Construction schedule shall be appropriate to planting and seeding season (see below). Changes to this schedule will require written approval from the Engineer.

DESCRIPTION OF WORK

Construction of the Replication Area shall be completed as shown on the drawings.

Replication Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Massachusetts Wetlands Protection Act (MGL C. 131, s40), Section 401 Water Quality Certification, and Section 404, U.S. Army Corps of Engineers Permit.

The Contractor is responsible for protection and preservation of natural areas adjacent to the Replication Area both within and outside the project limits and for the duration of the Contract; including but not limited to damage to soils or vegetation due to erosion, sedimentation, compaction, trampling, vehicles, storage of materials, or other negligence shall be repaired to the satisfaction of the Engineer and at the Contractor's expense.

SUBMITTALS

Request for Conditional Acceptance: As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

SUBMITTALS - MATERIAL**Soil and Amendments**

No soil, compost, or other soil amendment imported to the work site shall contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants.

At least sixty (60) days prior to installation and prior to ordering, the Contractor shall submit for approval sources of soil, compost, and amendments. Submittal shall include the supplier and location of the source. Off-site sources shall be identified and available for inspection by the Wetland Specialist prior to transport of material to the site to verify that they are likely to be free of invasive plant species, including all viable plant parts.

Samples of tested and approved wetland soil and soil amendments for soil texture, organic carbon content or other routine soil analysis parameters (e.g., pH, Cation Exchange Capacity, Percent Base Saturation) and Soil Organic Matter Analysis will be required if requested by the Engineer. The grab samples shall be collected by the Contractor or Wetland Specialist from multiple representative locations in the wetland topsoil mix following the “Umass Soil and Plant Tissue Testing Laboratory Sampling and Collection Protocols” (or equivalent certification paperwork provided by the soil supplier). The lab analysis shall be provided to the Engineer along with written certification from the Contractor or Wetland Specialist that the wetland topsoil was collected per the referenced protocol and meets the desired specification. The analysis and written certification of same shall be provided to the Engineer prior to placing the wetland topsoil in the Replication Area.

Seed Mix

Certificate of Materials from the supplier shall be submitted 30 days prior to seeding and must be approved prior to ordering materials. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

Bill of lading or notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

Plant Certification

Plant Certification shall be per the applicable requirements of Subsection 771, PLANTING TREES, SHRUBS AND GROUND COVER, of the Standard Specifications. The nursery source shall certify the provenance or origin of all plants.

Wetland Soil

Soil appropriate for the Replication Area may be either hydric soil excavated from the impacted wetland, a manufactured mix of compost and on-site borrow, or a combination thereof, as approved by the Engineer.

Hydric soil from the impacted wetland area may be spread on the surface of the constructed Replication Area as an inoculant or can be placed in a bulk fashion in a roughly 1:1 ratio of area and depth. Soil shall be handled such that the original soil structure is preserved and shall not be compacted, screened, or otherwise processed.

Hydric soil from the impacted wetland that is infested with invasive plant species identified on the Massachusetts Invasive Plant Advisory Group (MIPAG) shall not be used in the Replication Area unless approved by the Wetland Specialist and Engineer. To the extent possible, infested soil shall be disposed of within the project limits in an upland area outside of regulated areas and as approved by the Invasive Plant Management Strategy item (if in the contract) or by the Engineer.

A manufactured mix suitable for wetlands shall consist of on-site borrow from the proposed Replication Area (if approved by the Wetland Specialist and Engineer) thoroughly mixed with compost to achieve a target organic carbon content of 10-12% (up to 21% percent organic matter) by dry weight. The organic material used for mixing shall be well or partially decomposed. Clean leaf compost is the preferred soil amendment to achieve these standards though other materials may be used if approved by the Wetland Specialist and Engineer. Note that “clean” refers both to a negligible amount (<1%) of physical contaminants such as plastic and to the lack of chemical contaminants that might pose a hazard to plants or animals. Off-site borrow may be used for mixing if approved in advance by the Engineer.

No soil or soil amendment shall be brought on site without approval of the material source by the Wetland Specialist and the Engineer. Soils used in the replacement area shall be free of rocks greater than 4 inches in diameter.

Plants

Plant material shall conform to the applicable requirements of Section 771, PLANTING TREES, SHRUBS AND GROUND COVER, of the latest edition of the Standard Specifications and as amended below.

Plants shall be native species, not cultivars. To the extent possible, plants shall originate from the applicable EPA Level III Ecoregion.

Plant species and sizes to be included in the Replication Area shall be as specified on the plans.

Water

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

Mulch/Compost Blanket for Seeding

Hydromulch shall be per the manufacturer's recommendations and shall be wood fiber or straw mulch only. Mulch shall be incidental to seeding.

Compost Blanket may be used in lieu of mulch for seeding. Compost Blanket shall meet the material and submittal requirements of that Item and shall be applied as specified below. Compost Blanket shall be compensated under that item.

CONSTRUCTION METHODS & SEQUENCE

SITE PROTECTION MEASURES

Minimizing Damage

The Contractor shall plan and execute operations in a manner minimizing the amount of excavated and exposed fill or other foreign materials that could be washed or otherwise carried into Replication Area and nearby resource areas.

Construction of and access to the Replication Area shall minimize damage to existing vegetation and soils as specified herein. Damage to soils or vegetation shall be repaired to the satisfaction of the Engineer and at the Contractor's expense. If required for soil remediation, tilling and the addition of compost shall be at the Contractor's expense.

Wetland topsoil shall be deposited and graded in the Replication Area in a manner that minimizes travel and subsequent compaction of the subgrade (including any specified pit and mound topography) to the extent practicable, including use of track mounted excavators as appropriate. Should soils be compacted, they shall be loosened by a method such as disking, spring-tooth harrowing and/or rototilling. The Contractor shall use boards, timber or composite mats, or other approved materials as necessary, to protect existing and/or new wetlands from compaction due to heavy foot traffic or if equipment is required to travel over wetland soil. All labor and materials required for protection and preservation of site shall be incidental to this item.

Excavation & Grading

Soil in the proposed wetland areas that must be removed for grades to conform to the proposed elevations shall be stripped and disposed of, or, if suitable for reuse, be stockpiled in an approved location. Stockpiled soils shall be kept wet and not allowed to dry out. Procedures for maintaining appropriate moisture levels shall be documented by the Wetland Specialist and provided to the Engineer and the Contractor.

Replication area shall be excavated as shown on the drawings. Where replication area is adjacent to existing reference wetland, finish grade of replication shall generally match existing grades and micro-topography, notwithstanding any deviations that are necessary to achieve the desired hydrology and habitat in the Replication Area.

Prior to placement of backfill, scarify subgrade to a depth of 4 to 6 inches.

Placement of Wetland Soil

Following excavation, scarification, and grading of sub-grade, and after the sub-grade elevations are approved by the Wetland Specialist, suitable soil previously removed or an evenly mixed organic/mineral soil created on-site shall be spread to the design depth and thickness over the proposed wetland areas as shown on the plans and as directed by the Wetland Specialist.

Vehicles used to transport soil from offsite shall be washed or cleaned with air pressure to prevent exotic or invasive seeds or root fragments from contaminating the Replication Area.

Final Grading

The finished grade of the Replication Area shall be at an elevation that will provide an unrestricted hydrologic connection between the Replication Area and adjacent resource areas. The hydrologic connection should be in keeping with restoring the intended function of the replacement wetland relative to the impacted reference wetland. The Contractor shall verify that this elevation is not at a level that could negatively alter the hydrology of an adjacent wetland. Microtopography in the form of hummocks, pits and mounds shall be as shown on the plans or as adjusted by the Wetland Specialist. Final elevations and grading of wetland soil shall be approved by the Wetland Specialist and the Engineer.

To avoid compaction once soil has been placed, no heavy equipment shall travel across placed soil and no work shall occur in wet or moist soil. Soil that is compacted due to construction activities shall be replaced with soil as specified herein and at the Contractor's expense.

Planting

Following placement of wetland soil and approval of final grade and conditions, Replication Area shall be planted. Planting shall conform to SECTION 771 PLANTING TREES, SHRUBS AND GROUNDCOVER of the Division I Standard Specifications and as amended below.

Planting Season shall be May 15-June 15 and September 1-November 1 unless otherwise specified in applicable permit conditions.

Prior to planting, the Wetland Specialist shall approve the condition of the plant material and the method of installation and shall oversee the planting work. Replication Area shall be planted in the dry. Plants shall be placed according to the planting details and within the range of target elevations and at the spacing shown on the Plans or, if spacing is not indicated on the Plans, at the direction of the Wetland Specialist. Unless otherwise noted on the Plans, final plant locations shall be determined on site and located with regard to expected hydrology, plant growth characteristics, habitat desired, and water protection.

Plant material shall be installed as soon as possible after delivery. Plants stored on-site prior to installation shall be stored in the shade and watered twice daily up until time of installation. Plants showing signs of stress or compromised health may be rejected by the Engineer or Wetland Specialist and shall be replaced at the Contractor's expense.

Plant material shall be furnished and installed as indicated including all labor, materials, plants, equipment, incidentals, re-setting of plants (frost heaves, etc), irrigation, re-planting and clean up. If previously approved species are not available at the time of planting, the Wetland Specialist may propose substitutions relative to species, size, and quantities for review and approval by the Engineer.

Seeding

Following placement of wetland soil and planting (if included), the Replication Area shall be seeded using one of the following methods:

- Broadcast by hand or with a hand-held spreader followed by application of straw mulch. If necessary, seed shall be lightly raked to insure good seed-to-soil contact.
- Hydro-seeded with hydro mulch per the Standard Specifications and per the manufacturer's directions.
- Hand broadcast seed with Compost Blanket pneumatically applied at the same time to ensure light cover of soil topdressing over seed.

If spring conditions are drier than usual, supplemental watering may be required. If sowing during the summer months, supplemental watering will likely be required until germination.

If required, seeding limits for different seed mixes shall be determined by the Wetland Specialist.

PLANT ESTABLISHMENT AND INVASIVE MANAGEMENT

Plants shall be watered as necessary to maintain healthy establishment. Plants that fail by September 1 after spring planting or by May 15 after fall planting shall be replaced within the immediate or next planting period and at the Contractor's expense.

Seeding that fails to established according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

Invasive Plants: Corrective measures shall be taken to remove or treat invasive plant species in the Replication Areas. Invasive plants shall include those listed as invasive by Massachusetts Invasive Plant Advisory Group (MIPAG) and the US Army Corp of Engineer's New England District's Compensatory Mitigation Guidance

CONDITIONAL ACCEPTANCE OF WORK

Conditional Acceptance shall indicate approval of the wetland construction work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist demonstrating that the wetland replication construction work was done according to plans (or how modified) and meets required permit conditions.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Replication Area and surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The final finished target elevations have been met and maintained relative to the approved plans and reference wetland. Areas that are too high or too low should be identified along with suggested corrective measures.
- Hydrology meets performance standards.
- Specified seed mix has been seeded. If inspected 30 or more days after seeding, seeded species in the wetland and adjacent upland shall show signs of good germination and healthy growth.
- Planted woody and herbaceous species meet specifications and are establishing well.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- There are no invasive plants visible in the replication area.

Upon approval that the work meets the above conditions, The Engineer will issue a letter of Conditional Acceptance. If the Wetland Replication work is not approved, the Engineer will issue a rejection letter requiring corrective actions. The Wetland Specialist shall recommend corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Contractor, Wetland Specialist and regulatory representative (if required) shall assess the Replication Area. Final Acceptance will initiate the start of the Wetland Monitoring Period.

The following conditions shall be inspected and approved for acceptance and payment.

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover at least 95 percent of the Replication Area, excluding areas of open water areas or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

If the mitigation work does not meet the above condition and is not approved, the Engineer will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions. Work not approved will be addressed by the Contractor at no extra cost.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 755.46 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, equipment, submittals, maintenance, 2-year warranty, all required soil, site preparation, grading, wetland seeding, planting, mulching, watering, wetlands specialist, Request for Certificate of Compliance, and all incidental costs necessary to complete the work as required. Payment for Item 755.46 will be paid in full upon Conditional Acceptance.

ITEM 767.121**SEDIMENT CONTROL BARRIER****FT**

This item shall conform to the requirements of Section 751 and 767 of the Standard Specifications and the following:

GENERAL

The purpose of this item is to provide a linear, compost-filled barrier for filtering suspended sediments from storm water flow.

MATERIALS

Material for the sediment control barrier shall be compost meeting M1.06.0, except that no manure or bio-solids shall be used. In addition, no kiln-dried wood or construction debris shall be allowed. Compost shall pass through a 3-inch sieve.

Sediment barriers shall be a minimum of 12 inches and maximum of 18 inches in diameter and shall be jute mesh or approved biodegradable material.

Stakes for anchors, if required, shall be nominal two-inch x two-inch stakes.

CONSTRUCTION METHODS

Tubes of compost may be filled on site or shipped. Tubes shall be placed, filled and staked in place as required to ensure stability against water flows. Stakes shall not be used to puncture tubes, except as stated in detail drawings. Stakes are to be placed on the downhill side of tubes to provide additional support. All tubes shall be tamped to ensure good contact with soil.

The Contractor shall ensure that the filter tubes function as intended at all times. Tubes shall be inspected after each rainfall and at least daily during prolonged rainfall. The Contractor shall immediately correct all deficiencies, including, but not limited to, washout, overtopping, clogging due to sediment, and erosion. The Contractor shall review location of tubes in areas where construction activity causes drainage runoff to ensure that the tubes are properly located for effectiveness. Where deficiencies exist, such as overtopping or wash-out, additional staking or compost material shall be installed as directed by the Department. Contractor shall remove sediment deposits as necessary to maintain the filters in working condition.

Filter tubes shall be removed by the Contractor when site conditions are sufficiently stable to prevent surface erosion, and after receiving permission to do so from the Department. All tube fabric shall be cut and removed and disposed of off-site by the Contractor. At the direction of the Department, the Contractor may rake out and seed mulch material so that it is no greater than two inches in depth on soil substrate.

METHOD OF MEASUREMENT

Sediment control barriers will be measured for payment by the foot of barrier installed, complete in place. Measurements are assumed to be taken in a horizontal plane.

BASIS OF PAYMENT

Payment for Item 767.121, Sediment Control Barriers, will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment, and incidental costs required to complete the work. No separate payment will be made for maintenance or replacement of barriers, removal and disposal of fabric and stakes, or raking and seeding of compost, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 767.9**MATting FOR EROSION CONTROL****SQUARE YARD**

Work to be done under this item shall conform to the relevant provisions of Section 700 and the following:

Materials:

Temporary 100% Degradable matting for erosion control shall be:

1. "C125 BN" as manufactured by North American Green
2. "ECS-2B" as manufactured by East Coast Erosion Control
3. "EXCEL SS-2" as manufactured by GeoSolutions, Inc.
4. Approved equal

Temporary, degradable matting for erosion control shall be composed of a core coconut fiber or straw and two external confining meshes of non-degradable material. The minimum manufacturer's suggested design life shall be 12 months.

INSTALLATION

Install matting in accordance with the approved manufacturer's recommendations and project details.

Matting for erosion control shall be installed at locations as directed by the Engineer.

METHOD OF MEASUREMENT

Matting for erosion control will be measured for payment by the square yard, complete in place.

BASIS OF PAYMENT

Matting for erosion control will be paid for at the Contract unit price per square yard, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 768.**COIR LOG****FOOT**

Coir fiber is made from pure coir drawn from the husk of the coconut, a 100% natural product. Coir fiber logs are machine fabricated cylindrical shaped rolls made with a knotted outer netting of machine spun coir twine.

MATERIALS

Log dimension are 12 inch in diameter and 10 feet in length. The coir log is to be packed to a density of no less than 7 lbs/cubic-foot.

Provide with pre-drilled holes for tubeling or plug plantings, or logs may be hand drilled by the contractor. Equal to:

1. North American Green Coir Logs: Product 12CN7
2. RoLanka International, Inc. BioD-Roll 30L
3. Nedia Enterprises, Inc. 12" KoirLog (ND Series)
4. Or approved equal

INSTALLATION

Install along stream banks as indicated on the Bank Stabilization detail and in accordance with manufacturer recommendations. Prepare the subgrade prior to coir log installation. All surfaces must be smooth, free of all foreign and organic material, sharp objects, or debris of any kind. The subgrade must provide a firm, unyielding foundation with no sharp changes or abrupt breaks in grade. Standing water or excessive moisture prior to installation is not allowed. Seed the subgrade area around the logs, hydroseed over the logs, and plant native plug plantings in logs. Consult local nurseries or arborist for appropriate plug plantings based on the zone, sun exposure, soil conditions, and time of year planting is to occur.

METHOD OF MEASUREMENT

Coir logs will be measured for payment by the foot, complete in place.

BASIS OF PAYMENT

Coir logs will be paid for at the Contract unit price per foot, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for maintenance plantings in the coir logs, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 850. TRAFFIC CONTROLS FOR CONSTRUCTION OPERATIONS LUMP SUM

Work under this item shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

GENERAL

The intent of work performed under this item is to ensure public safety and convenience for the duration of the Work. Nothing contained herein shall be construed as relieving the Contractor of any of his responsibilities for protection of persons and property under the terms of the Contract.

Portable changeable message signs must be in place 2 weeks prior to the start of construction.

TEMPORARY TRAFFIC CONTROL DEVICES

All devices used for temporary traffic control shall be in accordance with the latest Massachusetts Department of Transportation, Federal Highway Administration, and MUTCD standards and be deployed in accordance with the Temporary Traffic Control Plan included with the Drawings.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for this Item shall be at the contract lump sum bid price for Item 850., Traffic Controls for Construction Operations, which price shall include all materials, tools, equipment, setup, removal, and labor incidental thereto that is required to complete the work in a satisfactory manner.

This item will be paid in two parts, 50% payment after the initial traffic control devices have been installed and 50% payment after all work has been completed and the traffic control devices have been removed.

No separate payment will be made for furnishing, placement, relocation, or removal, signage, barricades, barrels, cones, temporary barrier, or any other apparatus or person used for traffic control, but all costs in connection therewith shall be included in the Contract unit bid price.

The Contractor shall provide traffic controls for construction operations in accordance with Section 850, the Division 1 Section, and the details included on the drawings. Payment for that work is included in the lump sum Item 850.

The Contractor will be reimbursed for traffic police required by the Police Department under Item 999.1. and safety signing under Item 852. Portable changeable message signs will be paid for separately under Item 856.12. All other traffic control devices shall be incidental to the project costs.

ITEM 874.2**TRAFFIC SIGN REMOVED AND RESET****EACH**

The work under this item shall conform to the relevant provisions of Sections 828 and 840 of the Standard Specifications and the following:

The work shall include the careful removal and resetting of signs, attached hardware and supports from locations shown on the plans and as directed by the Town. The Contractor shall coordinate the removal of signs with the Town. Any sign damaged or lost either directly or indirectly as a result of the Contractor's operations shall be replaced by the Contractor at his own expense.

Signs removed shall be reset at specified locations on the Drawings and as directed by the Town.

METHOD OF MEASUREMENT

Sign removed and reset will be measured for payment by each, complete in place.

BASIS OF PAYMENT

Sign removed and reset will 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. No separate payment will be made for sign mounting hardware or any components of the sign or support damaged by the Contractor's operations, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 983.4**STREAMBED MATERIAL****CY**

Work under this item shall conform to the relevant provisions of Section 983 of the Standard Specifications and the following:

GENERAL

This work shall consist of excavating existing channel bottom material in areas where the channel bottom is to be disturbed and regraded to create a work area for the culvert, riprap placement and cofferdam installation. This item shall also include the stockpiling and protecting of the excavated material on the Site, subsequent placement of the stockpiled material in the channel, providing supplemental material as needed, and the removal and proper disposal of all unused and unacceptable material.

MATERIALS

The material for this item shall consist of the existing naturally-formed rocks, cobbles, gravel, soils and clean natural sediments from within the channel (streambed material). Streambed material shall match the gradation and material properties of the in-situ material located within the banks of Reed Brook. Existing streambed materials may be stockpiled and re-used for the final channel surface. Streambed material shall be placed in the locations shown and as detailed on the drawings; generally, inside the box culvert to form the final channel.

If supplemental streambed material is required to complete the work, the gradation of the existing material will be used to determine the suitability of the supplemental material, at the discretion of the Engineer.

Any material excavated from ledge (bedrock) formations or broken from larger boulders will not be accepted. Broken concrete will not be accepted.

SUBMITTALS

Obtain a sample of the existing streambed material and submit the lab tested gradation to the Engineer, prior to culvert construction. Submit to the Engineer the material specification, along with the gradation, of any proposed supplemental material for review and approval.

CONSTRUCTION METHODS

The Contractor shall submit for the Engineer's approval a proposed location for stockpiling material. The proposed location shall be upland where disruption to the stream channel or impact to wetland areas caused by moving the excavated channel bottom material to and from the stockpile are minimized during the placement of material. The Contractor shall prepare the area approved by the Engineer, suitable in size and location for stockpiling the existing channel bottom material.

The stockpile shall be located where it can remain undisturbed for the duration of the stream channel construction and shall be protected using sedimentation control measures. The stockpile area shall be cleared and cleaned adequately to prevent mixing with underlying soil or other materials, including the use of a separation barrier such as: structural fabric, polyethylene sheeting, or similar. The stockpile area shall be adequately covered to protect the excavated channel bottom material from erosion by rain or other forces.

After clearing and grubbing, the Contractor will identify the limits of the exposed channel bottom material to be excavated under this item. The Contractor will identify the bottom limit of excavation, an amount up to but not exceeding 24 inches in depth, based upon visual inspection of the channel bottom material, unless

otherwise specified in the Contract. After the limits of excavation have been determined and reviewed by the Engineer, the Contractor shall excavate the channel bottom material, separate from any other roadway, structure, channel or unsuitable material excavation in the area. After the channel bottom material, and approved supplemental streambed channel material if needed, has been placed in the stockpile area, no other excavated or off-Site material shall be placed in the stockpile.

The stockpiled channel bottom material shall be placed at the designated location(s) to the required thickness as shown on the plans, denoted on the permit application, or as directed by the Engineer. Equipment and placement techniques shall prevent integration with the surrounding material and shall keep the channel bottom material relatively homogenous. Channel material shall be placed in a manner that replicates the original condition of the channel prior to excavation.

The Contractor shall perform all containment, diversion, or other separation of the channel flow when placing the channel bottom material to minimize sediment transport downstream.

If the Engineer determines additional material is required to complete the work, the Contractor shall provide supplemental Natural Streambed Material in compliance with the sieve analysis performed on the existing streambed materials, as identified in this Special Provision.

METHOD OF MEASUREMENT

Streambed material will be measured for payment by the cubic yard of streambed material installed, complete in place.

The Engineer will delineate the horizontal pay limit prior to the start of excavation. The vertical pay limit will be measured from the top of the existing channel bottom to the bottom of excavation required specifically for the stockpiling of channel bottom material.

Any material excavated beyond the approved horizontal pay limits or deeper than the depth of channel bottom material identified and approved by the Engineer will not be measured for payment under this item.

BASIS OF PAYMENT

Payment for Item 983.4, Streambed Material, will be paid for at the Contract unit price per cubic yard, which price shall include all labor, materials, equipment, installation, testing, and incidental costs required to complete the work.

No additional compensation will be made for preparation of the stockpile area, excavation of channel bottom, hauling of materials, cleaning, sorting, proper disposal of unsuitable materials, supplementing with approved material, and protecting adjacent work (including but not limited to sedimentation controls and covering of excavated material).

This item shall also include the stockpiling and protection of the excavated material on the Site, subsequent placement of the suitable stockpiled material in the channel, and the removal and proper disposal of all unused and unsuitable material. Material may be deemed unsuitable by the Engineer or the Owner after observing the material in the stockpile.

ITEM 991.1**CONTROL OF WATER - STRUCTURE NO. 1****LUMP SUM**

The work under this item shall conform to the relevant provisions of Section 991.1, Control of Water, of the Standard Specifications and the following:

The Contractor is responsible for the design of the dewatering system. Prior to fabrication and installation of the dewatering system, the Contractor shall submit shop drawings to the Engineer for approval for all stages of construction for review and concurrence or any noted exceptions. The submittal shall be designed, stamped, and signed by a professional engineer licensed in the Commonwealth of Massachusetts.

GENERAL

Design, furnish, install, operate, monitor, maintain and remove a temporary dewatering system as required to lower and control water levels at least 2-ft below subgrades of excavations and to permit construction to proceed in-the-dry. Where the phrase “in-the-dry” is used in this Section, it shall be defined as an excavation subgrade where the groundwater level has been lowered to at least 2-ft below the lowest level of the excavation, is stable with no ponded water or mud, is able to support construction equipment and is suitable for the placement of backfill material and concrete foundations.

Furnish, maintain, and remove temporary surface water control measures adequate to drain and remove surface water entering excavations.

Retain the services of a professional engineer registered in the State of Massachusetts to prepare dewatering and drainage system designs.

Work shall include the design, equipment, materials, installation, protection, and monitoring of geotechnical instrumentation required to monitor the performance of the dewatering and drainage system as required herein.

Collect and properly dispose of all discharge water from the dewatering and drainage systems in accordance with the requirements specified herein and all Federal, State, and local requirements and permits. Water from dewatering systems may be discharged into uplands.

Obtain and pay for all permits required for dewatering and drainage systems. Repair damage caused by dewatering and drainage system operations.

DESIGN CRITERIA

The Contractor is responsible for the proper design and implementation of methods for controlling surface water and groundwater.

The primary purpose of the groundwater control system is to preserve the natural undisturbed condition of the subgrade soils in the areas of the proposed excavations. Prior to excavation, the Contractor shall lower the groundwater to at least 2-ft below the lowest excavation subgrade elevation. Additional groundwater lowering may be necessary beyond the 2-ft requirement, depending on construction methods and equipment used and the prevailing groundwater and soil conditions. The Contractor is responsible for lowering the groundwater as necessary to complete construction in accordance with the plans and specifications at no additional cost to the Owner.

Design deep wells, well points and sumps, and all other groundwater control system components to prevent loss of fines from surrounding soils. Sand filters shall be used with all dewatering installations unless screens are properly sized by the Contractor’s design engineer to prevent passage of fines from surrounding soils.

The Contractor shall be responsible for damage to properties, buildings or structures, utilities, pavements and work that may result from dewatering or surface water control operations.

Design review and field monitoring activities by the Owner or by the Engineer shall not relieve the Contractor of his/her responsibilities for the work.

As necessary, provide backup power generation and groundwater control system components and devise emergency procedures for maintaining continuous, uninterrupted surface water control and groundwater control operations.

The Contractor shall be responsible for meeting all permit conditions.

SUBMITTALS

Dewatering and drainage system designs shall be prepared by a Massachusetts licensed professional engineer retained by the Contractor. The Contractor shall submit qualifications as required herein.

The Contractor shall submit a dewatering and drainage system design plan. The plan shall include a description of the proposed dewatering system and include the proposed installation methods to be used for dewatering and drainage system elements and for observation wells. The plan shall include equipment, drilling methods, holes sizes, filter sand placement techniques, sealing materials, development techniques, the number and location of dewatering points and observations wells, etc. Include the dewatering system design calculations and layout of the system in the plan.

The plan shall identify the anticipated area influenced by the dewatering system and address impacts to adjacent existing and proposed structures.

Coordinate dewatering and drainage submittals with the Excavation and Support of Excavation submittals. The submittal shall show the areas and depths of excavation to be dewatered.

Do not proceed with any excavation or dewatering activities until the dewatering submittals has been approved by the Engineer and monitoring wells have been installed.

QUALITY ASSURANCE

GENERAL

Perform all work in accordance with current applicable regulations and codes of all Federal, State, and local agencies.

The Contractor should have completed at least five (5) projects of similar size and complexity in this type of installation in the last 5 years. Equipment operators for this project shall be fully trained and experienced with the operations of the equipment to be used for this project.

The dewatering system designer shall be a Registered Professional Engineer in the State of Massachusetts with at least 5 years professional experience in the design and installation of dewatering systems and shall have completed not less than 5 successful dewatering projects of equal type, size, and complexity to that require for the work.

MATERIALS

MATERIALS

Piping, strawbales silt fence, pumping equipment and all other materials required to provide control of surface water and groundwater in excavations shall be suitable for the intended purpose.

Silt filter bags (Dandy Dewatering Bag, Dirtbag, JMP Environ-Protection Filter Bag, or equal) of adequate size to match flowrate.

Standby pumping systems and a source of standby power shall be maintained at all sites.

EXECUTION

GENERAL

Methods of groundwater control may include but are not limited to properly filtered sumps, perimeter groundwater cutoff, well points, ejectors, deep wells, and combinations thereof.

Where groundwater levels are above the proposed bottom of excavation level, a pumped dewatering system will be required for pre-drainage of the soils prior to excavation, and for maintaining the lowered groundwater level until construction has been completed to such an extent that the structures or fill will not be floated or otherwise damaged.

Provide, operate, and maintain adequate pumping, diversion, and drainage facilities in accordance with the approved dewatering plan to maintain the excavated area sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures nor cause excessive disturbance of underlying natural ground. Locate dewatering system components so that they do not interfere with construction under this or other contracts.

Conduct operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work.

Take actions necessary to ensure that dewatering discharges comply with permits applicable to the Project. Dispose of water from the trenches and excavations in such a manner as to avoid public nuisance, injury to public health or the environment, damage to public or private property, or damage to the work completed or in progress.

Repair any damage resulting from the failure of the dewatering operations and any damage resulting from the failure to maintain all the areas of work in a suitable dry condition.

Exercise care to ensure that water does not collect in the bell or collar holes to sufficient depth to wet the bell or collar of pipes waiting to be jointed.

Take precautions to protect new work from flooding during storms or from other causes. Control the grading in the areas surrounding all excavations so that the surface of the ground will be properly sloped to prevent water from running into the excavated area. Where required, provide temporary ditches for drainage. Upon completion of the work, all areas shall be restored to original condition.

Brace or otherwise protect pipelines and structures not stable against uplift during construction.

Do not excavate until the dewatering system is operational and the excavation may proceed without disturbance to the final subgrade.

Unless otherwise specified, continue dewatering uninterrupted until the structures, pipes, and appurtenances to be installed have been completed such that they will not float or be otherwise damaged by an increase in groundwater elevation.

Temporarily lower the groundwater level at least two feet below excavations to limit potential “boils,” loss of fines, or softening of the ground. If any of these conditions are observed, submit a modified dewatering plan to the Engineer within 48 hours. Implement the approved modified plan and repair any damage incurred.

Notify the Engineer immediately if any settlement or movement is detected of survey points adjacent to excavations being dewatered. If settlement is deemed by the Engineer to be related to the dewatering, submit a modified dewatering plan to the Engineer within 24 hours. Implement the approved modified plan and repair any damage incurred to the adjacent structure at no cost to the Owner.

It is expected that the type of system, spacing of dewatering units and other details of the work will have to be varied depending on soil/water conditions at a particular location.

All work included in this Section shall be done in a manner which will protect adjacent structures and utilities and shall not cause loss of ground or disturbance to the structures or utility bearing soil. The impact of anticipated subsurface soil/water conditions shall be considered when selecting methods of excavation and dewatering and drainagesystems.

Install, monitor, and report data from observation wells. Evaluate the collected data relative to groundwater control system performance and modify systems as necessary to dewater the site in accordance with the Contract requirements.

Locate groundwater control system components where they will not interfere with construction activities adjacent to the work area. Excavations for sumps or drainage ditches shall not be made within or below 1H:1V slopes extending downward and out from the edges of existing or proposed foundation elements or from the downward vertical footprint of the pipe.

SURFACE WATER CONTROL

Construct surface water control measures, including dikes, ditches, sumps, and other methods to prevent, as necessary, flow of surface water into excavations and to allow construction to proceed without delay.

EXCAVATION DEWATERING

At all times during construction, provide and maintain proper equipment and facilities to promptly remove and properly dispose of all water entering excavations. Excavations shall be maintained in-the-dry. Groundwater levels shall be kept at least 2-ft below the lowest excavation level.

Excavation dewatering shall maintain the subgrade in a natural undisturbed condition and until the fill and proposed structures have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

Masonry and concrete shall not be placed in water or be submerged within 24 hours after being installed. Water shall not flow over new masonry or concrete within four days after placement.

In no event shall water rise to cause unbalanced pressure on structures until the concrete or mortar has set at least 24 hours. Prevent flotation of pipes by promptly placing backfill.

Dewatering shall at all times be conducted in such a manner as to preserve the natural undisturbed condition of the subgrade soils at the proposed bottom of excavation.

If the subgrade of the trench or excavation bottom becomes disturbed due to inadequate dewatering or drainage, excavate below normal grade as directed by the Engineer and refill with structural fill, screened gravel or other material as approved by the Engineer at the Contractor’s expense.

Evaluate the impact of the anticipated subsurface soil/water conditions on the proposed method of excavation and removal of water. It is expected that the initial dewatering plan may have to be modified to suit the variable soil/water conditions to be encountered during construction. Dewater and excavate, at all times, in a manner which does not cause loss of ground or disturbance to pipes or proposed structures bearing soil or soil which supports overlying or adjacent structures or instability of the excavation.

If the method of dewatering does not properly dewater the excavation as specified, install additional groundwater observation wells as directed by the Engineer and do not place any pipe or structure until the readings obtained from the observation wells indicate that the groundwater has been lowered a minimum of 2-ft below the bottom of the final excavation within the excavation limits.

Dewatering units used in the work shall be surrounded by suitable filter sand and no fines shall be removed by pumping. Pumping from the dewatering system shall be continuous until pipe or structures are adequately backfilled. Stand-by pumps shall be provided.

Water entering the excavation from precipitation or surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to a sump and pumped from the excavation to maintain a bottom free from standing water.

Drainage shall be disposed of in an area approved by the Engineer. Existing or new sanitary sewers shall not be used to dispose of drainage.

WELLPOINT SYSTEMS

Where necessary, install a vacuum well point system around the excavation to dewater the excavation. Each well point and riser pipe shall be surrounded by a sand filter. Sand shall be of such a gradation that, after initial development of the well points, the quantity and size of soil particles discharged shall be negligible. Well point systems shall be capable of operating continuously under the highest possible vacuum.

Installation of well point systems shall be in accordance with the approved submittal in the presence of the Engineer.

DEEP WELLS

Where necessary, install a deep well system around the excavation to dewater or depressurize the excavation. Each well shall be surrounded by a sand or gravel filter with adequate gradation such that after development, the quantity and size of soil particles discharged are negligible. Sufficient number of wells shall be installed to lower or depressurize the groundwater level to allow excavation to proceed in-the-dry.

Installation of deep well shall be in accordance with the approved submittal in the presence of the Engineer.

OBSERVATION WELLS

Install observation wells as required to monitor groundwater levels beneath and around the excavated area until adjacent structures are completed and backfilled.

REMOVAL OF SYSTEM

Do not remove dewatering system without written approval from the Engineer. Backfill and compact sumps or ditches with screened gravel or crushed stone. At the completion of the excavation and backfilling work, and when approved by the Engineer, all pipe, deep wells, well points, pumps, generators, observation wells, other equipment and accessories used for the groundwater and surface water control systems shall be removed from the site. All materials and equipment shall become the property of the Contractor. All areas disturbed by the installation and removal of groundwater control systems and observation wells shall be restored to their original condition.

Leave in place any casings for deep wells, well points or observation wells located within the plan limits of structures or pipelines or within the zone below 1H:1V planes extending downward and out from the edges of foundation elements or from the downward vertical footprint of the pipe, or where removal would otherwise result in ground movements causing adverse settlement to adjacent ground surface, utilities, or existing structures.

Where casings are pulled, holes shall be filled with sand, where sand will be placed in the casing during pulling such that at least 2 feet of sand will be in the bottom of casing at all times until the bottom of casing is within 2 feet of the ground surface. Where left in place, casings should be filled with cement grout and cut off a minimum of 3-ft below finished ground level or 1-ft below foundation level so as not to interfere with finished structures.

When directed by the Engineer, observation wells should be left in place for continued monitoring. When so directed, cut casings flush with final ground level, and provide protective lockable boxes with locking devices. The protective boxes shall be suitable for the traffic and for any other conditions to which the observation wells will be exposed.

DISPOSAL OF DRAINAGE

Dewatering discharge:

- Install sand and gravel, or crushed stone, filters in conjunction with sumps, well points, and/or deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
- Control surface water and groundwater such that excavation to final grade is made in-the-dry, the natural undisturbed condition of the subgrade soils are maintained, and softening and/or instability or disturbance due to the presence or seepage of water does not occur. All construction and backfilling shall proceed in-the-dry and flotation of completed portions of work shall be prohibited.
- Transport pumped or drained water without interference to other work, damage to pavement, other surfaces, or property. Pump water through a silt filter bag or other approved sedimentation device prior to discharge to grade of drainage system.
- Do not discharge water into any sanitary sewer system.
- Provide separately controllable pumping lines.
- The Engineer reserves the right to sample discharge water at any time
- Install erosion/sedimentation controls for velocity dissipation at point discharges onto non-paved surfaces.

Water removed or diverted from excavations must not be allowed to cause nuisance or damage to traffic or any public or private property or service or to cause damage to the environment or pollution to the waters of the state. Dispose of drainage so that flow or seepage back into the excavated area will be prevented.

Drainage shall be disposed of in accordance with Contractor's approved plan.

METHOD OF MEASUREMENT AND BASIS OF PARTIAL PAYMENT

Payment for this Item shall be at the contract lump sum bid price for Items 991.1, Control of Water, which price shall include all materials, tools, equipment, installation, disposal, and labor, including the sediment trap, cofferdams, shoring, and velocity dissipater, incidental thereto that is required to complete the work in a satisfactory manner. The work shall be completed in accordance with the contract drawings, standard specifications, these special provisions, and project permit requirements.

Within ten (10) days after the award of the Contract, the Contractor shall submit, for the approval of the Engineer, a schedule of values for the major components of the control of water as listed above. The total of all partial payments to the Contractor shall equal the Lump Sum contract prices. The cost of labor and materials for any item not listed, but required to complete the work, shall be considered incidental to Items and no further compensation above the contract lump sum will be allowed.

ITEM 995.011**CULVERT STRUCTURE, CULVERT NO. 1****LUMP SUM**

The work under this Item shall conform to the applicable provisions of Section 995 of the Standard Specifications and the specific requirements stipulated below for the component parts of this Item. For those component parts where no specific requirement is stipulated, the Standard Specifications shall apply except for payment.

Work under this Item shall include all materials, equipment, tools, and labor required to construct the following: Precast culvert superstructure and substructure which includes, but not limited to: precast concrete box culvert, precast segments, headwalls, mechanical connections, waterproofing membrane, shear keys, etc.

The work does not include any items listed separately in the proposal. Payment for materials shown on the Plans as being part of this bridge structure or which may be incidental to its construction and are not specifically included for payment under another Item shall be considered incidental to the work performed under this Item and shall be included in the unit price of the component of which they are a part.

PRECAST CONCRETE CULVERT ELEMENTS**A. General.**

The work under this Heading consists of fabricating, transporting and installing a precast concrete box culvert and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The Precast Concrete Bridge Elements shall meet the requirements of Section M4: Cement Concrete and Related Materials.

MATERIALS**A. Materials.**

Materials shall conform to M4.09.1 and the following:

Non-Shrink Grout Products	M4.04.5
Welded Steel Wire Fabric	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Waterproofing Membranes	M9.08.0
Lifting Devices	PCI MNL-116

1. Threaded Inserts.

Threaded inserts are permissible to facilitate forming the keyway pours. Threaded inserts shall be hot dip galvanized or made of stainless steel. The number of threaded inserts shall be minimized, and the inserts shall not come in contact with the reinforcing steel.

CONSTRUCTION METHODS – PLANT FABRICATION**A. Box Culverts**

The Contractor shall submit design computations for the box culvert bridge elements to the Engineer for review and approval. The computations shall be prepared in accordance with the latest AASHTO LRFD Bridge Design Specifications, the MassDOT Bridge Manual (Hundreth Anniversary Edition), and the Plans using English units and HL-93 live loading. The design computations shall consider all Strength, Extreme Event and Service Limit States as are appropriate for each stage of fabrication, shipment, construction, and for the final in-service condition. Design computations and shop drawings shall be prepared and stamped by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts. The shop drawings shall be prepared and submitted in accordance with M4.09.2B.

The frame dimensions provided on the plans are shown to establish the size of the proposed opening. The width and thickness of each frame unit may vary depending upon the manufacturer's specifications provided that the opening size is maintained. The Contractor shall be responsible for modifying the dimensions of the frame bridge elements to compensate for elastic shortening, shrinkage, grade corrections, and other phenomena that make in-process fabricating dimensions different from those shown on the drawings. Approval of the shop drawings shall not relieve the Contractor from responsibility for the correctness of the dimensions shown.

1. Joints.

The precast reinforced concrete box culvert shall be produced with grout-filled keyways per the details on the plans, the manufacturer's recommendations, and as approved by the Engineer. The ends shall be manufactured such that when the sections are laid together they will make a continuous line of frames with a smooth interior surface free of appreciable irregularities, and in compliance with the permissible variations.

2. Marking.

The following information shall be clearly marked on the interior of each frame by indentation, waterproof paint, or other approved means:

- (a) Frame span and rise
- (b) Date of manufacture and lot number
- (c) Name and trademark of the manufacturer

B. Pre-Production Meeting.

The Contractor shall notify the Engineer to determine if a pre-production meeting will be required to review the specification, shop drawings, curing plan, schedule, and discuss any specific requirements. The meeting shall be held at least seven (7) days prior to the scheduled casting of any Precast Concrete Bridge Element or control section. The Contractor shall schedule the meeting, which shall include representatives of the Fabricator and Engineer.

C. Reinforcement.

The reinforcing bars shall be installed in accordance with Subsection 901.35, including tolerances for cover and horizontal spacing of bars. Components of mechanical reinforcing bar splicers shall be set with the tolerances shown on the plans. The reinforcing bars and mechanical reinforcing bar splicers shall be assembled into a rigid cage that will maintain its shape in the form and which will not allow individual reinforcing bars to move during the placement of concrete. This cage shall be secured in the form so that the clearances to all faces of the concrete, as shown on the plans, shall be maintained.

Where reinforcing bars are to protrude from one Precast Concrete Bridge Element in order to mate with reinforcing bar splicers in a second precast concrete element, the fabricator shall set the reinforcing bars and the reinforcing bar splicers with a template in order to ensure proper fit up within the tolerances specified on the plans.

D. Tolerances.

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with Subsection 901.35. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

E. Forms.

Concrete shall be cast in rigidly constructed forms, which will maintain the Precast Concrete Bridge Elements within specified tolerances to the shapes, lines and dimensions shown on the approved fabrication drawings. Forms shall be constructed from flat, smooth, non-absorbent material and shall be sufficiently tight to prevent the leakage of the plastic concrete. When wood forms are used, all faces in contact with the concrete shall be laminated or coated with a non-absorbent material. All worn or damaged forms, which cause irregularities on the concrete surface or damage to the concrete during form removal, shall be repaired or replaced before being reused. If threaded inserts are cast into the elements for support of formwork, the inserts shall be recessed a minimum of 1 inch and shall be plugged after use with a grout of the same color as that of the precast cement concrete.

CONSTRUCTION METHODS – FIELD CONSTRUCTION**A. General.**

All of the Contractor's field personnel involved in the erection and assembly of the Precast Concrete Bridge Elements shall have knowledge of and follow the approved Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly.

Prior to installation, the following documentation shall be reviewed and confirmed by the Engineer:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Precast Concrete Bridge Element's representative subplot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

Field construction staff shall verify that the Engineer has accepted all Precast Concrete Bridge Elements prior to installation.

B. Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly.

Prior to the erection, the Contractor shall submit an Erection Procedure and a Quality Control Plan for Precast Concrete Bridge Element Assembly for approval by the Engineer. This submittal shall include computations and drawings for the transport, hoisting, erection and handling of the Precast Concrete Bridge Elements. The Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts with working knowledge of the Contractor's equipment, approved shop drawings, and materials to build the bridge. The Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly shall, at a minimum, include the following:

1. Erection Procedure

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Design, Fabrication and Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (eighth edition) for handling, erection, and bracing requirements. At a minimum, the Erection Procedure shall provide:

- (a) Minimum concrete compressive strength for handling the Precast Concrete Bridge Elements.
- (b) Concrete stresses during handling, transport, and erection.
- (c) Crane capacities, pick radii, sling geometry, and lifting hardware.
- (d) Verification that the equipment can handle all pick loads and weights with the required factor of safety.
- (e) Evaluation of construction sequence and evaluation of any geometric conflicts in the lifting of the Precast Concrete Bridge Elements and setting them as shown on the plans.
- (f) Design of crane supports including verification of subgrade for support.
- (g) Location and design of all temporary bracing that will be required during erection.

Non-shrink grout and concrete materials, approved by the Engineer, shall be placed as shown on the plans. Fill joints, keyways, and voids, in strict accordance with the specifications and manufacturer's recommendations and instructions.

Joints shall be filled flush to the top with non-shrink grout, and any vertical misalignment between adjacent elements shall be feathered out on a slope of 1 to 12.

Curing of grout or concrete shall be performed in strict accordance with the specifications and manufacturer's recommendations. Filling shall not be completed in cold weather when either the ambient temperature or the precast member's temperature is below the manufacturer's recommendation. No localized heating of either the precast members or of the air surrounding the element will be permitted in an attempt to reach application temperatures.

If the joints or voids are not filled within five days after the Precast Bridge Elements are erected, the Contractor shall cover and protect the openings from weather and debris until they are filled.

2. Quality Control Plan for Precast Concrete Bridge Element Assembly

The Quality Control Plan for Precast Concrete Bridge Element Assembly is a document prepared and submitted by the Contractor prior to the start of work which requires the Contractor to identify and detail the sequence of construction in accordance with the project schedule and which clearly identifies all stages of field construction. The assembly procedures for the Precast Concrete Bridge Elements shall be submitted in PDF format on 24"x36" sheets. This document will be treated as a Construction Procedure and will be reviewed by the Engineer. The approval of this document will serve as a guideline for setting interim concrete and grout strengths and curing procedures to allow construction to proceed without waiting for the final in-service strengths to be achieved.

The following list details the minimum criteria that should be included in the Quality Control Plan for Precast Concrete Bridge Element Assembly:

- (a) A detailed schedule showing the sequence of operations that the Contractor will follow. The schedule shall include a timeline for installation of all major elements of the bridge accounting for the installation of temporary works and cure times of grouts or closure pour concrete and other selected materials.
- (b) Calculations that support the schedule outlined above should be included verifying that the selected materials have adequate interim strength to proceed from one step to another. Final material strengths are not normally required until the bridge is opened to vehicular traffic. The minimum factor of safety of two (2) will be required for the interim strength of grouts and closure pour concrete before construction is allowed to proceed to subsequent steps. The factor of safety is applied to the service loads that are supported by the elements and materials during various stages of construction. For example, if the Contractor calculates that the grout between the precast pier cap and pier wall requires a strength of 100 psi to support the dead load of the beams in the next step, a cylinder break of 200 psi will be required prior to allowing the pier cap to be loaded with the beams. The required strength of materials for subsequent construction stages shall also be calculated and the material strength verified.
- (c) The Contractor is responsible for determining the center of gravity for all elements. Special care shall be used for unusual elements that are not symmetric. These elements may require special lifting hardware to allow for installation in a plumb or flat position.
- (d) Plan of the work area, depicting items such as temporary earth support, utilities within the immediate vicinity of the work, drainage structures, etc. The Contractor shall coordinate the various subcontractors that will need to occupy the same area and shall ensure that there are no conflicts. For example, if the Contractor is having different Subcontractors prepare and submit plans for temporary earth support and demolition, and the earth support is required to be installed prior to the demolition, it shall be the Contractor's responsibility to ensure that the Quality Control Plan for Precast Concrete Bridge Element Assembly submission allows both operations to be performed without field modification.
- (e) Details of all equipment that shall be employed for the construction of the bridge.

- (f) Methods of providing temporary support of the elements. Include methods of adjusting and securing the element after placement.
- (g) Procedures for controlling the overall horizontal dimensions and the vertical elevations as each precast concrete bridge element is erected by using the tolerance limits of the joints as detailed on the plans.
- (h) Methods for curing grout.
- (i) Proposed methods for installing non-shrink grout and the sequence and equipment for the grouting operation.
- (j) Methods for sealing the keyways in preparation for filling with non-shrink grout, including the use of backer rods. The Contractor shall not assume that the backer rods will restrain the pressure from the grout in vertical grout joints. Provide additional forming to retain the backer rod.

C. Survey and Layout.

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. The Engineer reserves the right to perform additional independent survey. If discrepancies are found, the Contractor may be required to verify previous survey data.

D. Preparation of Closure Pours and Grouted Keyways.

Immediately prior to erecting the Precast Concrete Bridge Elements, the closure pours and grouted keyways shall be cleaned at the job site of all dust, dirt, carbonation, laitance, and other potentially detrimental materials which may interfere with the bonding of the closure pour concrete or grout and precast concrete using a high-pressure water blast. Any exposed reinforcing steel in the precast concrete shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer. The surfaces of the closure pours and grouted keyways shall be wetted so that the surfaces shall have a Saturated Surface Dry (SSD) condition for at least 24 hours prior to the placement of the closure pour concrete.

E. Erection.

The elements shall be placed in the sequence and according to the methods outlined in the Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly. As the erection proceeds, the Contractor shall constantly monitor the assembly to ensure that the precast concrete bridge element is within proper horizontal and vertical location and tolerances prior to releasing it from the crane and setting the next unit. The Contractor may use shims to maintain proper setting tolerances.

The concrete elements shall be lifted only by the lifting devices, and the utmost care shall be taken to prevent distortion of the elements during handling, transportation or storage.

This approval will be contingent on the Contractor demonstrating by calculations, prepared by a Professional Engineer registered in Massachusetts, that the elements will not be damaged by the non-vertical lifting force and by documentation that the capacity of the lifting devices is adequate for the non-vertical lifting force.

After all Precast Concrete Bridge Elements have been placed, the actual overall dimensions of the structure both horizontal and vertical, as laid out shall not deviate from the nominal dimensions shown on the plans beyond a tolerance of +0 inches and -1 inches. Once the layout of Precast Concrete Bridge Elements has been accepted by the Engineer, the Contractor shall cut all lifting devices off below the surfaces of the elements.

F. Box Culverts

Backfilling operations shall not begin until the following checks have been made:

- (a) The joints between exterior frame bridge elements and wingwall stems are complete as shown on the plans;
- (b) All joint seals are properly placed.

The backfilling procedures shall be in accordance with Sections 120, 150, and 170 of the Standard Specifications and Supplemental Specifications modified as follows:

- (a) Fill shall be placed and compacted in layers not exceeding one foot in depth;
- (b) Dumping of fill shall not be allowed any nearer to the structure than 3.25 feet from a vertical plane extending from the back of the footing;
- (c) Backfill shall be placed as symmetrically as possible around the structure with differential depths of backfill on each side of the structure not exceeding 1.5 feet with respect to each other;
- (d) Compaction shall be achieved using hand compaction equipment for all fill within one foot of the structure;
- (e) The bare structure shall not be crossed by any equipment heavier than that specified by the frame manufacturer. All damage resulting from equipment damage shall be rectified to the satisfaction of the Engineer at no cost to the Owner;
- (f) Construction equipment will not be permitted atop an uncompleted structure;
- (g) Construction equipment whose weight exceeds the design capacity shall not be permitted atop the completed structure under any circumstances;
- (h) The use of vibratory rollers for compaction purposes will not be permitted.

A representative of the manufacturer shall be on site at the commencement of the installation, at no cost to the Owner, to assist the Contractor. The representative shall offer advisory assistance only and shall not supplant the Contractor's representative, or the Engineer.

G. Filling of Blockouts for Lifting Devices and Threaded inserts.

If the blockouts in the Precast Concrete Bridge Elements where the lifting devices were located will be exposed and visible after assembly is complete, the Contractor shall fill these blockouts with Mortar (M4.04.5).

After the formwork has been removed, all threaded inserts that have been cast into the precast concrete bridge deck for support of the formwork shall be filled with a grout of the same color as that of the precast concrete.

COMPENSATION

A. Basis of Payment

Payment for this Item shall be at the contract lump sum bid price for Item 995.011, Culvert Structure, Culvert No. 1, which price shall include all materials, tools, equipment, installation, disposal, and labor, including excavation, backfill, crushed stone, geotextile fabric, headwalls, damp-proofing, waterproof membrane, grout, and bolts incidental thereto that is required to complete the work in a satisfactory manner. The work shall be completed in accordance with the contract drawings, standard specifications, these special provisions, and project permit requirements.

Within ten (10) days after the award of the Contract, the Contractor shall submit, for the approval of the Engineer, a schedule of values for the major components of the culvert structure as listed above. The total of all partial payments to the Contractor shall equal the Lump Sum contract prices. The cost of labor and materials for any item not listed, but required to complete the work, shall be considered incidental to Items and no further compensation above the contract lump sum will be allowed.

END OF SPECIAL PROVISIONS

Culvert #1

East Prescott Street and North Main Street over Reed Brook Culvert

A2. Order of Conditions issued by Westford Conservation Commission



2025 00039304

BK: 39717 Pg: 125 Page: 1 of 17

Recorded: 12/05/2025 01:30 PM

**Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

And Westford Non-zoning Wetland Bylaw c.171

Provided by MassDEP:

MassDEP File #:334-1881

eDEP Transaction

#:1954359

City/Town: WESTFORD

A. General Information**1. Conservation Commission**

WESTFORD

2. Issuancea. ☒ OOCb. ☐ Amended OOC**3. Applicant Details****a. First Name**

JEREMY

b. Last Name

DOWNS, PE

c. Organization

WESTFORD DEPARTMENT OF PUBLIC WORKS

d. Mailing Address

28 NORTH STREET

e. City/Town

WESTFORD

f. State

MA

g. Zip Code

01886

4. Property Owner**a. First Name****b. Last Name****c. Organization**

TOWN OF WESTFORD (RIGHT-OF-WAY WHERE N MAIN ST MEETS E PRESCOTT ST)

d. Mailing Address

55 MAIN STREET

e. City/Town

WESTFORD

f. State

MA

g. Zip Code

01886

5. Project Location**a. Street Address**

EAST PRESCOTT AT NORTH MAIN STREET

b. City/Town

WESTFORD

c. Zip Code

01886

d. Assessors

N/A

e. Parcel/Lot#

N/A

Map/Plat#**f. Latitude**

42.58894N

g. Longitude

71.47851W

6. Property recorded at the Registry of Deed for:**a. County****b. Certificate****c. Book****d. Page**

NORTHERN MIDDLESEX

11232

204

7. Dates**a. Date NOI Filed : 10/8/2025****b. Date Public Hearing
Closed:**

11/12/2025

**c. Date Of
Issuance:**

11/13/2025

8. Final Approved Plans and Other Documents**a. Plan Title:****b. Plan Prepared by:****c. Plan Signed/Stamped by:****d. Revised Final Date: e. Scale:**TOWN OF
WESTFORD,
MASSACHUSETTS,
EAST PRESCOTT
STREET & NORTH
MAIN STREET
OVER REED
BROOK CULVERT
REPLACEMENT
PERMIT SET

TIGHE & BOND

DANIEL S. HOLMES, PE,
AND JEREMY J. CIGAL,
PE

OCTOBER 2025

SCALE AS
NOTED ON
EACH PAGE**B. Findings****1. Findings pursuant to the Massachusetts Wetlands Protection Act**



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:334-1881

eDEP Transaction #:1954359

City/Town:WESTFORD

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

a. ☒ Public Water Supply	b. ☐ Land Containing Shellfish	c. ☒ Prevention of Pollution
d. ☒ Private Water Supply	e. ☒ Fisheries	f. ☒ Protection of Wildlife Habitat
g. ☒ Ground Water Supply	h. ☒ Storm Damage Prevention	i. ☒ Flood Control

2. Commission hereby finds the project, as proposed, is:

Approved subject to:

- a. ☒ The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

- b. ☐ The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. ☐ The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act , and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☐ Buffer Zone Impacts:Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a).

a. linear feet

Inland Resource Area Impacts:(For Approvals Only):

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☒ Bank	<u>218</u> a. linear feet	<u>218</u> b. linear feet	<u>218</u> c. linear feet	<u>218</u> d. linear feet
5. ☒ Bordering Vegetated Wetland	<u>235</u> a. square feet	<u>235</u> b. square feet	<u>235</u> c. square feet	<u>235</u> d. square feet
6. ☒ Land under Waterbodies and Waterways	<u>1215</u> a. square feet	<u>1215</u> b. square feet	<u>1215</u> c. square feet	<u>1215</u> d. square feet
	<u>80</u> e. c/y dredged	<u>80</u> f. c/y dredged		



Massachusetts Department of Environmental Protection

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7. ☐ Bordering Land Subject to Flooding

Cubic Feet Flood Storage

a. square feet b. square feet c. square feet d. square feet

e. cubic feet f. cubic feet g. cubic feet h. cubic feet

8. ☐ Isolated Land Subject to Flooding

Cubic Feet Flood Storage

a. square feet b. square feet

c. cubic feet d. cubic feet e. cubic feet f. cubic feet

9. ☒ Riverfront Area

20750 20750

a. total sq. feet b. total sq. feet

Sq ft within 100 ft

15550 15550

c. square feet d. square feet e. square feet f. square feet

Sq ft between 100-200 ft

5200 5200

g. square feet h. square feet i. square feet j. square feet

Coastal Resource Area Impacts:

Resource Area

Proposed
Alteration

Permitted
Alteration

Proposed
Replacement

Permitted
Replacement

10. ☐ Designated Port Areas

Indicate size under Land Under the Ocean, below

11. ☐ Land Under the Ocean

a. square feet b. square feet

c. c/y dredged d. c/y dredged

12. ☐ Barrier Beaches

Indicate size under Coastal Beaches and/or Coastal Dunes below

13. ☐ Coastal Beaches

a. square feet b. square feet c. c/y nourishment d. c/y nourishment

14. ☐ Coastal Dunes

a. square feet b. square feet c. c/y nourishment d. c/y nourishment

15. ☐ Coastal Banks

a. linear feet b. linear feet

16. ☐ Rocky Intertidal Shores

a. square feet b. square feet

17. ☐ Salt Marshes

a. square feet b. square feet c. square feet d. square feet

18. ☐ Land Under Salt Ponds

a. square feet b. square feet

c. c/y dredged d. c/y dredged

19. ☐ Land Containing Shellfish

a. square feet b. square feet c. square feet d. square feet

**Massachusetts Department of Environmental
Protection**

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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20.7 Fish Runs

Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above

c. c/y dredged d. c/y dredged

21.7 Land Subject to Coastal Storm Flowage

a. square feet b. square feet

22.

Restoration/Enhancement (For Approvals Only)

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

23.

☒ Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

0

1

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal



**Massachusetts Department of Environmental
Protection**

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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City/Town:WESTFORD

has been taken, until all proceedings before the Department have been completed.

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

" Massachusetts Department of Environmental Protection"

[or 'MassDEP']

File Number : "334-1881"

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order(the "Project") is (1) ☒ is not (2) ☐ subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;
 - a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period



**Massachusetts Department of Environmental
Protection**

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
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erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
- g) The responsible party shall:
 - 1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 - 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission")



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upon request; and

3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS



**Massachusetts Department of Environmental
Protection**

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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Conservation Commission hereby (check one that applies):

a. ☐ DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw _____

2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. ☒ APPROVES the proposed work, subject to the following additional conditions.

1. Municipal Ordinance or Bylaw WESTFORD NON-
ZONING WETLAND
BYLAW

2. Citation CHAPTER 171

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:
SEE ATTACHED SPECIAL CONDITIONS



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

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E. Signatures

This Order is valid for three years from the date of issuance, unless otherwise specified pursuant to General Condition #4. If this is an Amended Order of Conditions, the Amended Order expires on the same date as the original Order of Conditions.

11/13/2025
1. Date of Original Order

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

4
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures

Margaret Wheeler
[Signature]

[Signature]
[Signature]
Marilyn Frank

☒ by hand delivery on

☐ by certified mail, return receipt requested, on

Date 11/13/2025

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

WESTFORD



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Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

WESTFORD

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

EAST PRESCOTT AT NORTH MAIN STREET

Project Location

334-1881

MassDEP File Number

Has been recorded at the Registry of Deeds of:

County

Book

Page

for:

Property Owner

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Rev. 4/1/2010

Westford Department of Public Works
Reed Brook Culvert under East Prescott Street and North Main Street, near 125 North Main Street
(334-1881)

Project Description:

The project involves work within jurisdictional wetland resource areas (Bank, Bordering Vegetated Wetland, Land Under Waterway) and associated 100-foot buffer zones and Riverfront Area to replace an existing culvert.

Findings:

The Commission finds that the project is a Limited Project under 310 CMR 10.53(8) for the replacement of an existing stream crossing and that any wetland alterations will be temporary in nature.

The Commission finds that during construction, erosion control measures will be implemented to prevent construction-related pollutants from entering the wetlands.

The Commission finds that the existing 36" corrugated metal pipe is severely deteriorated due to extensive rust and corrosion and will be replaced by a 9.25' by 5' box culvert meets the Stream Crossing Standards to the maximum extent practicable. The Commission also finds that the existing headwalls of inlet and outlet are in poor condition, and there is scour and erosion along the bank, which will be remedied with the proposed work.

The Commission finds that the project also includes roadway improvements, including curbing; replacement of two (2) catch basins, drainage pipes, and guardrails; relocation of an existing water main and an existing gas main; and potentially new guardrails.

The Commission finds that the proposed culvert has been designed to maintain hydraulic continuity and wildlife crossing of Reed Brook.

The Commission finds that the proposed culvert has been designed to provide continuity of the natural streambed and provide bank continuity on both sides of the stream, matching the horizontal profile of the existing stream, and constructed so as not to hinder its use by riverine wildlife.

The Commission finds that, in accordance with 310 CMR 10.55(4), a 60-SF replication area is proposed to replace 60-SF of permanent alteration of BVW resulting from the project.

The Commission finds that the project has been designed to minimize disturbance to existing trees and shrubs.

The Commission finds that a waiver for the 30-foot no-disturb zone (Ch.235 Rules and Regulations §235-2(9)(E)) is requested and granted.

The Commission finds that the proposed project meets the applicable Stormwater Management Standards found in 310 CMR 10.05(6)(k-q).

The Commission finds that, due to the nature and purpose of the proposed activities, there are no practicable alternatives to the Project.

The Commission finds that the site is located outside the Flood Hazard Area as shown on the FEMA Flood Insurance Rate Map Community Panel #25017C 0228F, effective July 8, 2025.

The Commission finds that the site is not located within an Estimated Habitats of Rare Wildlife and Priority Habitats of Rare Species as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP).

The Commission finds that the project, if completed in compliance with this Order of Conditions (OOC) and the approved plan, complies with the MA Wetlands Protection Act and Regulations and the Town of Westford's Non-zoning Wetland Bylaw and Regulations.

Westford Department of Public Works
Reed Brook Culvert under East Prescott Street and North Main Street, near 125 North Main Street
(334-1881)

The following Special Conditions also apply to work within the jurisdictional areas of the Conservation Commission as defined by MA General Laws, Chapter 131 Section 40 and the Westford Non-zoning Wetland Bylaw Ch. 171 and Regulations Ch. 235.

Special Conditions:

21. It shall be understood by the applicant that the issuance of this Order of Conditions shall apply to the Massachusetts Wetlands Protection Act and the Town of Westford's Non-Zoning Wetlands Bylaw.
22. There shall be no adverse impacts to wetland areas.
23. Notice shall be given to the Commission or its agent no more than two (2) weeks and no less than one (1) week prior to the commencement of any construction activities, including onsite trucking of fill and major removal of site vegetation.
24. Prior to the commencement of the project, there shall be a meeting onsite between the project contractor, the site superintendent and project engineer and the Commission's agent to review this Order of Conditions and its requirements.
25. This Order of Conditions shall be reviewed with and a copy provided to all contractors and engineers working on the site involved with site preparation, earthwork and landscaping. A copy of said Order of Conditions and referenced plans and documents shall be onsite during all construction activities. Any other plans not consistent with the Order shall not be onsite.
26. The Applicant and their contractors shall make no changes or additions to any of the work or construction products shown on the Approved Plans without first having those changes reviewed and approved by the Commission or its agent.
27. During all construction phases the proponent shall provide an onsite manager who shall be responsible for implementing all mitigation measures and full compliance with this Order of Conditions, with particular emphasis on installation and maintenance of erosion and sedimentation control measures, and who shall conduct site investigations with the Commission and/or its agent. It shall be the site manager's responsibility and priority to control sediment flow on the site and ensure that sediment is not discharged to the resource areas.
28. Prior to the performance of any other site work, a sedimentation and erosion control barrier consisting of straw wattles, or other control feature as may be approved by the Commission or its agent, shall be properly installed (wattles staked so they can't be lifted or moved easily) between the construction area and the wetlands in the location shown on the Plan of Record or as directed by the Commission or its agent. This control feature shall be properly installed and inspected and approved by the Commission or its agent prior to the commencement of any other work on the site.

The Commission's agent is authorized to require the installation of any other erosion/sedimentation/work limit controls on the site as deemed necessary to protect the wetlands.
29. The applicant shall have on hand at the start of any soil disturbance, removal or stockpiling, a minimum of 25 feet of wattles. Said wattles shall be used for control of emergency erosion problems and shall not be used for normal control of erosion.
30. These erosion control features shall be maintained in proper working condition during and after construction. These erosion control features shall be removed promptly following satisfactory permanent stabilization of the site with approval the Commission or its agent, or their direction to remove said barrier.

31. Temporary cofferdams may be installed to limit the flow of water through the project site. To the maximum extent practicable, work shall be performed during low flow conditions to minimize disturbance.
32. The culvert shall be installed per the plan to provide hydraulic and wildlife connectivity.
33. The composition of the native streambed material within the proposed culvert shall match the existing streambed and shall be reviewed and approved by the Commission and/or its agent, prior to removal of the existing culvert.
34. The applicant shall protect all stormwater BMPs during construction to prevent a reduction in their long-term capacity. Upon completion of the project, any stormwater BMPs shall be cleaned of any silt and sediment.
35. A laydown yard may be established on proximate properties. If proposed within 100' of a jurisdictional wetland resource, the location and any necessary erosion controls, shall be reviewed and approved by the Commission and/or its Agent.
36. The wetland replication shall be conducted in accordance with "Wetland Replacement and Slope Details" (sheet 13 of 16). The planting plan shall include seed mix and plant species native to the Westford area that grow well in wetland buffer zone conditions and will enhance buffer zone functions. The plan shall include ground cover, shrubs and trees. The size, spacing and number of species shall also be provided.
37. The plantings and seeding shall be completed in the early phase of the project, and plants shall be monitored for a minimum of two years. Any plants that die shall be replaced with similar species. Restoration areas shall remain naturalized. This shall be a condition in perpetuity and shall be noted in the Certificate of Compliance.
38. Alteration within the restoration areas is prohibited, except as may be required to maintain the area in its restored condition, keep out non-native invasive plant species, and/or as otherwise approved by the Commission or its agent. This shall be a condition in perpetuity and shall be noted in the Certificate of Compliance.
39. Any ground disturbed during any phase of the project shall be seeded and stabilized with a seed mixture approved by an agent of the Commission. The disturbed areas shall be stabilized within the same growing season the work occurs and no later than September 15 to ensure adequate growth within the growing season. Any areas not satisfactorily stabilized by December 1 shall be temporarily stabilized during the winter months using erosion control blankets, jute netting and/or straw mulch.
40. Any required dewatering shall be performed so as to direct water to an upland discharge point, as far away as possible from wetlands and in such a fashion that said water is temporarily detained in a stilling pond, or other acceptable feature as may be approved by the Commission or its agent and overflow from said basin or feature shall flow back towards the wetlands through a line of silt fence in combination with staked straw wattles. In no case shall there be direct discharge to wetlands.
41. All construction equipment, including but not limited to machinery, heavy equipment and vehicles, shall be parked and stored more than 100 feet from any wetlands when not in use. All fuels, lubricants and hydraulic fluids shall be stored more than 100 feet from any wetlands. All refueling and maintenance involving transfer of oils and hydraulic fluids shall be performed more than 100 feet from any wetlands.

42. All excavate, fill, loam and any other earthen materials associated with the project shall be stored and stockpiled more than 100 feet from any wetlands. No excavate, fill, loam or other material shall be stockpiled against the sediment or erosion control feature.
43. No fill, excavate, construction debris or equipment, or any other material shall be allowed to enter the wetlands; any such material entering the wetlands shall be removed immediately. No trees or shrubs shall be felled into or disposed of in the wetlands.
44. All imported topsoil shall be documented to be free of invasive weed seeds.
45. Only clean fill shall be used for the project. Clean fill shall be free from contamination, trash, debris, asphalt, brick, concrete, metal, wood, recycled construction materials or other deleterious materials. No unsuitable material of any kind (stumps, roots, trash, debris, etc.) may be buried, placed or dispersed on the property.
46. Upon stabilization of the site the applicant shall remove the erosion/sedimentation control barriers with the approval of the Commission or its agent.
47. **Upon completion of the project the proponent shall request a Certificate of Compliance.**

If the project has been conducted in accordance with plans stamped by a registered professional engineer, a written statement by such a professional person certifying substantial compliance with the plans and setting forth what deviation, if any, exists from the plans approved in the Order shall accompany the request for the Certificate of Compliance.

Final Approved Plan:

"Town of Westford, Massachusetts, East Prescott Street & North Main Street Over Reed Brook Culvert Replacement Permit Set," prepared by Tighe & Bond, signed and stamped by Daniel S. Holmes, PE, and Jeremy J. Cigal, PE, scale as noted on each page, dated October 2025, containing the following sixteen (16) sheets:

- Sheet 1: Cover
- Sheets 2 & 3: General Notes
- Sheet 4: Boring Logs
- Sheet 5: Existing Condition & Demolition Plan
- Sheet 6: Site Plan
- Sheet 7: Profiles
- Sheet 8: Temporary Traffic Control Plan
- Sheet 9: Culvert Details
- Sheet 10: Culvert Layout Plan
- Sheet 11: Roadway Sections and Details
- Sheet 12: Erosion Control Details
- Sheet 13: Wetland Replacement and Slope Details
- Sheet 14: Water Control Details
- Sheet 15: Utility Details
- Sheet 16: Watermain Details

Plans and Documents Considered:

- Notice of Intent application material prepared by Tighe & Bond, dated October 2025, submitted October 8, 2025, including:
 - Cover Letter from Daniel S. Holmes, PE, dated October 7, 2025;

Westford Department of Public Works

Reed Brook Culvert under East Prescott Street and North Main Street, near 125 North Main Street
(334-1881)

- Narrative, 5 sections;
- Site Location Map;
- Priority Resource Map;
- Orthophotograph;
- Site Plan Map;
- National Flood Hazard Layer FIRMette;
- Photographic Log, dated May 25, 2023;
- Checklist for Stormwater Management Report;
- "Town of Westford, Massachusetts, East Prescott Street & North Main Street Over Reed Brook Culvert Replacement Permit Set," prepared by Tighe & Bond, signed and stamped by Daniel S. Holmes, PE, and Jeremy J. Cigal, PE, scale as noted on each page, dated October 2025, containing sixteen (16) sheets;
- Correspondence from Massachusetts Department of Environmental Protection – Northeast Regional Office to Westford Assistant Town Engineer Jeremy Downs, dated October 22, 2025.

PERMIT SET

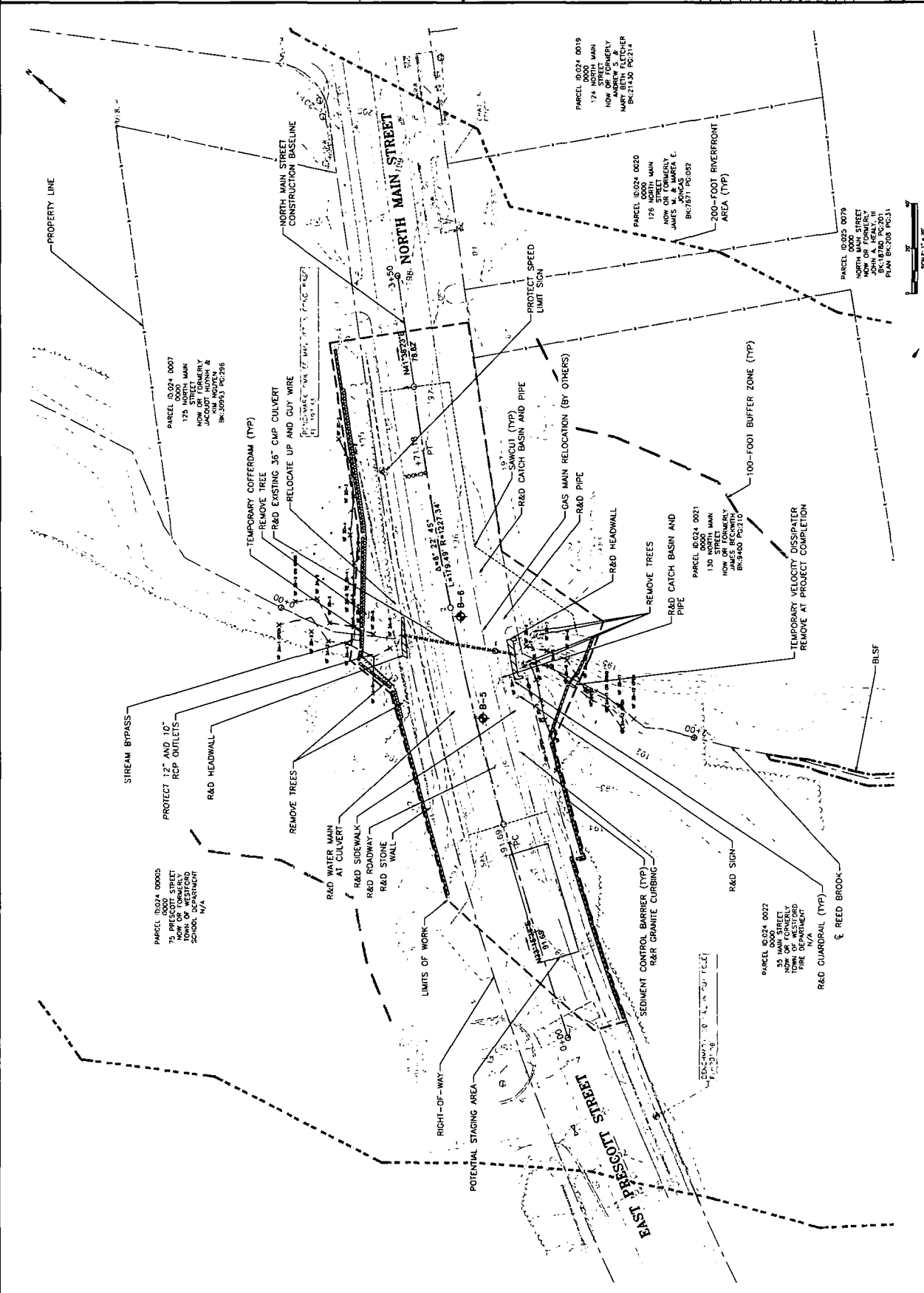
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**East Prescott
Street & North
Main Street
Culvert
Replacement**

Westford
Department of
Public Works
Westford, MA

[illegible]

SHEET 5 OF 16



PERMIT SET

THIS DOCUMENT IS INCOMPLETE AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

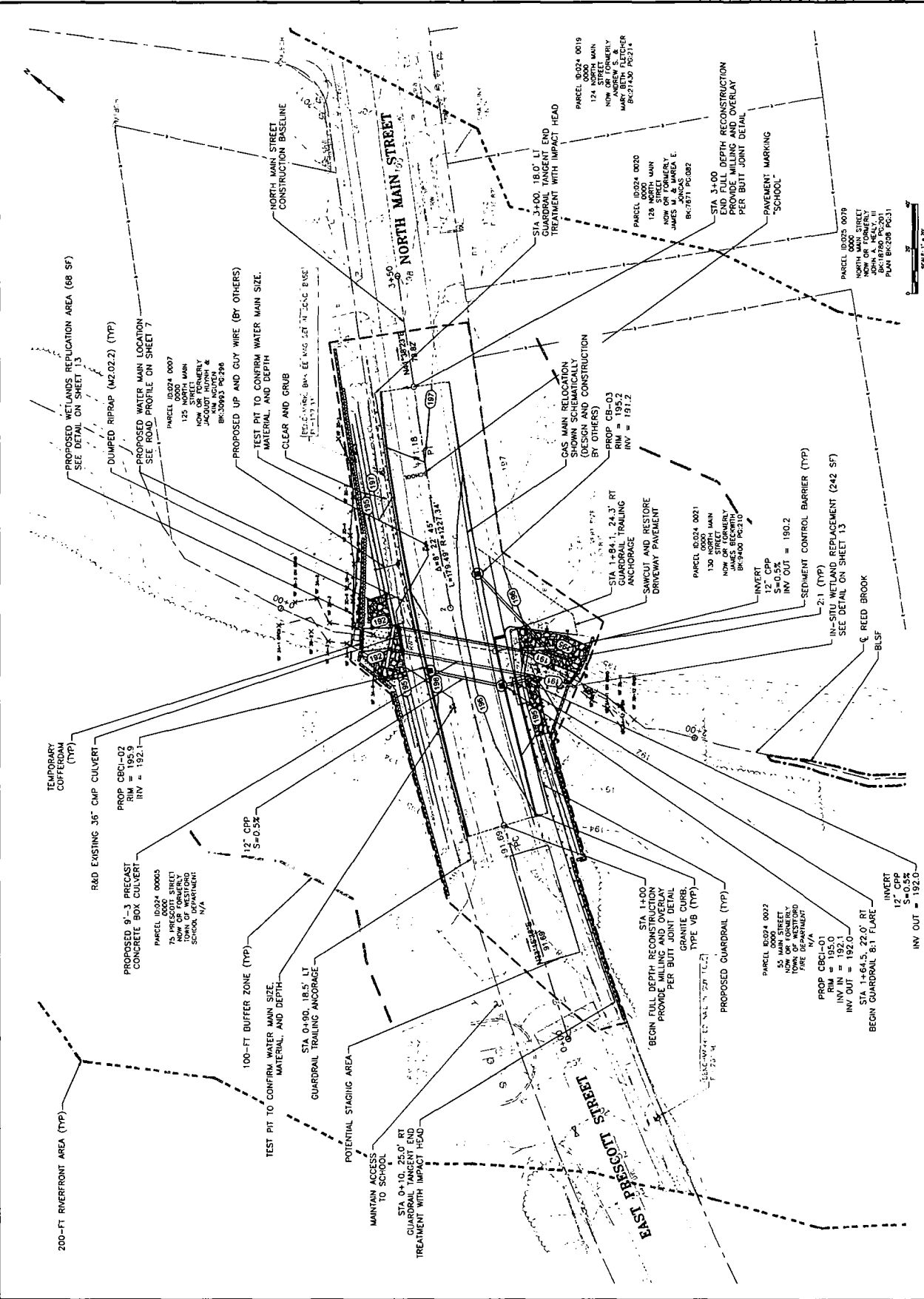
**East Prescott
Main Street
Culvert
Replacement**

**Westford
Department of
Public Works
Westford, MA**

NO.	DATE	DESCRIPTION
1	10/08/2013	ISSUED FOR PERMIT
2	10/08/2013	ISSUED FOR PERMIT
3	10/08/2013	ISSUED FOR PERMIT
4	10/08/2013	ISSUED FOR PERMIT
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72	10/08/2013	ISSUED FOR PERMIT
73	10/08/2013	ISSUED FOR PERMIT
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82	10/08/2013	ISSUED FOR PERMIT
83	10/08/2013	ISSUED FOR PERMIT
84	10/08/2013	ISSUED FOR PERMIT
85	10/08/2013	ISSUED FOR PERMIT
86	10/08/2013	ISSUED FOR PERMIT
87	10/08/2013	ISSUED FOR PERMIT
88	10/08/2013	ISSUED FOR PERMIT
89	10/08/2013	ISSUED FOR PERMIT
90	10/08/2013	ISSUED FOR PERMIT
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100	10/08/2013	ISSUED FOR PERMIT

SITE PLAN

SHEET 6 OF 16



Printed at 11:00 AM on 10/08/2013. User: jh1. Plot: 10/08/2013. Title: 10/08/2013. Scale: 1/2"=20'. Path: \\server\projects\10777913\10777913.dwg

ATTACHMENT B

Culvert #2 - Acton Road over Unnamed Stream

- B1. Construction Specifications
- B2. Order of Conditions issued by Westford Conservation Commission

Culvert #2
Acton Road over Unnamed Stream

B1. Construction Specifications

CONSTRUCTION SPECIFICATIONS

Please refer to the MassDOT *Standard Specifications for Highways and Bridges* dated 2025 for standard items. The following items are not standard and are provided to supplement the contract.

ITEM 145.1

DRAINAGE PIPE ABANDONED

LUMP SUM

GENERAL

Work under this item shall conform to the relevant provisions of Section 145 of the MassDOT Standard Specifications for Highways and Bridges and the following:

The work under this item shall include the abandonment of the existing drainage pipe under Acton Road as shown on the Plans and as directed by the Engineer.

The pipe shall be abandoned in place by backfilling with a controlled low-strength material that conforms to Item 160.2 of the MassDOT Standard Specifications. Flowable fill material shall be injected from the inlet end of the culvert with the outlet sealed off. Air releases shall be installed as necessary to ensure that the flowable fill completely fills the existing culvert. No excavation of the existing road shall occur without receiving authorization from the Town and the Engineer.

METHOD OF MEASUREMENT

Item 145.1 will be measured per LUMP SUM.

BASIS OF PAYMENT

Item 145.1 will be paid for at the Contract unit price per LUMP SUM, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 148.01

**DREDGING AND STOCKPILING OF
STREAMBED MATERIAL**

CUBIC YARD

GENERAL

Work under this item shall conform to the relevant provisions of Section 148 of the MassDOT Standard Specifications for Highways and Bridges and the following:

The work under this item shall include dredging of approved native streambed material to be stockpiled for re-use as shown on the Plans and as directed by the Engineer.

Streambed material may be stockpiled on site at a location determined by the Contractor. The stockpiled material will be reused on site for streambed restoration. The placement of this material will be paid for under Item 983.521.

When the Contractor is not actively working with the dredged and stockpiled material, the stockpile shall be protected to prevent damage. Providing, installing, adjusting, protecting, and all other work required to cover the stockpiled material shall be considered incidental to this Item.

METHOD OF MEASUREMENT

Item 148.01 will be measured per CUBIC YARD of material dredged and stockpiled within the specified limits as directed by the Engineer.

BASIS OF PAYMENT

Item 148.01 will be paid for at the Contract unit price per CUBIC YARD, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

Any streambed material that will be dredged and disposed of will be included in the bid price for Item 148. – Dredging and Disposal of Material.

The replacement of the stockpiled material shall be included in the bid price for Item 983.521 – Streambed Restoration.

ITEM 482.31**SAWING AND SEALING JOINTS IN ASPHALT
PAVEMENT AT BRIDGES****FEET****GENERAL**

The work to be done under this Item consists of making a sealed kerf across the full width of the finished asphalt pavement at bridge abutments where called for on the Plans. The shape, width, and depth of the kerf shall be as shown on the Plans.

Prior to the start of the asphalt pavement operation, the Contractor shall place a mark on each curb or barrier on either side of the paved roadway. These marks shall be aligned with the actual end of the bridge deck and shall be placed so that they will not be covered or otherwise obscured by the asphalt pavement.

After the completion of the paving operation, the Contractor shall snap a straight chalk line on the pavement between these two marks. The Contractor shall then saw cut the pavement along this line to the depth, width and shape as shown on the Plans. The equipment shall be approved by the Engineer prior to commencing work.

After completing the saw cutting, the Contractor shall clean the saw groove of any dust and debris with an oil free air blast. If the groove was wet sawn, the groove shall be cleaned with a water blast to remove any remaining slurry and debris, vacuumed with a Wet-or-Dry vacuum to remove any standing water, and then dried with an air blast from a Hot-Air-Lance.

Once the groove is clean and dry, the Contractor shall fill it completely with a Hot Applied Crack Sealer meeting the requirements of M3.05.2 in accordance with the manufacturer's application instructions and restrictions regarding ambient and material temperatures. The crack sealer shall be thoroughly cured prior to opening the road to traffic. To reduce tackiness, only boiler slag aggregate (black beauty) shall be scattered over the sealer when required by the Engineer. Conventional sand shall not be used for this purpose.

METHOD OF MEASUREMENT

Item 482.31 will be measured for payment by the Foot, of the actual number of feet of kerf sawed and sealed in the asphalt pavement surface, complete in place.

BASIS OF PAYMENT

Item 482.31 will be paid for at the Contract unit price per Foot, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work.

ITEM 634.11**STEEL THRIE BEAM HIGHWAY GUARD****FOOT****GENERAL**

Work under this Item shall conform to the relevant provisions of Section 601 of the Standard Specifications and the following:

Work under this Item shall include installation of double nested steel thrie beam at locations indicated on the Plans and as required by the Engineer in conformance with the dimensions and details shown on the Plans. This work includes all required steel guardrail post, offset blocks, post anchorages into headwall and wingwalls, and shall include two sections of MassDOT standard steel thrie beam highway guard, where one section is nested inside the other. All guardrail materials/hardware and installation procedures shall be in accordance with relevant MassDOT Standard Construction Details and additional details provided in the Construction Drawings.

METHOD OF MEASUREMENT

Item 634.11 shall be measured per FOOT of actual guardrail installed and accepted by the Engineer, complete in-place.

BASIS OF PAYMENT

Item 634.11 shall be paid for at the Contract Unit Price per FOOT of actual steel thrie beam highway guard installed and accepted by the Engineer, complete in-place. This item shall include full compensation for all labor, equipment, materials, and incidentals required to complete the work described under this Item.

ITEM 697.2**FLOATING SILT FENCE****FOOT****GENERAL**

Work under this Item shall conform to the relevant provisions of Section 670 of the Standard Specifications and the following:

Work under this Item shall include installation, maintenance, and removal of a temporary floating silt fence to prevent any sediment disturbed during construction from reaching adjacent waterways and to prevent any further sediment dispersion into the existing stream. The fence shall be installed downstream of the existing culvert, as shown on the plans.

MATERIALS

Floating silt fence shall be made of a woven polypropylene with a minimum 200 lb. tensile strength. The Contractor shall submit to the Engineer, for review and approval, product specifications and technical data provided by the manufacturer, prior to installation. The fence shall be continuously weighted at the bottom to maintain a vertical submerged position. Anchors shall be placed at both ends of the curtain and at intermediate locations, as necessary, to hold the fence securely in place. The fence shall be installed to withstand the forces of the flow of the waterway.

INSTALLATION

Floating silt fence shall be installed before construction begins and earth is disturbed. Silt fences shall be inspected and approved by the Town of Westford Conservation Commission Agent after installation and prior to commencement of further construction activities.

The Contractor shall inspect silt fence weekly to ensure continuous effectiveness. The Contractor shall always maintain the intent of the fence by making any/all necessary adjustments, should the need arise. If any part of the fence becomes damaged or dislodged, construction activities shall be halted until all deficiencies are corrected by the Contractor with no additional compensation. The floating silt fence shall be removed after all construction activities are completed and in such a way that no collected sediment is dispersed into waterways.

METHOD OF MEASUREMENT

Item 697.2 shall be measured per FOOT installed.

BASIS OF PAYMENT

Item 697.2 shall be paid for at the Contract unit price per FOOT installed. This item shall include full compensation for all labor, equipment, maintenance, materials, and incidentals required to complete the work for the duration of the Contract.

No separate payment will be made for any adjustments or repairs that may be required to provide a floating silt fence that is continuously effective for the duration of construction.

No separate payment will be made for the removal of the floating silt fence.

ITEM 698.1**GEOTEXTILE FABRIC FOR STABILIZATION****SQUARE YARD****GENERAL**

The work under this Item shall conform to the Standard Specifications of Section M9.50.0 for the intended application, and the following:

The work under this item shall consist of furnishing and placing of geotextile fabric for stabilization under the crushed stone beneath the precast box culvert and wingwall footings as shown on the Plans and as directed by the Engineer.

The geotextile fabric shall be handled and installed per the manufacturer's recommendations.

MATERIALS

Filter fabric shall be a material suitable for the intended applications and shall be selected from the most current version of the Qualified Construction Materials List (QCML) for Geotextile Fabrics found at:

<https://www.mass.gov/service-details/qualified-construction-materials-list>

METHODS

Geotextile shall be placed in direct contact with soils without wrinkles or folds and shall be anchored on a smooth graded surface approved by the Engineer. The geotextile shall be placed in such a manner that placement of the overlaying materials will not excessively stretch or tear it.

Adjacent geotextile sheets shall be joined by either sewing or overlapping. At roll ends, overlapped seams shall overlap a minimum of 12 inches, except when placed under water, where they shall overlap a minimum of 3 feet. Adjacent rolls shall overlap a minimum of 12 inches.

Care shall be taken during the placement of crushed stone to avoid stretching and subsequent tearing of the geotextile. Stones shall not be dropped from a height exceeding 3 feet.

Field monitoring shall be performed to verify that the crushed stone placement does not damage the geotextile.

Any section of fabric that is damaged shall be repaired in accordance with the manufacturer's requirements and AASHTO M 288 and to the satisfaction of the Engineer or it shall be replaced at the Contractor's expense.

METHOD OF MEASUREMENT

Item 698.1 shall be measured by the SQUARE YARD furnished and installed. Overlapping for seams and joints shall be measured as one layer of fabric.

BASIS OF PAYMENT

Item 698.1 shall be paid for at the contract unit bid price per SQUARE YARD furnished and installed. This item shall include full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 698.4**GEOTEXTILE FABRIC FOR PERMANENT
EROSION CONTROL****SQUARE YARD****GENERAL**

The work under this Item shall conform to the Standard Specifications of Section M9.50.0 for the intended application, and the following:

The work under this Item shall consist of furnishing and installing geotextile fabric below riprap embankments as shown on the Plans or as required by the Engineer.

The geotextile fabric shall be handled and installed per the manufacturer's recommendations.

MATERIALS

Filter fabric shall be a material suitable for the intended applications and shall be selected from the most current version of the Qualified Construction Materials List (QCML) for Geotextile Fabrics found at:

<https://www.mass.gov/service-details/qualified-construction-materials-list>

METHODS

Geotextile shall be placed in intimate contact with soils without wrinkles or folds and shall be anchored on a smooth graded surface approved by the Engineer. The geotextile shall be placed in such a manner that placement of the overlaying materials will not excessively stretch or tear it. Adjacent geotextile sheets shall be joined by either sewing or overlapping. At roll ends, overlapped seams shall overlap a minimum of 12 inches, except when placed under water, where they shall overlap a minimum of 3 feet. Adjacent rolls shall overlap a minimum of 12 inches.

The Riprap placement shall begin at the toe of slope and proceed up the slope. Placement shall take place so as to avoid stretching and subsequent tearing of the geotextile. Stones shall not be dropped from a height exceeding 3 feet.

Care shall be taken to avoid damage to the geotextile during handling and installation. Field monitoring shall be performed to verify that the riprap placement does not damage the geotextile.

Any section of fabric that is damaged due to the Contractor's operations shall be repaired in accordance with the manufacturer's requirements and AASHTO M 288 and to the satisfaction of the Engineer or it shall be replaced at the Contractor's expense.

METHOD OF MEASUREMENT

Item 698.4 shall be measured by the SQUARE YARD furnished and installed. Overlapping for seams and joints shall be measured as one layer of fabric.

BASIS OF PAYMENT

Item 698.4 shall be paid for at the contract unit bid price per SQUARE YARD furnished and installed. This item shall include full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

GENERAL

The work under this Item shall conform to the relevant provisions of Sections 670, 751 and 767 of the MassDOT Standard Specifications for Highways and Bridges and the following:

This work shall include the furnishing and placement of a sediment control barrier for the purpose of slowing the velocity of and filtering suspended sediments from storm water flow. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers. Sediment barrier shall be used as perimeter barriers, to contain stockpile sediments, to break slope length, and to slow or prevent up gradient water from flowing into a work zone. The Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Sedimentation control shall be a minimum 12-inch diameter compost filter tubes.

With approval from the Engineer the following may be used to control sediments for small, disturbed areas with minimal slope and slope length:

- 9-inch diameter composts filter tubes or fiber logs
- Straw or straw bales provided that runoff is in the form of sheet flow and not concentrated flows (i.e. channels, swales, gullies, etc.)

No straw wattles may be used. Additional barriers (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line. Additional barriers shall be incidental to this item.

Where specified or required by permits, sedimentation fence shall be used in addition to compost filter tubes or straw bales and shall be incidental to this item.

Maintenance of control barriers and removal of accumulated sediment shall be as specified below, as required by the Engineer, and shall conform to the requirements of relevant environmental permits.

Upon completion of work and stabilization of soil, sediment control barriers shall be dismantled and/or removed as specified below for the site context (naturalized or urban). Site shall be restored as specified for specific barrier used. All non-biodegradable materials, including silt fence, twine, plastic netting, and photodegradable fabric, shall be removed, and disposed off-site for all projects.

Location of sediment barrier shall be based on the site's contours and such that it provides maximum effectiveness. Barriers shall be staked, trenched and/or wedged as specified herein and shall be securely in contact with existing soil such that there is no flow beneath the barrier and so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans to ensure that the placement will provide maximum effectiveness. If necessary to accommodate field conditions and to maximize effectiveness, barrier locations may be shifted with approval from the Engineer.

ITEM 767.121 (CONTINUED)

MATERIALS AND CONSTRUCTION

Compost Filter Tube

Compost material inside the filter tube shall meet section M1.06.0 of the MassDOT Standard Specifications for Highways and Bridges, except for the following: no manure or bio-solids shall be used; no kiln dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be made of 100% biodegradable materials (i.e., cotton, hemp, or jute) and shall have a knitted mesh with openings that allow for sufficient water flow and effective sediment capture.

Tubes shall be tamped, but not trenched, to ensure good contact with soil. When reinforcement is necessary, tubes shall be stacked as shown on the detail plans.

Straw Bales

Straw bales shall conform to the requirements of the Standard Specifications and the following:

Bales should be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides (rather than along the tops and bottoms) of the bales in order to prevent deterioration of the bindings.

The barrier shall be trenched and backfilled. The trench shall be excavated the width of the bale and the length of the proposed barrier to a minimum depth of 4 inches. The trench shall be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging) the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier.

Each bale shall be securely anchored by at least 2 stakes or rebars driven through the bale. The first stake in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or rebars shall be driven deep enough into the ground to securely anchor the bales. For safety reasons, stakes shall not extend above the bales but shall be driven in flush with the top of the bale.

The gaps between the bales shall be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw scattered over the area immediately uphill from a straw bale barrier tends to increase barrier efficiency. Wedging shall be done carefully in order not to separate the bales.

Straw bales shall be on the upslope side of the silt fence unless specified otherwise by the Engineer. When used in a swale, the barrier shall extend to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

ITEM 767.121 (CONTINUED)

Silt Fence

Silt fence shall conform to the requirements of the Standard Specifications and the following:

Silt fence shall only be used if shown on the plans, as required by the Engineer, or when specified by Order of Conditions or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch-wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed at the bottom of the trench followed by backfilling with compacted earth or gravel.

Stakes shall be driven 16 inches into the ground on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective. Spacing of stakes for silt fence may range from a minimum of 10 feet apart (where low flow is expected) to 3-4 feet apart where water may run over the top of the fence. Sagging fabric will require additional staking or other anchoring.

Height of silt fence shall be appropriate to the steepness and length of the slope and as specified by the manufacturer. Width of fabric shall be sufficient to provide a minimum 36-inch-high barrier after fabric is folded or trenched.

MAINTENANCE

Maintenance of sediment control barriers shall conform to the requirements of the Standard Specifications or the Order of Conditions, whichever is more restrictive.

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days, after a rain event resulting in 0.25 inches or more of rainfall, and at least daily during prolonged rainfall.

Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract. Contractor shall remove accumulated sediments when they reach half the height of the barrier or sediment fence.

The Contractor shall immediately correct all deficiencies including washouts, overtopping, clogging due to sediment, and erosion. The contractor shall review location of barriers in areas where construction activity causes drainage runoff to ensure that the barriers are properly located for effectiveness. Where deficiencies exist, such as overtopping or wash-out, additional staking or additional barriers shall be installed as required by the Engineer.

Barriers that decompose naturally such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact (despite fabric decay) and continues to provide effective water and sediment control, barrier does not necessarily require replacement if approved by the Engineer.

ITEM 767.121 (CONTINUED)

At specific locations, such as at gully points, steep slopes, or identified failure points in the sediment capture line, barriers shall be reinforced as required by the Engineer. Such reinforcing shall be incidental to the cost of this item and shall not exceed 10 percent of the overall length of barrier required for the project.

Barriers that are decomposing, cut, or otherwise compromised shall be repaired or replaced as directed by the Engineer. Repair and/or replacement shall be incidental to this item.

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed when construction work is complete and when site conditions are sufficiently stable to prevent surface erosion and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and silt fence, shall be removed and disposed off-site by the Contractor.

For naturalized areas, biodegradable, natural fabric, and material shall be left in place to decompose on-site unless required otherwise by the Engineer. Compost filter tubes may be left as they are with stakes removed. Straw bales shall be broken down and spread evenly. All nylon or nonbiodegradable twine shall be removed along with silt fence. Wooden stakes may be left on site, placed neatly and discreetly.

On urban, residential, and other locations where aesthetics is a concern, the following shall apply:

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). Not more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent grasses (i.e., lawn or native grass mix).
- Silt fence, stakes, and other debris shall be removed and disposed off-site. Site shall look neat and clean upon completion.

Dismantling, removal, and seeding shall be incidental to this item.

METHOD OF MEASUREMENT

Item 767.121 shall be measured per FOOT furnished and installed, complete in place.

BASIS OF PAYMENT

Item 767.121 shall be paid for at the contract unit bid price per FOOT which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of site, silt fence if required, and incidental costs required to complete the work. Additional barrier, such as double or triple stacking of compost filter tubes, shall be considered incidental under this Item.

Barriers that have been driven over or otherwise damaged by construction activities shall be repaired or replaced as directed by the Engineer at the Contractors expense.

Installation of a limit of work barrier and limit of work signage shall be considered incidental under this Item.

ITEM 983.521**STREAMBED RESTORATION****CUBIC YARD****GENERAL**

The work to be done under this Item shall conform to the relevant provisions of Section 983 of the Standard Specifications and the following:

This work shall consist of placing natural streambed material or equivalent substrate, angular riprap mixed with natural streambed material or equivalent substrate, crushed stone, and geotextile fabric for stabilization on the riverbed inside, upstream, and downstream of the proposed bridge to set a desired channel profile, maintain a natural bed appearance, and to provide passage for aquatic organisms and an upland bank along the face of the new structure for wildlife passage. The placement of these materials shall be as specified herein and on the Plans. The ultimate product will replicate the function and appearance of the existing stream, to the extent possible.

MATERIALS

The streambed restoration areas shall be comprised of the following:

- 24" layer inside culvert and varying layer depth outside culvert of natural streambed (previously dredged and stockpiled under Item 148.01) or equivalent substrate over

The natural streambed material shall be that material previously excavated from the surrounding area and stockpiled. The dredging and stockpiling of materials will be paid for under Item 148.01 – Dredging and Stockpiling of Material. If the contractor must bring in non-native material due to shortage, the Engineer shall review and approve all materials to be installed. If additional non-native material is required due to shortage, it shall be considered incidental to this item.

Any gravel, cobble, or boulders excavated and stockpiled from the existing streambed (as part of Item 148.01) shall be reused for streambed restoration, provided the excavated stone is characteristic of the existing stream material upstream and downstream of the work area. The elevations and conditions of the existing streambed adjacent to the project site shall be maintained to the maximum extent practicable.

Simulated streambed fill shall consist of natural field stone or natural river rock. Crushed stone from a quarry or other sources will not be permitted. Stone gradation will approximate the following size distribution; amounts finer than each laboratory sieve (square openings) (percent by weight)

Size (Inches)	Material	Percentage
0.01"	Sand	5
0.07"	Coarse Sand	10
1 ½" – 2"	Bank Run Gravel	25
2" – 4"	Small Cobble	50
4" – 8"	Medium Cobble	10

The size of an individual stone particle will be determined by measuring its diameter across the intermediate axis. Stone particles shall be sound, tough, dense, resistant to the action of air and water, and suitable in all respects for the purpose intended.

ITEM 983.521 (CONTINUED)

CONSTRUCTION

The streambed material shall be placed as detailed on the plans and as described in this specification. The Contractor shall submit to the Engineer for approval prior to the start of operations, their Placement Plan and Method of Placement.

A layer of natural streambed material shall be installed to restore streambed habitat and aesthetics. The material shall be installed during dewatered conditions behind cofferdams in accordance with the environmental permits. Where appropriate based on existing conditions at the site, a higher proportion of larger native boulders from the natural streambed material mix shall be placed along the edge of the channel to protect the banks or structures. Larger material shall also be installed in the channel to maintain a natural level of hydraulic roughness and re-establish fish habitat.

Once all material has been placed in the stream channel and approved by the Engineer, the Contractor shall remove the water control structures in such a way to slowly wet the stream to minimize the initial sediment pulse. Every attempt shall be made to minimize the downstream movement of sediment.

The final streambed shall look like a natural river, shall match nearby river reaches, and there shall be minimal to no subsurface flow upon final inspection by the Engineer.

METHOD OF MEASUREMENT

Item 983.521 shall be measured by CUBIC YARD of natural streambed/boulders re-laid, complete in place.

BASIS OF PAYMENT

Item 983.521 shall be paid for at the Contract unit price per CUBIC YARD complete and in place which price shall be considered full compensation for all labor, tools, equipment, and materials necessary to rebuild the streambed.

ITEM 991.1**CONTROL OF WATER****LUMP SUM**

The work to be done under this Item shall conform to the relevant provisions of Section 140 and consists of the work required for the control of water to remove the existing structure and complete construction of the proposed precast box concrete culvert in the dry, to the limits shown on the Plans and as specified herein.

It is the responsibility of the Contractor to design the water control structures to be used as part of the dewatering for removal of the existing culvert and installation of the new precast concrete box culvert. Additionally, as part of the work under this Item, it is the responsibility of the Contractor to determine the need and extent of sandbags, sedimentation basins, dewatering techniques, sedimentation controls, system maintenance, etc. needed to control water and sediment at the site. Construction operations shall be conducted in such a manner as to minimize siltation and prevent contamination of the waterway. The work also includes furnishing, installing, maintaining, and removing Turbidity Curtains (floating silt fences) where required during in-water work under these items that may produce turbidity or sedimentation, to avoid or minimize impacts to Essential Fish Habitat (EFH) by preventing construction materials, debris, and sedimentation from entering the waterway and surrounding areas.

The water control structures at locations shall be fully designed by the Contractor. All earth support shall be designed in accordance with the AASHTO LRFD Bridge Design Specifications and MassDOT LRFD Bridge Manual with all interims published as of the bid opening date.

The Contractor is responsible for determining all geotechnical criteria, lateral earth pressures, and hydrostatic pressures associated with the water control structures. Additional lateral earth pressures due to surcharges caused by equipment operation and/or material storage near the water control structures shall be considered and incorporated into the design.

SUBMITTALS

Prior to the commencement of any work at the site, the Contractor shall submit to the Engineer for review and approval, a detailed plan for water control, including the construction of the water control system, and a box culvert placement plan with a timetable and details specific to each of the phases of construction in relation to the control of water system. The submittal shall include working drawings and calculations. Detailing the methods and materials proposed to account for all anticipated loads and construction conditions necessary to permit the work while maintaining a safe work area and protecting property from damage.

Any drawings and calculations prepared as part of the submittal must be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

The Water Control Plan shall include a Sedimentation and Erosion Control Plan and a Water Flow Diversion and Containment Plan. The plans shall be adequate in detail to define specifics regarding materials, sizes, connections, and incidental items associated with the work. The furnishing of such plans shall not serve to relieve the Contractor's responsibility for the safety of the work or their responsibility for the successful completion of the project. The proposed plans submitted shall be designed and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

ITEM 991.1 (CONTINUED)

The Contractor shall make their own evaluation of existing conditions, groundwater level, water flow, the effects of their proposed temporary works and construction methods and shall provide in their design for all loads and construction conditions necessary to permit construction of the specified structures while maintaining public safety and protecting completed work and all third-party property from damage due to their operations.

Sedimentation and Erosion Control Plan:

The Contractor shall submit to the Engineer plans and details of the intended sedimentation/retention tank system that will be used along with dewatering techniques, and its location at the bridge site. All discharge resulting from dewatering activities shall be directed to temporary sedimentation/retention tank at locations approved by the Engineer. At no time shall said discharge be directly released into the stream. The proposed plan shall include methods and equipment necessary to discharge water from the sedimentation treatment basins. Sedimentation/retention tank shall be sized appropriately to adequately dewater from the proposed work zone while allowing sufficient time for sediments to settle out of the water, and with a depth such that a minimum of 18 inches of freeboard is maintained throughout its use.

Water Flow Diversion and Containment Plan:

The Contractor shall submit plans and details along with a complete description showing any proposed systems for control of water and dewatering plan to the Engineer for their approval prior to the start of the work. The proposed plan shall include methods and equipment necessary to perform the work and shall include water discharge methods and equipment to bring water from the work zone to sedimentation/retention tank.

METHODS

This work shall also include dewatering the work areas as needed to complete demolition and construction in the dry.

The system shall be designed so that there are no adverse effects on the adjacent properties. The control of water system shall be sized in such a way that the system is overtopped with elevated stream water before any adjacent properties are inundated.

Where sandbags are used, the bags shall not decay nor rip or tear during the installation, its service life within the waterway, or during the removal process. The Contractor shall not disturb the streambed in order to avoid migration of silts and sands further downstream. All in-stream work required to install, adjust, and remove the control of water system must be performed by hand or by hoisting equipment positioned upland. The Contractor is responsible for researching the seasonal groundwater levels and flow characteristics of the unnamed brook to determine appropriate details.

Measures to control the discharge of sediment or pollutants into the water resource areas shall include, but not be limited to the following:

- Site construction areas outside the buffer zones and on relatively flat ground.
- Management of construction operations involving hazardous materials, such as refueling and maintenance of equipment within the resource areas.
- Formulation of contingency plans to control accidental spillage from potentially hazardous materials.

ITEM 991.1 (CONTINUED)

- Installation and continuous maintenance of water control measures throughout the project.
- Treatment of all discharge resulting from dewatering activities through a sedimentation/retention tank to control turbidity. At no time shall the discharge from dewatering activities be directly released into a resource area.
- Perform as much work as possible outside the stream banks.

These measures shall be maintained for the duration of the contract.

The locations of any sedimentation/retention tank will be determined by the Contractor based on the selected methods of construction. Placement of the tank shall be in an upland area that is within the existing right of way and temporary easements.

If necessary, a sumping basin shall be constructed to collect any stream waters able to bypass the diversion system that may enter any work areas. The basin shall be equipped with a pump to convey water to a sedimentation/retention tank. Water shall be discharged downstream after passing through the sumping basin and sedimentation/retention tank. No water pumped from the work areas shall be discharged back to the stream until sediment is filtered using the sedimentation/retention tank.

All dewatering and related water control work shall be conducted in such a manner as to prevent siltation or contamination of the waterway. At a minimum, the sedimentation/retention tank shall be constructed of an earthen berm lined with geotextile fabric and surrounded by staked hay bales. The tank shall meet or exceed the following criteria:

- The size and location of the tank shall be determined based on the size of the Contractor's pump and the anticipated groundwater levels.
- The outlet/weir of the sedimentation/retention tank shall not cause erosion of the surrounding area. An approved method of controlling erosion, such as an erosion control blanket, stone, etc., shall be used at the outlet of the tank.
- The Contractor shall not allow any sediment within the sedimentation/retention tank to accumulate to a depth of greater than 12 inches at any point in the tank, nor shall the water level be allowed to rise to a height of more than 24 inches.
- The sedimentation/retention tank shall be designed with a minimum of 18 inches of freeboard, which must be maintained at all times.
- The Contractor shall inspect the sedimentation/retention tank at least daily when in operation.
- Damages shall be repaired immediately.
- The sedimentation/retention outlet shall be cleaned daily.
- The sediments within the sedimentation/retention tank shall be disposed of as described in the Order of Conditions or as approved by the Engineer.

Upon completion of water control, the materials and equipment used to maintain the control of water system, sumping basin, and sedimentation/retention tank shall become the property of the Contractor and shall be removed by the Contractor from the site. The area affected shall be restored to its natural condition in a manner subject to the Engineer's approval.

The Contractor is advised that the effectiveness of the water control method used will vary based on the field conditions and the time at which the actual excavation work is being performed. The Engineer has the right to order the Contractor to stop all excavation operations when in their judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

ITEM 991.1 (CONTINUED)

METHOD OF MEASUREMENT

Item 991.1 shall be measured per LUMP SUM.

BASIS OF PAYMENT

Item 991.1 will be paid at the Contract unit price per LUMP SUM, which price shall include all labor, materials, equipment, engineering, and incidental costs required to complete the work as indicated on the Contract Documents. Any riprap used for dewatering discharge shall be considered incidental to the work and shall be paid for under this Item.

In general, the payment method for Item 991.1 is partial progressive payment of the LUMP SUM Contract Unit Bid Price of this Item. The partial payment schedule will be as follows:

- The first payment of Item 991.1 (50% of the LUMP SUM bid price) will be made upon complete installation of the water control system to the satisfaction and approval of the Engineer.
- The final payment of Item 991.1 (50% of the LUMP SUM bid price) will be made upon the satisfactory removal of the water control system after bridge construction is complete.

All adjustments and repositioning of water control shall be considered as included under this item.

No separate payment will be made for the removal and disposal of the sediment material collected from the dewatering systems, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 995.011**CULVERT STRUCTURE****LUMP SUM**

The work done under this Item shall conform to the applicable portions of Section 995 of the Standard Specifications and the specific requirements stipulated below for component parts of the subject Item. For those component parts where no specific requirement is stipulated, the Standard Specifications shall apply, except for payment.

Work under this Item shall include all materials, equipment, and labor needed for the following:

- Precast box concrete culvert (culvert, headwall, cutoff wall);
- Precast concrete wingwalls (footings and wall stems);
- Epoxy coated reinforcing steel;
- Membrane waterproofing for bridge decks
- Preformed joint filler
- Damp proofing

The work does not include any items listed separately in the proposal. Payment for materials shown on the Plans as being part of the bridge structure or which may be incidental to its construction and are not specifically included for payment under another Item shall be considered incidental to the work performed under this Item and shall be included in the unit price of the component of which they are a part.

PRECAST CONCRETE ELEMENTS

Work under this heading shall conform to the relevant provisions of Section 901 of the Standard Specifications.

The following concrete mixes shall be used:

5000 PSI HP CEMENT CONCRETE shall be used for the precast box culvert, headwalls, wingwalls, footings, and cutoff walls.

All concrete products must be listed on the MassDOT Qualified Construction Material List as an approved producer. Preformed or pre-molded fillers, joint sealers, waterstops, and closed cell foam shall be considered incidental to the work involved in the furnishing and placing of all concrete. All structural concrete shall be placed in the dry.

STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED

The work under this heading shall conform to the applicable provisions of section 901.40, 901.62, 901.80, and 901.81 of the MassDOT Standard Specifications for Highways and Bridges as modified by the following:

Special procedures shall be used during handling, storage, and installation to prevent damaging epoxy coating, as outlined in the Concrete Reinforcing Steel Institute (CRSI) report titled “Guidelines for Inspection and Acceptance of Epoxy Coated Reinforcing Steel at the Jobsite”. Any damage to the epoxy coating shall be repaired following this report. A copy of this report must be available at the jobsite for reference.

ITEM 995.011 (CONTINUED)

Accessories supporting epoxy coated bars or welded wire fabric shall be epoxy coated. Individual and continuous slab bolsters and chairs shall be of a type to suit various conditions encountered and must be capable of supporting a 300 lb. load without damage or permanent distortion.

DAMP-PROOFING

All work to be done under this heading shall conform to the applicable provisions of Section 970 of the Standard Specifications.

Damp-Proofing shall be used to coat the sides of the precast box culvert and the backs of the precast concrete wingwalls. The top of the box culvert that doesn't have membrane waterproofing should also be damp-proofed.

PREFORMED JOINT FILLER

Work to be done under this item consists of providing and installing joint filler material as shown on the plans.

A. Materials

All closed cell expansion joint fillers used under this Item shall conform to Materials Specification M9.14.0, "Preformed Expansion Joint Filler."

B. Construction Methods

Install material per manufacturer's recommendations.

MEMBRANE WATERPROOFING FOR BRIDGE DECKS

All work to be done under this heading shall conform to the applicable provisions of Section 965 of the Standard Specifications.

Membrane waterproofing shall be used to coat the top of the precast box culvert to the limits shown in the plans.

PRECAST CONCRETE BOX CULVERT, WINGWALL FOOTINGS, WINGWALL STEMS, AND CUTOFF WALLS

C. General.

The work under this Heading consists of fabricating, transporting and installing the precast box concrete culvert, precast concrete wingwall footings, precast concrete wingwall stems, precast concrete cutoff walls, and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The work shall also include the full structural design of the box culvert. The design of the wingwall footings and wingwall stems are provided in the contract documents. However, the contractor may submit an alternative design for the wingwalls if desired. The alternative design shall include all plans, details, specifications, and calculations for the alternative design.

ITEM 995.011 (CONTINUED)

The work shall conform with the MassDOT Standard, Supplemental, and Interim Specifications and the requirements of the current AASHTO LRFD Bridge Construction Specifications, supplemented by the current relevant provisions of the latest edition of PCI MNL-116 (The Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products), except as noted herein.

QUALITY ASSURANCE

A. General.

Quality Assurance includes all the planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service. It is an all-encompassing term that includes Quality Control (performed by the Fabricator) and Acceptance (performed by the Engineer). Quality Control is the system used by the Contractor and Fabricator to monitor and assess their production processes at the plant facility and installation activities at the project site to ensure that the final product will meet the specified level of quality. Acceptance includes all factors used by the Engineer to determine the corresponding value for the product. Inspection at the plant facility is intended as a means of evaluation of compliance with contract requirements. Contractor and Fabricator Quality Control activities and Engineer Acceptance activities shall remain independent from one another. Engineer Acceptance activities shall not replace Fabricator Quality Control activities.

B. Fabricator Quality Control.

Quality Control shall be performed by the Fabricator to ensure that the product is fabricated in conformance with the specifications herein. The Fabricator shall maintain a Quality Control system to monitor, assess, and adjust placement and fabrication processes to ensure the Precast Concrete Bridge Element(s) meet the specified level of quality, through sufficient Quality Control sampling, testing, inspection, and corrective action (where required). The Fabricator's Quality Control system shall address all key activities during the placement and fabrication and shall be performed in conformance with the Fabricator's NPCA or PCI Certification. Quality Control documentation shall meet the requirements of the *Fabricator Quality Control – Documentation* section below. Upon request, Fabricator Quality Control documentation shall be provided to the Engineer.

1. Plant.

Prior to the fabrication of Precast Concrete Bridge Elements, the Fabricator's precast concrete plant shall obtain the following:

- (a) Certification by the National Precast Concrete Association (NPCA) Plant Certification Program or Precast/Prestressed Concrete Institute (PCI) Plant Certification Program, for the applicable types of Precast Concrete Bridge Element(s) being fabricated
- (b) MassDOT Prequalification
- (c) MassDOT Mix Design Approval

All concrete for a given Precast Concrete Bridge Element shall be produced by a single company and plant, unless otherwise approved by the Engineer.

2. Personnel.

The Fabricator shall provide adequate training for all QC personnel in accordance with NPCA or PCI certification. There shall be sufficient personnel trained and certified to perform the tests listed under Subsection M4.02.13, Part D. At a minimum, the Fabricator's Quality Control Personnel shall maintain the following qualifications and certifications:

ITEM 995.011 (CONTINUED)

- (a) QC Manager with an active NETTCP Field Technician or ACI Concrete Field Testing Technician – Grade I certification or higher, and a minimum of 4 years continuous experience in the manufacture of Precast Concrete Bridge Elements for state transportation departments.
- (b) A Technician/Inspector having the Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level I or NorthEast Transportation Training and Certification Program (NETTCP) Precast Concrete Inspector, or higher.

The Contractor shall submit to the Engineer a copy of the Fabricator's Quality Control Personnel required qualifications, as specified above.

3. Laboratory.

The Fabricator shall provide a room of sufficient size to house all equipment and to adequately perform all testing. The room shall have either a separate moisture storage room or curing box for concrete cylinders, and it shall be thermostatically controlled to maintain temperatures consistent with AASHTO T 23. It shall include a desk and file cabinet for proper record keeping, and have good lighting and ventilation.

This room shall be kept for testing and quality control and not used for any other purpose. An additional desk and file cabinet shall be provided for exclusive use of the Engineer. No exception from these requirements will be allowed without the express written permission of the Engineer.

4. Testing Equipment.

At a minimum, the Fabricator's plant facility shall have the following testing equipment:

- (a) Air Content Meter Type A or B: AASHTO T 152
- (b) Air Content Meter Volumetric Method: AASHTO T 196 (Required for Lightweight Concrete)
- (c) Slump Cone: AASHTO T 119
- (d) Cylinder Molds AASHTO M 205
- (e) Concrete Testing Machine: AASHTO T 22
- (f) Screening Sieve: AASHTO T 27, AASHTO T 11
- (g) Curing Box: AASHTO T 23
- (h) Spread Test Base Plate for Self-Consolidating Concrete (SCC): ASTM C1611
- (i) All other equipment prescribed by AASHTO and ASTM standards for the tests to be performed by the Fabricator as specified

5. Inspection.

Quality Control personnel shall monitor and inspect the fabrication of each Precast Concrete Bridge Element. Quality Control personnel shall report all inspection activities on Quality Control Inspection Reports and non-conformances on Non-Conformance Reports (NCRs) throughout the entire fabrication process, as specified herein.

6. Temperature Monitoring.

At a minimum, the Fabricator shall monitor, record, and report the temperatures of the form, ambient temperatures surrounding the concrete, and temperatures of the concrete continuously, without interruption as specified below:

- (a) Prior to placement of concrete to verify that $T_i \geq 50^\circ\text{F}$.
- (b) Immediately after placement to verify that $T_i \geq 50^\circ\text{F}$ is maintained.

ITEM 995.011 (CONTINUED)

- (c) Throughout the entire duration of the curing cycle, at regular intervals not to exceed one hour until 100% Design Strength (f'_c) is attained and concrete has cooled to within 40°F of the ambient temperature surrounding the Precast Concrete Bridge Element.

At a minimum, the temperature measuring devices shall record and report the temperature of the concrete to the nearest 2°F. At least two temperature sensors (thermocouples) shall be positioned to record the maximum and minimum anticipated concrete temperatures. The anticipated minimum temperature shall be measured with one or more thermocouples at a distance no greater than 2 inches from the surface of the thinnest section. The anticipated maximum temperature shall be measured with one or more thermocouples at the center of the thickest section. Proposed temperature measurement locations shall be submitted to the Engineer for approval. Temperature recording devices shall be located within the curing enclosure and calibrated as required by PCI MNL-116 Section 4.18.4. Maximum heat increase and cool down rates shall comply with PCI MNL-116, Section 4.19. The Contractor shall furnish temperature logs recorded at a minimum frequency of once per hour to the Inspector as required, with each post-pour QC inspection report.

7. Sampling and Testing.

At a minimum, the Fabricator shall perform random Quality Control sampling and testing as specified in *Table 1: Quality Control Sampling and Testing*. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during fabrication. Test Specimens shall conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60, with the exception of the stripping (80% f'_c) set of cylinders. Stripping (80 % f'_c) cylinders shall be cured in the same location and environment as the Precast Bridge Elements they represent. If approved by the Engineer, compressive strength cylinder match curing equipment, that maintains the same concrete conditions that the corresponding Precast Bridge Element is exposed to, may be utilized in lieu of Stripping (80 % f'_c) field cured cylinders, with the use of thermocouples, controllers, and heaters.

ITEM 995.011 (CONTINUED)**Table 1: Quality Control Sampling and Testing**

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size ^(c)	Sublot Size ^(d)	Frequency	Point of Sampling
Slump (in.) ^(a)	AASHTO T 119	Per AASHTO	≤ 8 in. or as approved by the Engineer	Total Quantity of Concrete (cy) produced on a Contract, per Type of Element fabricated, per Mix Design	20 cy	One (1) per Sublot or fraction thereof	Point of Discharge
Air Content (%)	AASHTO T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Compressive Strength (psi)	AASHTO T 22	Stripping Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 80% f'_c at Stripping				
		7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days				
		28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f'_c at 28 days				
		56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f'_c at 56 days ^(b)				

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f'_c).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

ITEM 995.011 (CONTINUED)

8. Certificate of Compliance.

The Fabricator shall provide a Certificate of Compliance in accordance with Standard Specifications, Division I, Section 6.01, stating that QC test cylinders have achieved the design strength, f'_c . A Certificate of Compliance shall accompany each shipment and shall be presented to the Engineer or designee upon delivery to the site.

9. Documentation.

At a minimum, the Fabricator shall maintain a filing system for the following QC records and documentation. All QC records and documentation shall be made available to the Engineer upon the request.

- (a) Current MassDOT Approved Mix Design Sheet(s) and Approval Letter(s)
- (b) PCI or NPCA Certification
- (c) Current Qualifications and Certifications for QC Manager(s) and QC Technician(s)
- (d) Most current set of Approved Shop Drawings
- (e) Approved Placement, Finishing and Curing Plan
- (f) Approved Dunnage Plan
- (g) Fabricator Certificate of Compliance for each fabricated Precast Concrete Bridge Element
- (h) Admixture Manufacturer's Certification of Compliance for each approved Admixture
- (i) Completed QC Inspection Report for each fabricated Precast Concrete Bridge Element
- (j) Identification Number for each fabricated Precast Concrete Bridge Element
- (k) Time and date of casting of each fabricated Precast Concrete Bridge Element
- (l) Date of stripping of each fabricated Precast Concrete Bridge Element
- (m) Batch Ticket Printout reporting the quantity of concrete produced for each batch of concrete produced
- (n) Concrete temperature records for each Precast Concrete Bridge Element fabricated
- (o) QC Test Report Forms for each subplot of concrete produced
- (p) Non-Conformance Reports (NCRs)
- (q) Documentation of Repairs (if applicable)

ITEM 995.011 (CONTINUED)

MATERIALS

A. Materials.

Materials shall meet the following specifications (if applicable):

General	M4.00.00
Portland Cement	M4.01.0
Blended Hydraulic Cements	M4.01.1
Fly Ash	M4.01.2
Cement Concrete	M4.02.00
Cement	M4.02.01
Cement Mortar	M4.02.15
Aggregates	M4.02.02
Lightweight Aggregates	M4.02.03
Water	M4.02.04
Cement Concrete Additives	M4.02.05
Proportioning	M4.02.06
Mixing and Delivery	M4.02.10
Test Specimens	M4.02.13
Mortar for Filling Keyways	M4.04.0
Slag	AASHTO M 302
High Performance Cement Concrete	M4.06.1
Self-Consolidating Concrete (SCC)	M4.02.17
Controlled Density Fill – Non-Excavatable	M4.08.0
Reinforcing Bars	M8.01.0
Epoxy Coated Reinforcing Bars	M8.01.7
Galvanized Reinforcing Bars	M8.01.8
Welded Wire Reinforcement	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Lifting Devices	PCI MNL-116
Corrugated Metal Pipe	AASHTO M 36

1. Cement Concrete Mix Design.

The cement concrete shall be comprised of specified proportions of water and MassDOT approved aggregates, cement, supplementary cementitious materials (SCMs), and admixtures to form a homogenous composition. Cement concrete for Precast Concrete Bridge Elements shall meet the requirements of M4.06.1 High Performance Cement Concrete, with the exception that the “Total Cementitious Content” specified shall be considered the “Maximum Allowable Cementitious Content”. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

Prior to production of cement concrete, the Fabricator shall report and submit all proposed mix design formulations and its constituent materials onto the MassDOT Cement Concrete Mix Design Sheet to the MassDOT Research and Materials Section for review and approval. All mix design yields shall be designed for 1.0 cubic yards of concrete, with an allowable tolerance of +/- 1.0 %. All liquids incorporated into the proposed mix design(s) shall include both water and admixtures in the liquid mass calculation.

ITEM 995.01 (CONTINUED)

During production of cement concrete, the Fabricator shall not alter the previously approved mix design formulation or its constituent materials. Proposed alterations in source, type, batch quantity, or gradation to any of the constituent materials of the previously approved mix design formulation shall require a new MassDOT Mix Design Sheet submission to the MassDOT Research and materials Section for review and approval. Fabrication shall not occur without prior MassDOT mix design approval. The Fabricator shall notify MassDOT RMS to schedule trial batch testing for the new mix design(s). Trial batch testing shall meet the following requirements:

- (a) Performed by a qualified laboratory and/or AASHTO accredited laboratory.
- (b) Performed and/or sampled in the presence of a MassDOT Inspector.
- (c) Meet the requirements as specified in *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete (SCC) shall meet M4.02.17.

Failure to perform all of the required trial batch testing or provide MassDOT RMS trial batch test results within the Specification Limits (as specified in Table 3) will result in the disqualification of the Fabricator's proposed mix design(s).

Table 3: Trial Batch Sampling and Testing for New Mix Designs

Quality Characteristic	Test Method	Sample Size	Specification Limit	Performed By
Slump ^(a)	AASHTO T 119	Per AASHTO	Max. 8 inches or as approved by the Engineer	Quality Control
Air Content (AC)	AASHTO T 152	Per AASHTO	$5\% \leq AC \leq 8\%$	Quality Control
Temperature (°F)	AASHTO T 309	Per AASHTO	$50^{\circ}\text{F} \leq ^{\circ}\text{F} \leq 90^{\circ}\text{F}$	Quality Control
Compressive Strength ^(b)	AASHTO T 22 AASHTO T 23	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Lab Mixed $f'_{cr} = 1.3 f'_c$ at 28 days Batch Mixed $f'_{cr} = 1.2 f'_c$ at 28 days	MassDOT
Alkali-Silica Reaction (ASR) ^(d)	ASTM C 1567	Per ASTM	M4.02.00	Quality Control
Resistance to Chloride Ion Penetration Chloride Ion Penetration ^(e)	AASHTO T 358 ^(f)	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Resistivity $\geq 21 \text{ k}\Omega\text{-cm}$ at 28 days	MassDOT
Freeze/Thaw Durability ^(c)	AASHTO T 161 (Procedure A)	Per AASHTO	Relative Dynamic Modulus of Elasticity after 300 cycles $\geq 80\%$	Quality Control

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) Trial batch compressive strength testing shall be performed by MassDOT. Laboratory mixed trial batch compressive strength results shall achieve 130% Design Strength (f'_c). Batch-mixed trial batch compressive results shall achieve 120% f'_c . Acceptance will be based on compressive strength testing performed by MassDOT.
- (c) If an AASHTO accredited laboratory is preparing the trial batch test specimens, MassDOT Acceptance presence is not required. If the Fabricator is preparing the trial batch test specimens, MassDOT Acceptance presence is required during trial batch test specimen preparation.
- (d) Alkali Silica Reaction (ASR) testing shall meet the requirements of M4.02.00. Independent laboratories performing ASR testing shall be listed on the MassDOT Quality Construction Materials List (QCML).

ITEM 995.01 (CONTINUED)

- (e) Calcium nitrite shall be removed from mix designs containing the admixture and replaced by an equivalent quantity of water when preparing Chloride Ion Penetration resistance trial batch test specimens.
- (f) The Wenner probe tip spacing “a” shall be 1.5.

2. Vertical Adjustment Assembly.

Vertical Adjustment Assembly details and material requirements shall be as shown on the plans. Alternate devices may be used provided that they are adjustable and can support the anticipated loads. The design of the leveling devices, with necessary calculations, shall be submitted to the Engineer for approval.

3. Grout.

Grout used for shear keys, vertical adjustment assembly voids, and hand holes shall be in accordance with M4.04.0.

4. Reinforcement.

All reinforcing steel shall be epoxy coated Grade 60 unless otherwise noted on the plans. Mechanical reinforcing bar splicers shall be epoxy coated.

5. Threaded Inserts.

Threaded inserts are permissible to facilitate forming the keyway pours. Threaded inserts shall be hot dip galvanized or made of stainless steel. The number of threaded inserts shall be minimized, and the inserts shall not come in contact with the reinforcing steel.

6. PVC Pipe.

PVC pipe used for forming voids as specified on the plans shall be in accordance with M5.03.7.

7. Grouted Reinforcement Splices.

Grouted reinforcement splicers used for connection of precast elements shall be in accordance with M8.01.9.

CONSTRUCTION METHODS – PLANT FABRICATION

A. Shop Drawings.

Prior to performing any work under this Section, the Contractor shall receive approval for all shop drawings for the Precast Concrete Bridge Element being worked on and any special Contract requirements, provided that a complete shop drawing package is provided. The Contractor shall not order materials or begin work before receiving approved shop drawings. The Engineer will reject Precast Concrete Bridge Elements that deviate from the approved drawings or are fabricated prior to receiving written approval of the shop drawings. The Contractor shall bear full responsibility and costs for all materials ordered or work performed prior to the approval of the shop drawings or written authorization from the Engineer.

Contractor shall submit scaled shop drawings to the Engineer for review and approval. Design calculations for the precast box culvert shall not be included in the submittal. The Fabricator’s name and address shall appear on each sheet.

Resubmittal of “Approved as Noted” shop drawings is not necessary for minor revisions, provided that the correction can be clearly understood and is unambiguous without possibility of misinterpretation. Shop drawings with questions or comments that require a response and/or additional information from the Fabricator must be resubmitted.

ITEM 995.01 (CONTINUED)

Detailed shop drawings shall be prepared in accordance with the relevant provisions of Subsection 5.02 and shall, at a minimum, contain the following:

- (a) Number and type and/or piece mark of the precast concrete bridge element including overall length, width, and height.
- (b) Skew angle.
- (c) Location, size, and geometry of all steel reinforcement, including mechanical reinforcing bar splicers to be used for connecting Precast Concrete Bridge Elements together in the field.
- (d) Location and details of all inserts, anchors, Vertical Adjustment Assemblies, and any other items required to be cast into the Precast Concrete Bridge Elements (whether detailed on the plans by the Engineer of Record or provided for the Contractor's convenience). Precast Concrete Bridge Elements shall not be fired or drilled into for attachment purposes. All hardware shall be galvanized except as noted.
- (e) Locations and details of the lifting devices, including supporting calculations, type and amount of any additional reinforcing required for lifting. The Fabricator shall design all lifting devices based on the no cracking criteria in Chapter 8 of the PCI Design Handbook (7th edition).
- (f) The minimum compressive strength required prior to handling the precast concrete bridge element.

The shop drawings shall not include procedures for placement, finishing, and curing of concrete. These details shall be included in the Placement, Finishing and Curing Plan that is to be submitted to the Engineer as described under *Placement, Finishing, and Curing Plan*.

B. Fabrication.

All Precast Concrete Bridge Elements shall be fabricated in accordance with the latest edition of PCI MNL-116 as modified herein.

C. Placement, Finishing and Curing Plan.

At least 30 days prior to start of fabrication, the Contractor shall submit the Fabricator's proposed Placement, Finishing and Curing Plan to the Engineer for approval. This shall be an independent submittal, separate from the fabrication shop drawings and design calculations. The Placement, Finishing and Curing Plan shall include the following:

- (a) Method of Mixing
- (b) Method of Placement
- (c) Method of Consolidation
- (d) Method of Finishing
- (e) Method of Initial Curing
- (f) Method of Intermediate Curing
- (g) Method of Final Curing
- (h) Moisture Retention Materials and Equipment (water spray equipment, saturated covers, sheet materials, liquid membrane-forming compounds, accelerated curing equipment, etc.)
- (i) Cylinder Curing Methods, Location, and Environmental Control (temperature, humidity, etc.)
- (j) Temperature Monitoring, Recording, and Reporting

D. Precast Box Culvert and Footings

The Contractor shall submit design computations for the precast box culvert to the Engineer for review and approval. The computations shall be prepared in accordance with the latest AASHTO LRFD Bridge Design Specifications, the 2013 MassDOT LRFD Bridge Design Manual, and the Plans using English units and HL-93 live loading.

ITEM 995.01 (CONTINUED)

Extreme Event and Service Limit States as are appropriate for each stage of fabrication, shipment, construction, and for the final in-service condition. Design computations and shop drawings shall be prepared and stamped by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts. The shop drawings shall be prepared and submitted in accordance with the section, Drawings, above.

The dimensions provided on the plans are shown to establish the size of the proposed opening. The width and thickness of each culvert unit may vary depending upon the manufacturer's specifications provided that the opening size is maintained. The Contractor shall be responsible for modifying the dimensions of the elements to compensate for elastic shortening, shrinkage, grade corrections, and other phenomena that make in-process fabricating dimensions different from those shown on the drawings. Approval of the shop drawings shall not relieve the Contractor from responsibility for the correctness of the dimensions shown.

1. Joints.

The precast reinforced concrete box culvert shall be produced with grout-filled keyways per the details on the plans, the manufacturer's recommendations, and as approved by the Engineer. The ends shall be manufactured such that when the sections are laid together they will make a continuous line of frames with a smooth interior surface free of appreciable irregularities, and in compliance with the permissible variations.

2. Marking.

The following information shall be clearly marked on the interior of each frame by indentation, waterproof paint, or other approved means:

- (a) Frame span and rise
- (b) Date of manufacture and lot number
- (c) Name and trademark of the manufacturer

E. Reinforcement.

The reinforcing bars shall be installed in accordance with Section 901.62 of the Supplemental Specifications, including tolerances for cover and horizontal spacing of bars. Components of mechanical reinforcing bar splicers shall be set with the tolerances shown on the plans. The reinforcing bars and mechanical reinforcing bar splicers shall be assembled into a rigid cage that will maintain its shape in the form and which will not allow individual reinforcing bars to move during the placement of concrete. This cage shall be secured in the form so that the clearances to all faces of the concrete, as shown on the plans, shall be maintained.

Where reinforcing bars are to protrude from one Precast Concrete Bridge Element in order to mate with reinforcing bar splicers in a second precast concrete element, the fabricator shall set the reinforcing bars and the reinforcing bar splicers with a template in order to ensure proper fit up within the tolerances specified on the plans.

F. Tolerances.

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with 901.62. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

ITEM 995.01 (CONTINUED)

G. Forms.

Concrete shall be cast in rigidly constructed forms, which will maintain the Precast Concrete Bridge Elements within specified tolerances to the shapes, lines and dimensions shown on the approved fabrication drawings. Forms shall be constructed from flat, smooth, non-absorbent material and shall be sufficiently tight to prevent the leakage of the plastic concrete. When wood forms are used, all faces in contact with the concrete shall be laminated or coated with a non-absorbent material. All worn or damaged forms, which cause irregularities on the concrete surface or damage to the concrete during form removal, shall be repaired or replaced before being reused. Any defects or damage of more than "Category 2, Minor Defects" made to the concrete, due to form work, stripping or handling, shall be subject to repair or rejection, as defined in the *Repairs and Replacement* section. If threaded inserts are cast into the elements for support of formwork, the inserts shall be recessed a minimum of 1 inch and shall be plugged after use with a grout of the same color as that of the precast cement concrete.

H. Mixing of Concrete.

The concrete shall be proportioned and mixed in conformance with the Fabricator's approved mix design and M4.02.10 Mixing and Delivery Fabrication shall not occur without prior mix design approval. The Fabricator shall provide copies of batch tickets to the Engineer.

I. Placement of Concrete.

Prior to the placement of concrete, the temperature of the forms shall be greater than or equal to 50°F. Quality Control inspection shall be performed by the Fabricator as specified in the *Fabricator Quality Control* section. The Fabricator shall verify all materials and equipment required for protecting and curing the concrete are readily available and meet the requirements of the *Final Curing Methods* section below. All items encased in the concrete shall be accurately placed in the position shown on the Plans and firmly held during the placing and setting of the concrete. Clearance from the forms shall be maintained by supports, spacers, or hangers and shall be of approved shape and dimension.

During placement, the concrete shall maintain a concrete temperature range between 50°F and 90°F. The Fabricator shall minimize the time to concrete placement (measured from start of mixing to completion of placement). In no event shall time to placement exceed 90 minutes. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during the placement of the concrete as specified in the *Fabricator Quality Control* section above. Delays or shutdowns of over 30 minutes shall not be allowed during the continuous filling of individual forms.

J. Consolidation of Concrete.

Suitable means shall be used for placing concrete to prevent segregation or displacement of reinforcing steel or forms. The concrete shall be thoroughly consolidated by external or internal vibrators or a combination of both. Vibrators shall not be used to move concrete within the forms. Vibrators shall be used as specified in 901.63C and as directed by the Engineer. Concrete shall be placed and consolidated in a way that minimizes the presence of surface voids or bug holes on the formed surfaces. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

ITEM 995.01 (CONTINUED)

K. Finishing of Concrete.

The finish of the Precast Concrete Bridge Elements shall be as indicated on the plans. Where Precast Concrete Bridge Elements have keyways for grout or closure pours, the surfaces of these shear keys shall be abrasive blasted prior to shipment. The Fabricator may utilize a surface retarder with water blast, sandblast, or a combination of both to achieve the desired keyway finish. At a minimum, the profile of the keyway surfaces shall be like that of 60 grit sandpaper. The exposed reinforcing steel in the precast slab shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer.

The Fabricator shall permanently mark each precast concrete bridge element with its type and/or piece mark, date of casting, and supplier identification either by stamp markings in fresh concrete, waterproof paint, or other approved means on a surface that will not be exposed after assembly.

L. Exposed Surfaces of Precast Concrete Bridge Elements.

As soon as conditions permit, before the concrete has fully hardened, all dirt, laitance, and loose aggregate shall be removed from the exposed concrete surfaces. Contractor shall not allow foot traffic on the uncured concrete until it has reached sufficient strength to prevent damage.

M. Exposed Surfaces of Closure Pour Shear Keys.

The closure pour shear key cast in the sides of the beam flanges shall have an exposed aggregate finish. The closure pour reinforcing steel and its coating shall not be damaged by the process for creating the exposed aggregate surface. Fabricator may utilize a surface retarder with water blast, abrasive blast, or a combination of both to achieve the desired shear key finish. The abrasive blast shall use oil free compressed air. The profile of the shear key surfaces shall be like that of 60 grit sandpaper.

N. Initial Curing Methods.

After the placement of concrete and prior to concrete finishing, the Fabricator shall initiate initial curing methods when the concrete surface begins to dry, to reduce moisture loss from the surface. Application of one or more of the following initial curing methods shall occur immediately after the bleed water sheen has disappeared.

1. Fogging.

Fogging nozzles shall atomize water into a fog-like mist. The fog spray shall be directed and remain visibly suspended above the concrete surface, to increase the humidity of the air and reduce the rate of evaporation. Water from fogging shall not be worked into the surface during finishing operations and shall be removed or allowed to evaporate prior to finishing.

2. Liquid-applied Evaporation Reducers

Evaporation reducers shall be sprayed onto the freshly placed concrete surface to produce an effective monomolecular film that reduces the risk of plastic-shrinkage cracking and rate of evaporation of the bleed water from the concrete surface. Evaporation reducers shall be applied in accordance with manufacturer's recommendations.

ITEM 995.01 (CONTINUED)

O. Intermediate Curing Methods.

The Fabricator shall initiate intermediate curing methods if concrete finishing has taken place prior to the concrete reaching final set. The freshly finished concrete surface shall be protected from moisture loss, by the continuation of initial curing methods (fogging and evaporation reducers) until final curing methods are applied or by the use of liquid membrane-forming curing compounds (see *Liquid Membrane-Forming Compounds for Curing* section).

P. Final Curing Methods.

The Fabricator shall initiate and apply final curing methods to the concrete immediately after the following conditions are met:

- (a) Completion of concrete finishing
- (b) Final set of concrete
- (c) Concrete has hardened sufficiently enough to prevent surface damage

During fabrication of Precast Concrete Bridge Elements, the Fabricator shall maintain the required concrete temperature ranges throughout the entire duration of the final curing method cycle as specified herein. Controlled and gradual termination of the final curing method shall occur after all specified conditions are met. The concrete temperature shall be reduced at a rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the final curing method enclosure. The Fabricator shall maintain a minimum concrete temperature of 40°F until 100% f_c is attained (see *Handling and Storage* section below).

1. Water Spray Curing.

All exposed concrete surfaces shall remain moist with a continuous fine spray of water throughout the entire duration of the final curing method cycle (see *Table 4: Final Curing Method Cycle for Water Spray*).

Table 4: Final Curing Method Cycle for Water Spray

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Five (5) days	≥ 80% f _c

2. Saturated Covers for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of saturated covers throughout the entire duration of the final curing method cycle (see *Table 5: Final Curing Method Cycle for Saturated Covers*). Saturated covers shall be allowed to dry thoroughly before removal to provide uniform, slow drying of the concrete surface.

ITEM 995.011 (CONTINUED)**Table 5: Final Curing Method Cycle for Saturated Covers**

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
$50^{\circ}\text{F} \leq ^{\circ}\text{F} \leq 90^{\circ}\text{F}$	$\geq$ Three (3) days	$\geq 80\% f'_c$

Saturated covers, such as burlap, cotton mats, and other coverings of absorbent materials shall meet the requirements of AASHTO M 182, Class 3. Saturated covers shall be in good condition, free from holes, tears, or other defects that would render it unsuitable for curing concrete. Saturated covers shall be dried to prevent mildew when storing. Prior to application, saturated covers shall be thoroughly rinsed in water and free of harmful substances that are deleterious or cause discoloration to the concrete. Saturated covers shall have sufficient thickness and proper positioning onto the concrete surface to maximize moisture retention.

Saturated covers shall contain a sufficient amount of moisture to prevent moisture loss from the surface of the concrete. Saturated covers shall be kept continuously moist so that a film of water remains on the concrete surface throughout the entire duration of the final curing method cycle. The Fabricator shall not permit the saturated covers to dry and absorb water from the concrete. Use of polyethylene film (see *Polyethylene Film* section) may be applied over the saturated cover to potentially decrease the need for continuous watering.

3. Sheet Materials for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of curing sheet materials throughout the entire duration of the final curing method cycle (see *Table 6: Final Curing Method Cycle for Curing Sheet Materials*).

Table 6: Final Curing Method Cycle for Sheet Materials

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
$50^{\circ}\text{F} \leq ^{\circ}\text{F} \leq 90^{\circ}\text{F}$	$\geq$ Three (3) days	$\geq 80\% f'_c$

Sheet Materials used for curing, such as polyethylene film, white burlap-polyethylene sheeting, and reinforced paper shall meet the requirements of ASTM C171 and the specifications herein. Sheet materials shall inhibit moisture loss and reduce temperature rise in concrete exposed to radiation from the sun during the final curing method cycle. Adjoining covers shall overlap not less than 12 inches. All edges of the covers shall be secured to maintain a moist environment.

ITEM 995.011 (CONTINUED)

(a) Polyethylene Film.

Polyethylene film shall meet the requirements of ASTM C171, consist of a single sheet manufactured from polyethylene resins, be free of visible defects, and have a uniform appearance. Careful considerations shall be taken by the Fabricator to prevent the film from tearing during storage and application, so as to not disrupt the continuity of the film (polyethylene film reinforced with glass or other fibers is more durable and less likely to be torn). The Fabricator shall monitor the application of the film to prevent uneven spots from appearing (mottling) on the concrete surface, due to variations in temperature, moisture content, or both. The Fabricator shall prevent mottling from occurring on the concrete surface by applying additional water under the film or applying a combination of polyethylene film bonded to absorbent fabric to the concrete surface to retain and evenly distribute the moisture.

Immediately following final finishing, polyethylene film shall be placed over the surface of the fresh concrete surface, so as to not damage the surface of the concrete and shall be placed and weighted so that it remains in contact with the concrete throughout the entire duration of the final curing method cycle. The film shall extend beyond the edges of the concrete surface. The film shall be placed flat on the concrete surface, avoiding wrinkles, to minimize mottling. Edges of

adjacent polyethylene film shall overlap a minimum of 6 inches and be tightly sealed with the use of sand, wood planks, pressure-sensitive tape, mastic, or glue to maintain close contact with the concrete surface, retain moisture, and prevent the formation of air pockets throughout the entire duration of the final curing method cycle.

(b) White Burlap-Polyethylene Sheeting

White burlap-polyethylene sheeting shall meet the requirements of ASTM C171, be securely bonded to the burlap so to avoid separation of the materials during handling and curing of the concrete and be applied in the same manner as the polyethylene film.

(c) Reinforced Impervious Paper.

Reinforced impervious paper shall meet the requirements of ASTM C171, consist of two sheets of kraft paper cemented together with a bituminous adhesive and reinforced with embedded cords or strands of fiber running in both directions, and be white in color. Reinforced impervious paper shall be treated to prevent tearing when wetted and dried.

Reinforced impervious paper can be reused so long as it is effective in retaining moisture on the concrete surface. The Fabricator shall visually inspect the reinforced impervious paper for all holes, tears, and pin holes from deterioration of the paper through repeated use by holding the paper up to the light. The paper shall be discarded and prohibited from use when the moisture is no longer retained.

After the concrete has hardened sufficiently to prevent surface damage, the concrete surface shall be thoroughly wetted prior to the application of the reinforced impervious paper and be applied in the same manner as the polyethylene film.

4. Liquid Membrane-Forming Compounds for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of liquid membrane-forming compounds throughout the entire duration of the final curing method cycle (see *Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds*).

ITEM 995.011 (CONTINUED)**Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds**

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
$50^{\circ}\text{F} \leq ^{\circ}\text{F} \leq 90^{\circ}\text{F}$	$\geq$ Seven (7) days	$\geq 80\% f'_c$

Liquid membrane-forming compounds shall meet the requirements of ASTM C 1315, Type I, Class A and shall exhibit specific properties, such as alkali resistance, acid resistance, adhesion-promoting quality, and resistance to degradation by ultraviolet light, in addition to moisture-retention capabilities. Liquid membrane-forming compounds shall consist of waxes, resins, chlorinated rubber, or other materials to reduce evaporation of moisture from concrete. Liquid membrane-forming compounds shall be applied in accordance with the manufacturer's recommendations.

Liquid membrane-forming compounds shall be applied immediately after the disappearance of the surface water sheen following final finishing. All exposed surfaces shall be wetted immediately after form removal and kept moist to prevent absorption of the compound, allowing the curing membrane to remain on the concrete surface for proper membrane moisture retention. The concrete shall reach a uniformly damp appearance with no free water on the surface prior to the application of the compound.

If patching or finishing repairs are to be performed prior to the application of the compound, the Precast Concrete Bridge Element shall be covered temporarily with saturated covers until the repairs are completed and the compound is applied. Only areas being repaired shall be uncovered during this period. While the saturated covers are removed to facilitate the patching process, the work shall continue uninterrupted. If for any reason the work is interrupted, saturated covers shall be placed onto the uncovered concrete surface, until the work continues and is completed, at which time the curing compound shall be applied to the repaired area.

Careful considerations shall be made by the Fabricator to determine if the evaporation rate is exceeding the rate of bleeding, thus causing the surface to appear dry even though bleeding is still occurring. Under such conditions, the application of liquid membrane-forming compounds to the concrete surface shall be delayed, in order to prevent bleed water from being sealed below the concrete surface and avert map cracking of the membrane films, reduction in moisture-retention capability, and reapplication of the compound. To diagnose and prevent this condition, the Fabricator shall place a transparent plastic sheet over a test area of the uncured and unfinished concrete surface and shall determine if any bleed water accumulates under the plastic.

The compound shall be applied in two applications at right angles to each other to ensure uniform and more complete coverage. On very deeply textured surfaces, the surface area to be treated shall be at least twice the surface area of a troweled or floated surface. In such cases, two separate applications may be needed, each at 200 ft²/gal., with the first being allowed to become tacky before the second is applied.

The curing compound shall be applied by power sprayer, using appropriate wands and nozzles with pressures between 25 and 100 psi. For very small areas such as repairs, the compound shall be applied with a wide, soft-bristled brush or paint roller. The compound shall be stirred or agitated before use and applied uniformly in accordance with the manufacturer's recommended rate. The Fabricator shall verify the application rates are in accordance with the manufacturer's recommended rate.

ITEM 995.011 (CONTINUED)

When the concrete surface is to receive paint, finishes, or toppings that require positive bond to the concrete, it is critical that the curing procedures and subsequent coatings, finishes, or toppings be compatible to achieve the necessary bond.

After the termination of the final curing method cycle has occurred, liquid membrane-forming compounds shall be removed by blast-cleaning from any concrete surface that is to receive paint, finishes, plastic concrete from secondary pour, grout, or any other toppings that require bonding to the concrete surface. These surfaces shall be further blast-cleaned to remove the cement matrix down to exposed aggregate to ensure proper bonding to the material. The method used to remove the curing compound shall not damage the reinforcement and coating. Compounds are prohibited on any concrete surface that will have a penetrating or coating type treatment such as a sealer, stain, or waterproofing membrane applied to it.

5. Accelerated Curing.

Accelerated curing shall use live steam or radiant heat with moisture in accordance with PCI MNL-116 as modified herein. The concrete temperature shall meet the maximum heat increase and cool down rates as specified herein. Concrete temperature monitoring shall meet the requirements of the *Temperature Monitoring* section. Excessive and fluctuating rates of heating and cooling shall be prohibited. The concrete temperature shall not exceed 158°F at any time. The Fabricator shall meet the following accelerated curing sequencing and requirements.

(a) Initial Delay Period.

The initial delay period shall be defined as the duration immediately following the placement of the concrete and the attainment of initial set of the concrete. The Fabricator shall determine the time of initial set in accordance with AASHTO T 197 specifications. Throughout the entire duration of the preset period, initial curing shall be implemented. The temperature increase period (see *Temperature Increase Period* section) shall not occur until initial set of the concrete is attained. During the initial delay period, the concrete temperature shall meet the following requirements:

- i. Concrete temperature rate of increase shall not exceed 10°F per hour.
- ii. Total concrete temperature increase shall not exceed 40°F higher than the placement concrete temperature or 100°F, whichever is less

(b) Temperature Increase Period.

The temperature increase period shall be defined as the duration immediately following the completion of the initial delay period (after initial set) and immediately prior to the start of the constant maximum temperature period. Application of steam to the enclosure shall not occur until the initial delay period is complete. After the initial delay period is complete, all exposed concrete surfaces shall be cured in a moist environment where the concrete temperature increases at a rate not to exceed 36°F per hour.

ITEM 995.011 (CONTINUED)

(c) Constant Maximum Temperature Period.

The constant maximum temperature period shall be defined as the duration immediately following the completion of the temperature increase period and immediately prior to the start of the temperature decrease period. After the temperature increase period is complete, all exposed concrete surfaces shall be cured in a moist environment at a controlled and constant elevated temperature throughout the entire duration of the constant maximum temperature period. Termination of the constant maximum temperature period and the start of the termination decrease period shall occur after all specified conditions are met (see *Table 8: Constant Maximum Temperature Period*).

Table 8: Constant Maximum Temperature Period

Sustained Concrete Temperature	Constant Maximum Temperature Period	Compressive Strength
$120^{\circ}\text{F} \leq ^{\circ}\text{F} \leq 158^{\circ}\text{F}$	$6 \text{ hrs} \leq \text{Time} \leq 48 \text{ hrs}$	$\geq 80\% f'_c$

(d) Temperature Decrease Period.

After the constant maximum temperature period is complete, the concrete temperature shall be cured in a moist environment at a controlled and reduced rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the curing enclosure.

Q. Stripping.

The Fabricator shall not strip forms or handle the Precast Concrete Bridge Element until Quality Control compressive strength cylinders attain a minimum compressive strength of 80% Design Strength (f'_c) or the value indicated on the approved drawings has been achieved. After removal from the form, all exposed concrete surfaces shall continue to be cured in conformance with the *Final Curing Methods* sections until completion.

R. Handling and Storage of Precast Concrete Bridge Elements.

Precast Concrete Bridge Elements may be exposed to temperatures below freezing (32°F) when the chosen curing cycle has been completed, provided that the following conditions are met:

- (a) Precast Concrete Bridge Elements are protected from precipitation with polyethylene curing covers until $100\% f'_c$ is attained.
- (b) Precast Concrete Bridge Elements maintain a minimum concrete temperature of 40°F until $100\% f'_c$ is attained.

Precast Concrete Bridge Elements damaged during handling and storage will be repaired or replaced at the Engineer's direction at no cost to the Town. Precast Concrete Bridge Elements shall be lifted at the designated points by approved lifting devices embedded in the concrete and in accordance with proper lifting and handling procedures. Storage areas shall be smooth and well compacted to prevent damage due to differential settlement. Precast Concrete Bridge Elements shall be supported on the ground by means of continuous blocking, in accordance with the approved dunnage plan.

Precast Concrete Bridge Elements shall be loaded on a trailer with blocking as described above, in accordance with the approved dunnage plan. Shock-absorbing cushioning material shall be used at all bearing points during transportation of the Precast Concrete Bridge Elements. Blocking shall be provided at all locations of tie-down straps. Precast Concrete Bridge Elements stored prior to shipment shall be inspected by the Contractor prior to being delivered to the site to identify damage that would be cause for repair or rejection.

ITEM 995.011 (CONTINUED)

S. Repairs and Replacement.

In the event defects are identified, they shall be classified in the following categories and a non-conformance report (NCR) shall be filed if required. The NCR shall be submitted to the Engineer for review. Defects in all categories shall be documented by plant Quality Control personnel and made available to the Engineer upon request. Any required repairs shall utilize materials listed on the MassDOT QCML.

Where noted, defects shall be repaired according to the PCI Northeast Region Guidelines for Resolution of Non-Conformances in Precast Concrete Bridge Elements, Report Number PCINE-18-RNPCBE. Please note that reference to PCINE-18-RNPCBE is made for repair details only. In the case of conflicts with this Special Provision, this Special Provision shall govern.

1. Category 1, Surface Defects.

Category 1 defects do not need to be repaired, and an NCR does not need to be filed. Surface defects are defined as the following:

- (a) Surface voids or bug holes that are less than 5/8-inch in diameter and less than 1/4-inch deep, except when classified as Category 4
- (b) Cracks less than or equal to 0.006 inches wide
- (c) Cracks less than or equal to 0.125 inches wide on surfaces that will receive a field-cast concrete overlay

2. Category 2, Minor Defects.

Category 2 defects shall be repaired, but an NCR does not need to be filed. Minor defects are defined as the following:

- (a) Spalls, honeycombing, surface voids that are less than 2 inches deep and have no dimension greater than 12 inches
- (b) Cracks less than or equal to 0.016 inches that will not receive a concrete overlay
- (c) Broken or spalled corners that will be covered by field-cast concrete

Minor defects shall be repaired according to PCINE-18-RNPCBE. Cracks shall be sealed according to the PCI Repair Procedure #14 in PCINE-18-RNPCBE.

3. Category 3, Major Defects.

For Category 3 defects, the Fabricator shall prepare an NCR that documents the defect and describes the proposed repair procedure. The NCR shall be submitted to the Engineer for approval prior to performing the repair. Major defects are defined as the following:

- (a) Spalls, honeycombing and surface voids that are deeper than 2 inches or have any dimension greater than 12 inches, when measured along a straight line
- (b) Concentrated area of defects consisting of four or more Category 2 Defects within a 4-square foot area.
- (c) Exposed reinforcing steel
- (d) Cracks greater than 0.016 inches and less than or equal to 0.060 inches in width that will not receive a concrete overlay
- (e) Bearing area spalls with dimensions not exceeding 3 inches
- (f) Cracks, spalls and honeycombing that will be encased in cast in place concrete need not be repaired, but the limits and location of the defects shall be documented with an NCR

ITEM 995.011 (CONTINUED)

Upon approval, defects and cracks shall be repaired according to PCINE-18-RNPCBE and this specification. All repairs shall be completed at the expense of the Contractor.

4. Category 4, Rejectable Defects.

Rejectable defects as determined by the Engineer may be cause for rejection. Fabricator may submit an NCR with a proposed repair procedure, requesting approval. Some rejectable defects are defined as the following:

- (a) Surface defects on more than 5% of the surface area which will be exposed to view after installation
- (b) Minor defects that in total make up more than 5% of the surface area of the unit
- (c) Cracks greater than 0.060 inches in width except as noted in Category 1
- (d) Elements fabricated outside of the specified tolerances
- (e) MassDOT compressive strength testing that does not meet the specified Design Strength, f'_c .

T. Shipping.

Prior to shipment, the Fabricator shall perform the following actions and provide the required documentation to the Engineer:

- (a) Precast Concrete Bridge Elements shall remain at the Fabricator's plant for a minimum of 7 days after cast date.
- (b) QC Inspection Reports shall be signed by the Quality Control Manager and provided to the Engineer.
- (c) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Precast Concrete Bridge Element's representative Sublot shall be generated by the Fabricator and provided to the Engineer.
- (d) Certificate of Compliance shall be generated by the Fabricator as described under the Fabricator Quality Control section and provided to the Engineer.
- (e) All Engineer approved Corrective Actions submitted on the Non-Conformance Reports (NCR), shall be verified to have been completed by the Engineer and Quality Control Manager.
- (f) All NCRs shall be signed off by the Quality Control Manager and the Engineer

U. Delivery.

Upon Delivery, the following documentation shall be provided to the Resident Engineer or designee:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Precast Concrete Bridge Element's representative sublot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

The Contractor shall inspect Precast Concrete Bridge Elements upon receipt at the site. Precast Concrete Bridge Elements damaged during delivery shall be repaired or replaced at the Engineer's direction at no additional cost.

ITEM 995.011 (CONTINUED)

CONSTRUCTION METHODS – FIELD CONSTRUCTION

A. General.

All of the Contractor's field personnel involved in the erection and assembly of the Precast Concrete Bridge Elements shall have knowledge of and follow the approved Erection Procedure.

Prior to installation, the following documentation shall be reviewed and confirmed by the Engineer or designee:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Precast Concrete Bridge Element's representative subplot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

Field construction staff shall verify that the Engineer has accepted all Precast Concrete Bridge Elements prior to installation.

B. Erection Procedure

Prior to the erection, the Contractor shall submit an Erection Procedure for approval by the Engineer. This submittal shall include computations and drawings for the transport, hoisting, erection and handling of the Precast Concrete Bridge Elements. The Erection Procedure shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts with working knowledge of the Contractor's equipment, approved shop drawings, and materials to build the bridge. The Erection Procedure shall, at a minimum, include the following:

1. Erection Procedure

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (seventh edition) for handling, erection, and bracing requirements. At a minimum, the Erection Procedure shall provide:

- (a) Minimum concrete compressive strength for handling the Precast Concrete Bridge Elements.
- (b) Concrete stresses during handling, transport, and erection.
- (c) Crane capacities, pick radii, sling geometry, and lifting hardware.
- (d) Verification that the equipment can handle all pick loads and weights with the required factor of safety.
- (e) Evaluation of construction sequence and evaluation of any geometric conflicts in the lifting of the Precast Concrete Bridge Elements and setting them as shown on the plans.
- (f) Design of crane supports including verification of subgrade for support.
- (g) Location and design of all temporary bracing that will be required during erection.

Non-shrink grout and concrete materials, approved by the Engineer, shall be placed as shown on the plans. Fill joints, keyways, and voids, in strict accordance with the specifications and manufacturer's recommendations and instructions.

Joints shall be filled flush to the top with non-shrink grout, and any vertical misalignment between adjacent elements shall be feathered out on a slope of 1 to 12.

ITEM 995.011 (CONTINUED)

Curing of grout or concrete shall be performed in strict accordance with the specifications and manufacturer's recommendations. Filling shall not be completed in cold weather when either the ambient temperature or the precast member's temperature is below the manufacturer's recommendation. No localized heating of either the precast members or of the air surrounding the element will be permitted in an attempt to reach application temperatures.

If the joints or voids are not filled within five days after the Precast Bridge Elements are erected, the Contractor shall cover and protect the openings from weather and debris until they are filled.

C. Survey and Layout.

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. The Engineer reserves the right to perform additional independent survey. If discrepancies are found, the Contractor may be required to verify previous survey data.

D. Preparation of Closure Pour Keyways.

Immediately prior to erecting the Precast Concrete Bridge Elements, the closure pour shear keys shall be cleaned at the job site of all dust, dirt, carbonation, laitance, and other potentially detrimental materials which may interfere with the bonding of the closure pour concrete and precast concrete using a high-pressure water blast. The exposed reinforcing steel in the precast concrete shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer. The surfaces of the shear keys shall be wetted so that the surfaces shall have a Saturated Surface Dry (SSD) condition for at least 24 hours prior to the placement of the closure pour concrete.

E. Erection.

The elements shall be placed in sequence and according to the methods outlined in the Erection Procedure. As the erection proceeds, the Contractor shall constantly monitor the assembly to ensure that the precast concrete bridge element is within proper horizontal and vertical location and tolerances prior to releasing it from the crane and setting the next unit. The Contractor may use shims to maintain proper setting tolerances.

The concrete elements shall be lifted only by the lifting devices, and the utmost care shall be taken to prevent distortion of the elements during handling, transportation, or storage.

Suitable spreaders shall be used during lifting so that only a vertical pull will be made on the lifting device. A non-vertical lifting force may be permitted if prior written approval is given by the Engineer. This approval will be contingent on the Contractor demonstrating by calculations, prepared by a Professional Engineer registered in Massachusetts, that the elements will not be damaged by the non-vertical lifting force and by documentation that the capacity of the lifting devices is adequate for the non-vertical lifting force.

Precast components shall be pre-bed with non-shrink grout thicker than shim stacks prior to placing other precast elements on top of them.

After all Precast Concrete Bridge Elements have been placed, the actual overall dimensions of the structure both horizontal and vertical, as laid out shall not deviate from the nominal dimensions shown on the plans beyond a tolerance of +0 inches and -1 inches. Once the layout of Precast Concrete Bridge Elements has been accepted by the Engineer, the Contractor shall cut all lifting devices off below the surfaces of the elements.

ITEM 995.011 (CONTINUED)

F. Precast Concrete Culverts, Three-Sided Frames and Arches.

Backfilling operations shall not begin until the following checks have been made:

- (a) The frame to footing key joints are grouted as shown on the plans;
- (b) The joints between exterior frame bridge elements and wingwall stems are complete as shown on the plans;
- (c) All joint seals are properly placed.

Backfill shall be paid for under separate items. The backfilling procedures shall be in accordance with Sections 120, 150, and 170 of the Standard Specifications and Supplemental Specifications modified as follows:

- (a) Fill shall be placed and compacted in layers not exceeding six inches in depth.
- (b) Dumping of fill shall not be allowed any nearer to the structure than 3.25 feet from a vertical plane extending from the back of the footing.
- (c) Backfill shall be placed as symmetrically as possible around the structure with differential depths of backfill on each side of the structure not exceeding 1.5 feet with respect to each other.
- (d) Compaction shall be achieved using hand compaction equipment for all fill within one foot of the structure.
- (e) The bare structure shall not be crossed by any equipment heavier than that specified by the frame manufacturer. All damage resulting from equipment damage shall be rectified to the satisfaction of the Engineer at no cost to the Town.
- (f) Construction equipment will not be permitted atop an uncompleted structure.
- (g) Construction equipment whose weight exceeds the design capacity shall not be permitted atop the completed structure under any circumstances.
- (h) The use of vibratory rollers for compaction purposes will not be permitted.
- (i) The Contractor shall have compaction testing completed and submitted to the Engineer and Town for records. Testing shall be completed by a third party who shall be onsite during all backfilling procedures for the box culvert.

A representative of the manufacturer shall be on site at the commencement of the installation, at no cost to the Town, to assist the Contractor. The representative shall offer advisory assistance only and shall not supplant the Contractor's representative, or the Engineer.

G. Filling of Blockouts for Lifting Devices and Threaded inserts.

If the blockouts in the Precast Concrete Bridge Elements where the lifting devices were located will be exposed and visible after assembly is complete, the Contractor shall fill these blockouts with Cement Mortar (M4.02.15) or grout.

BASIS OF PAYMENT

Item 995.01 will be paid at the Contract unit price per LUMP SUM, which price shall include all labor, materials, equipment, engineering, and incidental costs required to complete the work as indicated on the Contract Documents.

Culvert #2
Acton Road over Unnamed Stream

B2. Order of Conditions issued by Westford Conservation Commission



2025 00033260

BK: 39599 Pg: 30 Page: 1 of 14

Recorded: 10/17/2025 01:18 PM



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
And Westford Non-zoning Wetland Bylaw c.171

Provided by MassDEP:
MassDEP File #:334-1878
eDEP Transaction
#:1943198
City/Town:WESTFORD

A. General Information

1. Conservation Commission WESTFORD
2. Issuance a. ☒ OOC b. ☐ Amended OOC
3. Applicant Details
- | | | | |
|--------------------|---|--------------|----------|
| a. First Name | PAUL | b. Last Name | STARRATT |
| c. Organization | TOWN OF WESTFORD DEPARTMENT OF PUBLIC WORKS | | |
| d. Mailing Address | 28 NORTH STREET | | |
| e. City/Town | WESTFORD | f. State | MA |
| | | g. Zip Code | |
4. Property Owner
- | | | | |
|--------------------|--|-------------|--|
| a. First Name | b. Last Name | | |
| c. Organization | TOWN OF WESTFORD / COMMONWEALTH OF MASSACHUSETTS (ACTON ROAD RIGHT-OF-WAY) | | |
| d. Mailing Address | | | |
| e. City/Town | f. State | | |
| | | g. Zip Code | |
5. Project Location
- | | | | |
|------------------------|----------------------------------|----------------|-----------|
| a. Street Address | ACTON ROAD (NEAR 109 ACTON ROAD) | c. Zip Code | |
| b. City/Town | WESTFORD | e. Parcel/Lot# | N/A |
| d. Assessors Map/Plat# | N/A | g. Longitude | 71.39085W |
| f. Latitude | 42.55687N | | |
6. Property recorded at the Registry of Deed for:
- | | | | |
|--------------------|----------------|---------|---------|
| a. County | b. Certificate | c. Book | d. Page |
| NORTHERN MIDDLESEX | | 11232 | 204 |
7. Dates
- a. Date NOI Filed : 9/3/2025 b. Date Public Hearing Closed: 10/8/2025 c. Date Of Issuance: 10/9/2025
8. Final Approved Plans and Other Documents
- | | | | | |
|---|----------------------|----------------------------|------------------------|-----------------------|
| a. Plan Title: | b. Plan Prepared by: | c. Plan Signed/Stamped by: | d. Revised Final Date: | e. Scale: |
| CULVERT REPLACEMENT, WESTFORD, ACTON ROAD OVER UNNAMED STREAM | TEC | GREGORY GAUDREAU | 09/19/2025 | AS NOTED ON EACH PAGE |
| NOTICE OF INTENT RESOURCE AREA IMPACT PLAN | TEC | GREGORY GAUDREAU | 09/19/2025 | 1"=20' & 1"=10' |

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

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Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

a. ☒ Public Water Supply	b. ☐ Land Containing Shellfish	c. ☒ Prevention of Pollution
d. ☒ Private Water Supply	e. ☒ Fisheries	f. ☒ Protection of Wildlife Habitat
g. ☒ Ground Water Supply	h. ☒ Storm Damage Prevention	i. ☒ Flood Control

2. Commission hereby finds the project, as proposed, is:

Approved subject to:

- a. ☒ The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

- b. ☐ The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. ☐ The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act , and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a).

a. linear feet

Inland Resource Area Impacts:(For Approvals Only):

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☒ Bank	<u>22</u> a. linear feet	<u>22</u> b. linear feet	<u>32</u> c. linear feet	<u>32</u> d. linear feet
5. ☒ Bordering Vegetated Wetland	<u>220</u> a. square feet	<u>220</u> b. square feet	<u>220</u> c. square feet	<u>220</u> d. square feet
6. ☒ Land under Waterbodies and Waterways	<u>93</u> a. square feet	<u>93</u> b. square feet	<u>346</u> c. square feet	<u>346</u> d. square feet
	<u>0</u> e. c/y dredged	<u>0</u> f. c/y dredged		



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7. ☒ Bordering Land Subject to Flooding	<u>2577</u>	<u>2577</u>	<u>2577</u>	<u>2577</u>
	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	<u>0</u>	<u>0</u>	<u>1115</u>	<u>1115</u>
	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	<u> </u>	<u> </u>		
	a. square feet	b. square feet		
Cubic Feet Flood Storage	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☒ Riverfront Area	<u>5860</u>	<u>5860</u>		
	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	<u>5860</u>	<u>5860</u>	<u>2920</u>	<u>2920</u>
	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts:

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	<u> </u>	<u> </u>		
	a. square feet	b. square feet		
	<u> </u>	<u> </u>		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
14. ☐ Coastal Dunes	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
15. ☐ Coastal Banks	<u> </u>	<u> </u>		
	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	<u> </u>	<u> </u>		
	a. square feet	b. square feet		
17. ☐ Salt Marshes	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	<u> </u>	<u> </u>		
	a. square feet	b. square feet		
	<u> </u>	<u> </u>		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	a. square feet	b. square feet	c. square feet	d. square feet



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20. ☐ Fish Runs

Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above

c. c/y dredged d. c/y dredged

21. ☐ Land Subject to Coastal Storm Flowage

a. square feet b. square feet

22.

☐ Restoration/Enhancement (For Approvals Only)

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

23.

☐ Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.



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9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection"

[or "MassDEP"]

File Number : "334-1878"

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order(the "Project") is (1) ☒ is not (2) ☐ subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;
 - a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain



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in place until the site is fully stabilized.

- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment; the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
- g) The responsible party shall:
 - 1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 - 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and



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-
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
 - i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
 - j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
 - k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
 - l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS



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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Conservation Commission hereby (check one that applies):

a. ☐ DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw _____

2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. ☒ APPROVES the proposed work, subject to the following additional conditions.

WESTFORD
1. Municipal Ordinance or Bylaw NONZONING
WETLANDS BYLAW

2. Citation CHAPTER 171

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:
SEE ATTACHED SPECIAL CONDITIONS



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E. Signatures

This Order is valid for three years from the date of issuance, unless otherwise specified pursuant to General Condition #4. If this is an Amended Order of Conditions, the Amended Order expires on the same date as the original Order of Conditions.

10/8/2025

1. Date of Original Order

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

4

2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Margaret Whelan
[Signature]

[Signature]
Nell Alweider
Marilyn Frank

☒ by hand delivery on

☐ by certified mail, return receipt requested, on

Date

10/09/2025

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

WESTFORD



**Massachusetts Department of Environmental
Protection**

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:334-1878

eDEP Transaction #:1943198

City/Town:WESTFORD

Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

WESTFORD

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

ACTON ROAD (NEAR 109 ACTON ROAD)

Project Location

334-1878

MassDEP File Number

Has been recorded at the Registry of Deeds of:

County

Book

Page

for:

Property Owner

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Rev. 4/1/2010

Project Description:

The project involves the work within jurisdictional wetland resource areas (Bank, Bordering Vegetated Wetland, Land Under Waterway, Bordering Land Subject to Flooding, Riverfront Area) and associated 100-foot buffer zones to replace an existing culvert.

Findings:

The Commission finds that the project is a Limited Project under 310 CMR 10.53(8) for the replacement of an existing stream crossing and that any wetland alterations will be temporary in nature.

The Commission finds that during construction, erosion control measures will be implemented to prevent construction-related pollutants from entering the wetlands.

The Commission finds that the existing 18" corrugated metal pipe, which is deteriorating and partially filled with debris which affects water flow in the perennial stream, will be replaced by a 9' by 5' box culvert fully meeting Stream Crossing Standards.

The Commission finds that the project also includes roadway improvements and guardrail replacement.

The Commission finds that the proposed culvert has been designed to maintain hydraulic continuity of the unnamed perennial stream.

The Commission finds that the proposed culvert has been designed to provide continuity of the natural streambed and provide bank continuity on both sides of the stream, matching of the horizontal profile of the existing stream, and construction so as to not hinder its use by riverine wildlife.

The Commission finds that the project has been designed to minimize disturbance to existing trees and shrubs.

The Commission finds that a waiver for the 30-foot no-disturb zone (Ch.235 Rules and Regulations §235-2(9)(E)) is requested and granted.

The Commission finds that the proposed project meets the applicable Stormwater Management Standards found in 310 CMR 10.05(6)(k-q).

The Commission finds that, due to the nature and purpose of the proposed activities, there are no practicable alternatives to the Project.

The Commission finds that portions of the site are located within the Flood Hazard Area as shown on the FEMA Flood Insurance Rate Map Community Panel #25017C 0242F, effective July 7, 2014.

The Commission finds that the site is not located within an Estimated Habitats of Rare Wildlife and Priority Habitats of Rare Species as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP).

The Commission finds that the project, if completed in compliance with this Order of Conditions (OOC) and the approved plan, complies with the MA Wetlands Protection Act and Regulations and the Town of Westford's Non-zoning Wetland Bylaw and Regulations.

The following Special Conditions also apply to work within the jurisdictional areas of the Conservation Commission as defined by MA General Laws, Chapter 131 Section 40 and the Westford Non-zoning Wetland Bylaw Ch. 171 and Regulations Ch. 235.

Special Conditions:

21. It shall be understood by the applicant that the issuance of this Order of Conditions shall apply to the Massachusetts Wetlands Protection Act and the Town of Westford's Non-Zoning Wetlands Bylaw.
22. There shall be no adverse impacts to wetland areas.
23. Notice shall be given to the Commission or its agent no more than two (2) weeks and no less than one (1) week prior to the commencement of any construction activities, including onsite trucking of fill and major removal of site vegetation.
24. Prior to the commencement of the project, there shall be a meeting onsite between the project contractor, the site superintendent and project engineer and the Commission's agent to review this Order of Conditions and its requirements.
25. This Order of Conditions shall be reviewed with and a copy provided to all contractors and engineers working on the site involved with site preparation, earthwork and landscaping. A copy of said Order of Conditions and referenced plans and documents shall be onsite during all construction activities. Any other plans not consistent with the Order shall not be onsite.
26. The Applicant and their contractors shall make no changes or additions to any of the work or construction products shown on the Approved Plans without first having those changes reviewed and approved by the Commission or its agent.
27. During all construction phases the proponent shall provide an onsite manager who shall be responsible for implementing all mitigation measures and full compliance with this Order of Conditions, with particular emphasis on installation and maintenance of erosion and sedimentation control measures, and who shall conduct site investigations with the Commission and/or its agent. It shall be the site manager's responsibility and priority to control sediment flow on the site and ensure that sediment is not discharged to the resource areas.
28. Prior to the performance of any other site work, a sedimentation and erosion control barrier consisting of straw wattles, or other control feature as may be approved by the Commission or its agent, shall be properly installed (wattles staked so they can't be lifted or moved easily) between the construction area and the wetlands in the location shown on the Plan of Record or as directed by the Commission or its agent. This control feature shall be properly installed and inspected and approved by the Commission or its agent prior to the commencement of any other work on the site.

The Commission's agent is authorized to require the installation of any other erosion/sedimentation/work limit controls on the site as deemed necessary to protect the wetlands.
29. The applicant shall have on hand at the start of any soil disturbance, removal or stockpiling, a minimum of 25 feet of wattles. Said wattles shall be used for control of emergency erosion problems and shall not be used for normal control of erosion.
30. These erosion control features shall be maintained in proper working condition during and after construction. These erosion control features shall be removed promptly following satisfactory permanent stabilization of the site with approval the Commission or its agent, or their direction to remove said barrier.
31. Temporary cofferdams may be installed to limit the flow of water through the project site. To the maximum extent practicable, work shall be performed during low flow conditions to minimize disturbance.

32. The culvert shall be installed per the plan to provide hydraulic and wildlife connectivity.
33. The composition of the native streambed material within the proposed culvert shall match the existing streambed and shall be reviewed and approved by the Commission and/or its agent, prior to removal of the existing culvert.
34. The applicant shall protect all stormwater BMPs during construction to prevent a reduction in their long-term capacity. Upon completion of the project, any stormwater BMPs shall be cleaned of any silt and sediment.
35. Any ground disturbed during any phase of the project shall be seeded and stabilized with a seed mixture approved by an agent of the Commission. The disturbed areas shall be stabilized within the same growing season the work occurs and no later than September 15 to ensure adequate growth within the growing season. Any areas not satisfactorily stabilized by December 1 shall be temporarily stabilized during the winter months using erosion control blankets, jute netting and/or straw mulch.
36. Any required dewatering shall be performed so as to direct water to an upland discharge point, as far away as possible from wetlands and in such a fashion that said water is temporarily detained in a stilling pond, or other acceptable feature as may be approved by the Commission or its agent and overflow from said basin or feature shall flow back towards the wetlands through a line of silt fence in combination with staked straw wattles. In no case shall there be direct discharge to wetlands.
37. All construction equipment, including but not limited to machinery, heavy equipment and vehicles, shall be parked and stored more than 100 feet from any wetlands when not in use. All fuels, lubricants and hydraulic fluids shall be stored more than 100 feet from any wetlands. All refueling and maintenance involving transfer of oils and hydraulic fluids shall be performed more than 100 feet from any wetlands.
38. All excavate, fill, loam and any other earthen materials associated with the project shall be stored and stockpiled more than 100 feet from any wetlands. No excavate, fill, loam or other material shall be stockpiled against the sediment or erosion control feature.
39. No fill, excavate, construction debris or equipment, or any other material shall be allowed to enter the wetlands; any such material entering the wetlands shall be removed immediately. No trees or shrubs shall be felled into or disposed of in the wetlands.
40. All imported topsoil shall be documented to be free of invasive weed seeds.
41. Only clean fill shall be used for the project. Clean fill shall be free from contamination, trash, debris, asphalt, brick, concrete, metal, wood, recycled construction materials or other deleterious materials. No unsuitable material of any kind (stumps, roots, trash, debris, etc.) may be buried, placed or dispersed on the property.
42. Upon stabilization of the site the applicant shall remove the erosion/sedimentation control barriers with the approval of the Commission or its agent.
43. **Upon completion of the project the proponent shall request a Certificate of Compliance.**
If the project has been conducted in accordance with plans stamped by a registered professional engineer, a written statement by such a professional person certifying substantial compliance with the plans and setting forth what deviation, if any, exists from the plans approved in the Order shall accompany the request for the Certificate of Compliance.



ATTACHMENT C

Massachusetts State Wage Rates



**THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS
Prevailing Wage Rates**

MAURA HEALY
Governor
KIM DRISCOLL
Lt. Governor

As determined by the Director under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H

LAUREN JONES
Secretary
MICHAEL FLANAGAN
Director

Awarding Authority: Westford **City/Town:** WESTFORD

Contract Number:

Description of Work: This project will replace existing metal pipe culverts on Acton Road (near Greenwood Road) and North Main Street (near East Prescott Street) with new concrete box culverts.

Job Location: Acton Road and North Main Street

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.
- This annual update requirement is generally not applicable to 27F “rental of equipment” contracts. For such contracts, the prevailing wage rates issued by DLS shall remain in effect for the duration of the contract term. However, if the prevailing wage rate sheet issued does not contain wage rates for each year covered by the contract term, the Awarding Authority must request updated rate sheets from DLS and provide them to the contractor to ensure the correct rates are being paid throughout the duration of the contract. Additionally, if an Awarding Authority exercises an option to renew or extend the contract term, they must request updated rate sheets from DLS and provide them to the contractor.
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker’s rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT	12/1/2025	\$40.95	\$15.57	\$21.78	\$0.00	\$0.00	\$78.30
TEAMSTERS JOINT COUNCIL NO. 10	1/1/2026	\$40.95	\$16.17	\$21.78	\$0.00	\$0.00	\$78.90
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	\$41.95	\$16.17	\$21.78	\$0.00	\$0.00	\$79.90
	12/1/2026	\$41.95	\$16.17	\$23.52	\$0.00	\$0.00	\$81.64
	1/1/2027	\$41.95	\$16.77	\$23.52	\$0.00	\$0.00	\$82.24
(3 AXLE) DRIVER - EQUIPMENT	12/1/2025	\$41.02	\$15.57	\$21.78	\$0.00	\$0.00	\$78.37
TEAMSTERS JOINT COUNCIL NO. 10	1/1/2026	\$41.02	\$16.17	\$21.78	\$0.00	\$0.00	\$78.97
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	\$42.02	\$16.17	\$21.78	\$0.00	\$0.00	\$79.97
	12/1/2026	\$42.02	\$16.17	\$23.52	\$0.00	\$0.00	\$81.71
	1/1/2027	\$42.02	\$16.77	\$23.52	\$0.00	\$0.00	\$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT	12/1/2025	\$41.14	\$15.57	\$21.78	\$0.00	\$0.00	\$78.49
TEAMSTERS JOINT COUNCIL NO. 10	1/1/2026	\$41.14	\$16.17	\$21.78	\$0.00	\$0.00	\$79.09
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	\$42.14	\$16.17	\$21.78	\$0.00	\$0.00	\$80.09
	12/1/2026	\$42.14	\$16.17	\$23.52	\$0.00	\$0.00	\$81.83
	1/1/2027	\$42.14	\$16.77	\$23.52	\$0.00	\$0.00	\$82.43
ADS/SUBMERSIBLE PILOT	1/1/2024	\$117.16	\$10.08	\$11.62	\$12.67	\$0.00	\$151.53
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							
For apprentice rates see "Apprentice- PILE DRIVER"							
AIR TRACK OPERATOR	12/1/2025	\$41.97	\$10.15	\$9.50	\$9.11	\$0.00	\$70.73
LABORERS	6/1/2026	\$43.41	\$10.15	\$9.50	\$9.11	\$0.00	\$72.17
LABORERS - ZONE 2	12/1/2026	\$44.85	\$10.15	\$9.50	\$9.11	\$0.00	\$73.61
	6/1/2027	\$46.30	\$10.15	\$9.50	\$9.11	\$0.00	\$75.06
	12/1/2027	\$47.75	\$10.15	\$9.50	\$9.11	\$0.00	\$76.51
	6/1/2028	\$49.25	\$10.15	\$9.50	\$9.11	\$0.00	\$78.01
	12/1/2028	\$50.75	\$10.15	\$9.50	\$9.11	\$0.00	\$79.51
For apprentice rates see "Apprentice- LABORER"							
AIR TRACK OPERATOR (HEAVY & HIGHWAY)	12/1/2025	\$41.97	\$10.15	\$9.50	\$9.21	\$0.00	\$70.83
LABORERS	6/1/2026	\$43.41	\$10.15	\$9.50	\$9.21	\$0.00	\$72.27
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.85	\$10.15	\$9.50	\$9.21	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASBESTOS REMOVER - PIPE / MECH. EQUIPT.	12/1/2025	\$44.80	\$14.50	\$4.30	\$6.75	\$0.00	\$70.35
HEAT & FROST INSULATORS LOCAL 6							
HEAT & FROST INSULATORS LOCAL 6 (BOSTON)							
ASPHALT RAKER	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ASPHALT RAKER (HEAVY & HIGHWAY)	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.21	\$0.00	\$70.33
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.21	\$0.00	\$71.77
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE	12/1/2025	\$59.28	\$16.05	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.58	\$16.05	\$13.25	\$3.25	\$0.00	\$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$62.03	\$16.05	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BACKHOE/FRONT-END LOADER	12/1/2025	\$59.28	\$16.05	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.58	\$16.05	\$13.25	\$3.25	\$0.00	\$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$62.03	\$16.05	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER	12/1/2025	\$41.97	\$10.15	\$9.50	\$9.11	\$0.00	\$70.73
LABORERS	6/1/2026	\$43.41	\$10.15	\$9.50	\$9.11	\$0.00	\$72.17
LABORERS - ZONE 2	12/1/2026	\$44.85	\$10.15	\$9.50	\$9.11	\$0.00	\$73.61
	6/1/2027	\$46.30	\$10.15	\$9.50	\$9.11	\$0.00	\$75.06
	12/1/2027	\$47.75	\$10.15	\$9.50	\$9.11	\$0.00	\$76.51
	6/1/2028	\$49.25	\$10.15	\$9.50	\$9.11	\$0.00	\$78.01
	12/1/2028	\$50.75	\$10.15	\$9.50	\$9.11	\$0.00	\$79.51
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY)	12/1/2025	\$41.97	\$10.15	\$9.50	\$9.21	\$0.00	\$70.83
LABORERS	6/1/2026	\$43.41	\$10.15	\$9.50	\$9.21	\$0.00	\$72.27
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.85	\$10.15	\$9.50	\$9.21	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
BOILER MAKER	1/1/2024	\$48.12	\$7.07	\$14.60	\$6.00	\$0.00	\$75.79
BOILERMAKERS LOCAL 29							
BOILERMAKERS LOCAL 29							

Apprentice: BOILER MAKER**Effective Date: 1/1/2024**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	65.00	\$31.28	\$7.07	\$9.32	\$3.90	\$0.00	\$51.57
2	65.00	\$31.28	\$7.07	\$9.32	\$3.90	\$0.00	\$51.57
3	70.00	\$33.68	\$7.07	\$10.03	\$4.20	\$0.00	\$54.98

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: BOILER MAKER Effective Date: 1/1/2024							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	75.00	\$36.09	\$7.07	\$10.74	\$4.50	\$0.00	\$58.40
5	80.00	\$38.50	\$7.07	\$11.45	\$4.80	\$0.00	\$61.82
6	85.00	\$40.90	\$7.07	\$12.18	\$5.10	\$0.00	\$65.25
7	90.00	\$43.31	\$7.07	\$12.88	\$5.40	\$0.00	\$68.66
8	95.00	\$45.71	\$7.07	\$13.62	\$5.70	\$0.00	\$72.10
Apprentice to Journeyworker Ratio: 1:4							
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	8/1/2025	\$65.81	\$11.49	\$15.57	\$7.33	\$0.00	\$100.20
BRICKLAYERS LOCAL 3	2/1/2026	\$67.16	\$11.49	\$15.57	\$7.33	\$0.00	\$101.55
BRICKLAYERS LOCAL 3 (LOWELL)	8/1/2026	\$69.36	\$11.49	\$15.57	\$7.33	\$0.00	\$103.75
	2/1/2027	\$70.76	\$11.49	\$15.57	\$7.33	\$0.00	\$105.15
Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$32.91	\$11.49	\$15.57	\$7.33	\$0.00	\$67.30
2	60.00	\$39.49	\$11.49	\$15.57	\$7.33	\$0.00	\$73.88
3	70.00	\$46.07	\$11.49	\$15.57	\$7.33	\$0.00	\$80.46
4	80.00	\$52.65	\$11.49	\$15.57	\$7.33	\$0.00	\$87.04
5	90.00	\$59.23	\$11.49	\$15.57	\$7.33	\$0.00	\$93.62
Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) Effective Date: 2/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$33.58	\$11.49	\$15.57	\$7.33	\$0.00	\$67.97
2	60.00	\$40.30	\$11.49	\$15.57	\$7.33	\$0.00	\$74.69
3	70.00	\$47.01	\$11.49	\$15.57	\$7.33	\$0.00	\$81.40
4	80.00	\$53.73	\$11.49	\$15.57	\$7.33	\$0.00	\$88.12
5	90.00	\$60.44	\$11.49	\$15.57	\$7.33	\$0.00	\$94.83
Apprentice to Journeyworker Ratio: 1:5							
BULLDOZER/GRADER/SCRAPER	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CAISSON & UNDERPINNING BOTTOM MAN	12/1/2025	\$49.85	\$10.15	\$9.50	\$9.80	\$0.00	\$79.30
LABORERS	6/1/2026	\$51.40	\$10.15	\$9.50	\$9.80	\$0.00	\$80.85
LABORERS - FOUNDATION AND MARINE	12/1/2026	\$52.90	\$10.15	\$9.50	\$9.80	\$0.00	\$82.35

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER	12/1/2025	\$48.70	\$10.15	\$9.50	\$9.80	\$0.00	\$78.15
LABORERS	6/1/2026	\$50.25	\$10.15	\$9.50	\$9.80	\$0.00	\$79.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	\$51.75	\$10.15	\$9.50	\$9.80	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN	12/1/2025	\$49.03	\$10.15	\$9.50	\$9.80	\$0.00	\$78.48
LABORERS	6/1/2026	\$50.58	\$10.15	\$9.50	\$9.80	\$0.00	\$80.03
LABORERS - FOUNDATION AND MARINE	12/1/2026	\$52.08	\$10.15	\$9.50	\$9.80	\$0.00	\$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01
	For apprentice rates see "Apprentice- LABORER"						
CARPENTER	9/1/2025	\$50.35	\$10.33	\$11.47	\$8.50	\$0.00	\$80.65
CARPENTERS	3/1/2026	\$51.60	\$10.33	\$11.47	\$8.50	\$0.00	\$81.90
CARPENTERS -ZONE 2 (Eastern Massachusetts)	9/1/2026	\$52.85	\$10.33	\$11.47	\$8.50	\$0.00	\$83.15
	3/1/2027	\$54.10	\$10.33	\$11.47	\$8.50	\$0.00	\$84.40

Apprentice: CARPENTER**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$22.66	\$10.33	\$0.00	\$1.73	\$0.00	\$34.72
2	45.00	\$22.66	\$10.33	\$0.00	\$1.73	\$0.00	\$34.72
3	55.00	\$27.69	\$10.33	\$0.00	\$3.40	\$0.00	\$41.42
4	55.00	\$27.69	\$10.33	\$0.00	\$3.40	\$0.00	\$41.42
5	70.00	\$35.25	\$10.33	\$11.41	\$5.10	\$0.00	\$62.09
6	70.00	\$35.25	\$10.33	\$11.41	\$5.10	\$0.00	\$62.09
7	80.00	\$40.28	\$10.33	\$11.44	\$6.80	\$0.00	\$68.85
8	80.00	\$40.28	\$10.33	\$11.44	\$6.80	\$0.00	\$68.85

Apprentice: CARPENTER**Effective Date: 3/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$23.22	\$10.33	\$0.00	\$1.73	\$0.00	\$35.28
2	45.00	\$23.22	\$10.33	\$0.00	\$1.73	\$0.00	\$35.28
3	55.00	\$28.38	\$10.33	\$0.00	\$3.40	\$0.00	\$42.11
4	55.00	\$28.38	\$10.33	\$0.00	\$3.40	\$0.00	\$42.11

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: CARPENTER Effective Date: 3/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
5	70.00	\$36.12	\$10.33	\$11.41	\$5.10	\$0.00	\$62.96
6	70.00	\$36.12	\$10.33	\$11.41	\$5.10	\$0.00	\$62.96
7	80.00	\$41.28	\$10.33	\$11.44	\$6.80	\$0.00	\$69.85
8	80.00	\$41.28	\$10.33	\$11.44	\$6.80	\$0.00	\$69.85
Apprentice to Journeyworker Ratio: 1:5							
CARPENTER WOOD FRAME	10/1/2025	\$27.75	\$7.02	\$3.80	\$1.00	\$0.00	\$39.57
CARPENTERS	10/1/2026	\$28.85	\$7.02	\$3.80	\$1.00	\$0.00	\$40.67
CARPENTERS-ZONE 3 (Wood Frame)							
All Aspects of New Wood Frame Work							

Apprentice: CARPENTER WOOD FRAME Effective Date: 10/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$16.65	\$7.02	\$0.00	\$0.00	\$0.00	\$23.67
2	60.00	\$16.65	\$7.02	\$0.00	\$0.00	\$0.00	\$23.67
3	65.00	\$18.04	\$7.02	\$0.00	\$1.00	\$0.00	\$26.06
4	70.00	\$19.43	\$7.02	\$0.00	\$1.00	\$0.00	\$27.45
5	75.00	\$20.81	\$7.02	\$3.80	\$1.00	\$0.00	\$32.63
6	80.00	\$22.20	\$7.02	\$3.80	\$1.00	\$0.00	\$34.02
7	85.00	\$23.59	\$7.02	\$3.80	\$1.00	\$0.00	\$35.41
8	90.00	\$24.98	\$7.02	\$3.80	\$1.00	\$0.00	\$36.80

Apprentice: CARPENTER WOOD FRAME Effective Date: 10/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$17.31	\$7.02	\$0.00	\$0.00	\$0.00	\$24.33
2	60.00	\$17.31	\$7.02	\$0.00	\$0.00	\$0.00	\$24.33
3	65.00	\$18.75	\$7.02	\$0.00	\$1.00	\$0.00	\$26.77
4	70.00	\$20.20	\$7.02	\$0.00	\$1.00	\$0.00	\$28.22
5	75.00	\$21.64	\$7.02	\$3.80	\$1.00	\$0.00	\$33.46
6	80.00	\$23.08	\$7.02	\$3.80	\$1.00	\$0.00	\$34.90
7	85.00	\$24.52	\$7.02	\$3.80	\$1.00	\$0.00	\$36.34
8	90.00	\$25.97	\$7.02	\$3.80	\$1.00	\$0.00	\$37.79

Apprentice to Journeyworker Ratio: 1:5

CEMENT MASONRY/PLASTERING	7/1/2024	\$49.19	\$13.35	\$16.43	\$7.78	\$1.80	\$88.55
BRICKLAYERS LOCAL 3							
BRICKLAYERS LOCAL 3 (LOWELL)							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: CEMENT MASONRY/PLASTERING Effective Date: 7/1/2024							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.60	\$13.35	\$16.43	\$0.00	\$0.00	\$54.38
2	60.00	\$29.51	\$13.35	\$16.43	\$2.78	\$1.80	\$63.87
3	65.00	\$31.97	\$13.35	\$16.43	\$3.78	\$1.80	\$67.33
4	70.00	\$34.43	\$13.35	\$16.43	\$4.78	\$1.80	\$70.79
5	75.00	\$36.89	\$13.35	\$16.43	\$5.78	\$1.80	\$74.25
6	80.00	\$39.35	\$13.35	\$16.43	\$6.78	\$1.80	\$77.71
7	90.00	\$44.27	\$13.35	\$16.43	\$7.78	\$1.80	\$83.63
Apprentice to Journeyworker Ratio: 1:3							
CHAIN SAW OPERATOR	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	12/1/2025	\$60.48	\$16.05	\$13.25	\$3.25	\$0.00	\$93.03
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.81	\$16.05	\$13.25	\$3.25	\$0.00	\$94.36
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$63.29	\$16.05	\$13.25	\$3.25	\$0.00	\$95.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
COMPRESSOR OPERATOR	12/1/2025	\$37.97	\$16.05	\$13.25	\$3.25	\$0.00	\$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$38.83	\$16.05	\$13.25	\$3.25	\$0.00	\$71.38
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$39.78	\$16.05	\$13.25	\$3.25	\$0.00	\$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DELEADER (BRIDGE)	7/1/2025	\$58.51	\$10.30	\$11.95	\$12.50	\$0.00	\$93.26
PAINTERS LOCAL 35	1/1/2026	\$59.56	\$10.35	\$12.00	\$12.60	\$0.00	\$94.51
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: DELEADER (BRIDGE) Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.26	\$10.30	\$0.00	\$0.00	\$0.00	\$39.56
2	55.00	\$32.18	\$10.30	\$0.00	\$6.88	\$0.00	\$49.36
3	60.00	\$35.11	\$10.30	\$0.00	\$7.50	\$0.00	\$52.91
4	65.00	\$38.03	\$10.30	\$0.00	\$8.13	\$0.00	\$56.46
5	70.00	\$40.96	\$10.30	\$11.95	\$8.75	\$0.00	\$71.96
6	75.00	\$43.88	\$10.30	\$11.95	\$9.38	\$0.00	\$75.51

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: DELEADER (BRIDGE) Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
7	80.00	\$46.81	\$10.30	\$11.95	\$10.00	\$0.00	\$79.06
8	90.00	\$52.66	\$10.30	\$11.95	\$11.25	\$0.00	\$86.16
Apprentice: DELEADER (BRIDGE) Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.78	\$10.35	\$0.00	\$0.00	\$0.00	\$40.13
2	55.00	\$32.76	\$10.35	\$0.00	\$6.93	\$0.00	\$50.04
3	60.00	\$35.74	\$10.35	\$0.00	\$7.56	\$0.00	\$53.65
4	65.00	\$38.71	\$10.35	\$0.00	\$8.19	\$0.00	\$57.25
5	70.00	\$41.69	\$10.35	\$12.00	\$8.82	\$0.00	\$72.86
6	75.00	\$44.67	\$10.35	\$12.00	\$9.45	\$0.00	\$76.47
7	80.00	\$47.65	\$10.35	\$12.00	\$10.08	\$0.00	\$80.08
8	90.00	\$53.60	\$10.35	\$12.00	\$11.34	\$0.00	\$87.29
Apprentice to Journeyworker Ratio: 1:1							
DEMO: ADZEMAN	12/1/2025	\$48.75	\$10.15	\$9.50	\$9.65	\$0.00	\$78.05
LABORERS	6/1/2026	\$50.30	\$10.15	\$9.50	\$9.65	\$0.00	\$79.60
LABORERS - ZONE 2	12/7/2026	\$51.80	\$10.15	\$9.50	\$9.65	\$0.00	\$81.10
	6/7/2027	\$53.40	\$10.15	\$9.50	\$9.65	\$0.00	\$82.70
	12/6/2027	\$55.00	\$10.15	\$9.50	\$9.65	\$0.00	\$84.30
	6/5/2028	\$56.68	\$10.15	\$9.50	\$9.65	\$0.00	\$85.98
	12/4/2028	\$58.35	\$10.15	\$9.50	\$9.65	\$0.00	\$87.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	12/1/2025	\$49.75	\$10.15	\$9.50	\$9.65	\$0.00	\$79.05
LABORERS	6/1/2026	\$51.30	\$10.15	\$9.50	\$9.65	\$0.00	\$80.60
LABORERS - ZONE 2	12/7/2026	\$52.80	\$10.15	\$9.50	\$9.65	\$0.00	\$82.10
	6/7/2027	\$54.40	\$10.15	\$9.50	\$9.65	\$0.00	\$83.70
	12/6/2027	\$56.00	\$10.15	\$9.50	\$9.65	\$0.00	\$85.30
	6/5/2028	\$57.68	\$10.15	\$9.50	\$9.65	\$0.00	\$86.98
	12/4/2028	\$59.35	\$10.15	\$9.50	\$9.65	\$0.00	\$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BURNERS	12/1/2025	\$49.50	\$10.15	\$9.50	\$9.65	\$0.00	\$78.80
LABORERS	6/1/2026	\$51.05	\$10.15	\$9.50	\$9.65	\$0.00	\$80.35
LABORERS - ZONE 2	12/7/2026	\$52.55	\$10.15	\$9.50	\$9.65	\$0.00	\$81.85
	6/7/2027	\$54.15	\$10.15	\$9.50	\$9.65	\$0.00	\$83.45
	12/6/2027	\$55.75	\$10.15	\$9.50	\$9.65	\$0.00	\$85.05
	6/5/2028	\$57.43	\$10.15	\$9.50	\$9.65	\$0.00	\$86.73
	12/4/2028	\$59.10	\$10.15	\$9.50	\$9.65	\$0.00	\$88.40
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER LABORERS	12/1/2025	\$49.75	\$10.15	\$9.50	\$9.65	\$0.00	\$79.05
LABORERS - ZONE 2	6/1/2026	\$51.30	\$10.15	\$9.50	\$9.65	\$0.00	\$80.60
	12/7/2026	\$52.80	\$10.15	\$9.50	\$9.65	\$0.00	\$82.10
	6/7/2027	\$54.40	\$10.15	\$9.50	\$9.65	\$0.00	\$83.70
	12/6/2027	\$56.00	\$10.15	\$9.50	\$9.65	\$0.00	\$85.30
	6/5/2028	\$57.68	\$10.15	\$9.50	\$9.65	\$0.00	\$86.98
	12/4/2028	\$59.35	\$10.15	\$9.50	\$9.65	\$0.00	\$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: JACKHAMMER OPERATOR LABORERS	12/1/2025	\$49.50	\$10.15	\$9.50	\$9.65	\$0.00	\$78.80
LABORERS - ZONE 2	6/1/2026	\$51.05	\$10.15	\$9.50	\$9.65	\$0.00	\$80.35
	12/7/2026	\$52.55	\$10.15	\$9.50	\$9.65	\$0.00	\$81.85
	6/7/2027	\$54.15	\$10.15	\$9.50	\$9.65	\$0.00	\$83.45
	12/6/2027	\$55.75	\$10.15	\$9.50	\$9.65	\$0.00	\$85.05
	6/5/2028	\$57.43	\$10.15	\$9.50	\$9.65	\$0.00	\$86.73
	12/4/2028	\$59.10	\$10.15	\$9.50	\$9.65	\$0.00	\$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: WRECKING LABORER LABORERS	12/1/2025	\$48.75	\$10.15	\$9.50	\$9.65	\$0.00	\$78.05
LABORERS - ZONE 2	6/1/2026	\$50.30	\$10.15	\$9.50	\$9.65	\$0.00	\$79.60
	12/7/2026	\$51.80	\$10.15	\$9.50	\$9.65	\$0.00	\$81.10
	6/7/2027	\$53.40	\$10.15	\$9.50	\$9.65	\$0.00	\$82.70
	12/6/2027	\$55.00	\$10.15	\$9.50	\$9.65	\$0.00	\$84.30
	6/5/2028	\$56.68	\$10.15	\$9.50	\$9.65	\$0.00	\$85.98
	12/4/2028	\$58.35	\$10.15	\$9.50	\$9.65	\$0.00	\$87.65
For apprentice rates see "Apprentice- LABORER"							
DIRECTIONAL DRILL MACHINE OPERATOR OPERATING ENGINEERS LOCAL 4	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	\$78.11	\$10.08	\$11.62	\$10.04	\$0.00	\$109.85
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A \$69.83, 3A \$91.79,4A \$102.14 Total Rate							
DIVER TENDER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	\$55.79	\$10.08	\$11.62	\$12.67	\$0.00	\$90.16
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A \$54.20, 3A \$73.93,4A \$82.05 Total Rate							
DIVER TENDER (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	\$83.69	\$10.08	\$11.62	\$12.67	\$0.00	\$118.06
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	\$117.16	\$10.08	\$11.62	\$12.67	\$0.00	\$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DRAWBRIDGE OPERATOR (Construction)	7/1/2020	\$26.77	\$6.67	\$3.93	\$0.00	\$0.16	\$37.53
DRAWBRIDGE - SEIU LOCAL 888							
DRAWBRIDGE - SEIU LOCAL 888							

ELECTRICIAN	9/1/2025	\$66.17	\$13.00	\$14.37	\$8.72	\$0.00	\$102.26
ELECTRICIANS LOCAL 103	3/1/2026	\$66.86	\$13.00	\$14.64	\$9.00	\$0.00	\$103.50
ELECTRICIANS LOCAL 103	9/1/2026	\$68.78	\$13.00	\$14.69	\$9.00	\$0.00	\$105.47
	3/1/2027	\$69.97	\$13.00	\$14.73	\$9.00	\$0.00	\$106.70
	9/1/2027	\$71.88	\$13.00	\$14.79	\$9.00	\$0.00	\$108.67
	3/1/2028	\$73.08	\$13.00	\$14.82	\$9.00	\$0.00	\$109.90

Apprentice: ELECTRICIAN**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$26.47	\$13.00	\$0.79	\$0.00	\$0.00	\$40.26
2	40.00	\$26.47	\$13.00	\$0.79	\$0.00	\$0.00	\$40.26
3	45.00	\$29.78	\$13.00	\$13.27	\$3.92	\$0.00	\$59.97
4	45.00	\$29.78	\$13.00	\$13.27	\$3.92	\$0.00	\$59.97
5	50.00	\$33.09	\$13.00	\$13.37	\$4.36	\$0.00	\$63.82
6	55.00	\$36.39	\$13.00	\$13.47	\$4.80	\$0.00	\$67.66
7	60.00	\$39.70	\$13.00	\$13.57	\$5.23	\$0.00	\$71.50
8	65.00	\$43.01	\$13.00	\$13.67	\$5.67	\$0.00	\$75.35
9	70.00	\$46.32	\$13.00	\$13.77	\$6.10	\$0.00	\$79.19
10	75.00	\$49.63	\$13.00	\$13.87	\$6.54	\$0.00	\$83.04

Apprentice: ELECTRICIAN**Effective Date: 3/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$26.74	\$13.00	\$0.80	\$0.00	\$0.00	\$40.54
2	40.00	\$26.74	\$13.00	\$0.80	\$0.00	\$0.00	\$40.54
3	45.00	\$30.09	\$13.00	\$13.53	\$4.05	\$0.00	\$60.67
4	45.00	\$30.09	\$13.00	\$13.53	\$4.05	\$0.00	\$60.67
5	50.00	\$33.43	\$13.00	\$13.63	\$4.50	\$0.00	\$64.56
6	55.00	\$36.77	\$13.00	\$13.73	\$4.95	\$0.00	\$68.45
7	60.00	\$40.12	\$13.00	\$13.83	\$5.40	\$0.00	\$72.35
8	65.00	\$43.46	\$13.00	\$13.93	\$5.85	\$0.00	\$76.24
9	70.00	\$46.80	\$13.00	\$14.03	\$6.30	\$0.00	\$80.13
10	75.00	\$50.15	\$13.00	\$14.13	\$6.75	\$0.00	\$84.03

Apprentice Notes

:

Apprentice to Journeyworker Ratio: 2:3

ELEVATOR CONSTRUCTOR	1/1/2025	\$74.17	\$16.28	\$10.96	\$10.40	\$0.00	\$111.81
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	\$77.26	\$16.38	\$11.06	\$10.70	\$0.00	\$115.40

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	\$80.55	\$16.48	\$11.16	\$11.00	\$0.00	\$119.19

Apprentice: ELEVATOR CONSTRUCTOR**Effective Date: 1/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$37.09	\$0.00	\$0.00	\$0.00	\$0.00	\$37.09
2	55.00	\$40.79	\$16.28	\$10.96	\$10.40	\$0.00	\$78.43
3	65.00	\$48.21	\$16.28	\$10.96	\$10.40	\$0.00	\$85.85
4	70.00	\$51.92	\$16.28	\$10.96	\$10.40	\$0.00	\$89.56
5	80.00	\$59.34	\$16.28	\$10.96	\$10.40	\$0.00	\$96.98

Apprentice: ELEVATOR CONSTRUCTOR**Effective Date: 1/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$38.63	\$0.00	\$0.00	\$0.00	\$0.00	\$38.63
2	55.00	\$42.49	\$16.38	\$11.06	\$10.70	\$0.00	\$80.63
3	65.00	\$50.22	\$16.38	\$11.06	\$10.70	\$0.00	\$88.36
4	70.00	\$54.08	\$16.38	\$11.06	\$10.70	\$0.00	\$92.22
5	80.00	\$61.81	\$16.38	\$11.06	\$10.70	\$0.00	\$99.95

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER	1/1/2025	\$51.92	\$16.28	\$10.96	\$10.40	\$0.00	\$89.56
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	\$54.08	\$16.38	\$11.06	\$10.07	\$0.00	\$91.59
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	\$56.39	\$16.48	\$11.16	\$11.00	\$0.00	\$95.03

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.21	\$0.00	\$70.33
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.21	\$0.00	\$71.77
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.21	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY	11/1/2025	\$53.56	\$16.05	\$13.25	\$3.25	\$0.00	\$86.11
OPERATING ENGINEERS LOCAL 4	5/1/2026	\$55.00	\$16.05	\$13.25	\$3.25	\$0.00	\$87.55
OPERATING ENGINEERS LOCAL 4	11/1/2026	\$56.29	\$16.05	\$13.25	\$3.25	\$0.00	\$88.84
	5/1/2027	\$57.72	\$16.05	\$13.25	\$3.25	\$0.00	\$90.27

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY	11/1/2025	\$55.17	\$16.05	\$13.25	\$3.25	\$0.00	\$87.72
OPERATING ENGINEERS LOCAL 4	5/1/2026	\$56.62	\$16.05	\$13.25	\$3.25	\$0.00	\$89.17
OPERATING ENGINEERS LOCAL 4	11/1/2026	\$57.92	\$16.05	\$13.25	\$3.25	\$0.00	\$90.47
	5/1/2027	\$59.37	\$16.05	\$13.25	\$3.25	\$0.00	\$91.92

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY	11/1/2025	\$26.03	\$16.05	\$13.25	\$3.25	\$0.00	\$58.58
OPERATING ENGINEERS LOCAL 4	5/1/2026	\$26.88	\$16.05	\$13.25	\$3.25	\$0.00	\$59.43

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OPERATING ENGINEERS LOCAL 4	11/1/2026	\$27.64	\$16.05	\$13.25	\$3.25	\$0.00	\$60.19
	5/1/2027	\$28.49	\$16.05	\$13.25	\$3.25	\$0.00	\$61.04
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIRE ALARM INSTALLER	9/1/2025	\$66.17	\$13.00	\$14.37	\$9.00	\$0.00	\$102.54
ELECTRICIANS LOCAL 103	3/1/2026	\$66.86	\$13.00	\$14.64	\$9.00	\$0.00	\$103.50
ELECTRICIANS LOCAL 103	9/1/2026	\$68.78	\$13.00	\$14.69	\$9.00	\$0.00	\$105.47
	3/1/2027	\$69.97	\$13.00	\$14.73	\$9.00	\$0.00	\$106.70
	9/1/2027	\$71.88	\$13.00	\$14.79	\$9.00	\$0.00	\$108.67
	3/1/2028	\$73.08	\$13.00	\$14.82	\$9.00	\$0.00	\$109.90
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	9/1/2025	\$52.94	\$13.00	\$13.97	\$6.98	\$0.00	\$86.89
/ COMMISSIONING	3/1/2026	\$53.49	\$13.00	\$14.23	\$7.20	\$0.00	\$87.92
ELECTRICIANS LOCAL 103	9/1/2026	\$55.02	\$13.00	\$14.28	\$7.20	\$0.00	\$89.50
ELECTRICIANS LOCAL 103	3/1/2027	\$55.98	\$13.00	\$14.31	\$7.20	\$0.00	\$90.49
	9/1/2027	\$57.50	\$13.00	\$14.36	\$7.20	\$0.00	\$92.06
	3/1/2028	\$58.46	\$13.00	\$14.38	\$7.20	\$0.00	\$93.04
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
FIREMAN (ASST. ENGINEER)	12/1/2025	\$47.69	\$16.05	\$13.25	\$3.25	\$0.00	\$80.24
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$48.75	\$16.05	\$13.25	\$3.25	\$0.00	\$81.30
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$49.93	\$16.05	\$13.25	\$3.25	\$0.00	\$82.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FLAGGER & SIGNALER (HEAVY & HIGHWAY)	12/1/2025	\$28.09	\$10.15	\$9.50	\$9.21	\$0.00	\$56.95
LABORERS	6/1/2026	\$29.21	\$10.15	\$9.50	\$9.21	\$0.00	\$58.07
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$29.21	\$10.15	\$9.50	\$9.21	\$0.00	\$58.07
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
FLOORCOVERER	9/1/2025	\$57.74	\$10.33	\$11.47	\$8.80	\$0.00	\$88.34
FLOORCOVERERS LOCAL 2168	3/1/2026	\$59.24	\$10.33	\$11.47	\$8.80	\$0.00	\$89.84
FLOORCOVERERS LOCAL 2168 ZONE I	9/1/2026	\$60.74	\$10.33	\$11.47	\$8.80	\$0.00	\$91.34
	3/1/2027	\$62.24	\$10.33	\$11.47	\$8.80	\$0.00	\$92.84

Apprentice: FLOORCOVERER**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$25.98	\$10.33	\$0.00	\$1.76	\$0.00	\$38.07
2	45.00	\$25.98	\$10.33	\$0.00	\$1.76	\$0.00	\$38.07
3	55.00	\$31.76	\$10.33	\$0.00	\$3.52	\$0.00	\$45.61
4	55.00	\$31.76	\$10.33	\$0.00	\$3.52	\$0.00	\$45.61
5	70.00	\$40.42	\$10.33	\$11.47	\$5.28	\$0.00	\$67.50
6	70.00	\$40.42	\$10.33	\$11.47	\$5.28	\$0.00	\$67.50
7	80.00	\$46.19	\$10.33	\$11.47	\$7.04	\$0.00	\$75.03
8	80.00	\$46.19	\$10.33	\$11.47	\$7.04	\$0.00	\$75.03

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: FLOORCOVERER							
Effective Date: 3/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$26.66	\$10.33	\$0.00	\$1.76	\$0.00	\$38.75
2	45.00	\$26.66	\$10.33	\$0.00	\$1.76	\$0.00	\$38.75
3	55.00	\$32.58	\$10.33	\$0.00	\$3.52	\$0.00	\$46.43
4	55.00	\$32.58	\$10.33	\$0.00	\$3.52	\$0.00	\$46.43
5	70.00	\$41.47	\$10.33	\$11.47	\$5.28	\$0.00	\$68.55
6	70.00	\$41.47	\$10.33	\$11.47	\$5.28	\$0.00	\$68.55
7	80.00	\$47.39	\$10.33	\$11.47	\$7.04	\$0.00	\$76.23
8	80.00	\$47.39	\$10.33	\$11.47	\$7.04	\$0.00	\$76.23

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

FORK LIFT/CHERRY PICKER	12/1/2025	\$59.28	\$16.05	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.58	\$16.05	\$13.25	\$3.25	\$0.00	\$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$62.03	\$16.05	\$13.25	\$3.25	\$0.00	\$94.58

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS	12/1/2025	\$37.97	\$16.05	\$13.25	\$3.25	\$0.00	\$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$38.83	\$16.05	\$13.25	\$3.25	\$0.00	\$71.38
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$39.78	\$16.05	\$13.25	\$3.25	\$0.00	\$72.33

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	7/1/2025	\$48.01	\$10.30	\$11.95	\$12.50	\$0.00	\$82.76
GLAZIERS LOCAL 35	1/1/2026	\$49.06	\$10.35	\$12.00	\$12.60	\$0.00	\$84.01
GLAZIERS LOCAL 35 (ZONE 2)							

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)							
Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.01	\$10.30	\$0.00	\$0.00	\$0.00	\$34.31
2	55.00	\$26.41	\$10.30	\$0.00	\$6.88	\$0.00	\$43.59
3	60.00	\$28.81	\$10.30	\$0.00	\$7.50	\$0.00	\$46.61
4	65.00	\$31.21	\$10.30	\$0.00	\$8.13	\$0.00	\$49.64
5	70.00	\$33.61	\$10.30	\$11.95	\$8.75	\$0.00	\$64.61
6	75.00	\$36.01	\$10.30	\$11.95	\$9.38	\$0.00	\$67.64
7	80.00	\$38.41	\$10.30	\$11.95	\$10.00	\$0.00	\$70.66
8	90.00	\$43.21	\$10.30	\$11.95	\$11.25	\$0.00	\$76.71

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.53	\$10.30	\$0.00	\$0.00	\$0.00	\$34.83
2	55.00	\$26.98	\$10.30	\$0.00	\$6.88	\$0.00	\$44.16
3	60.00	\$29.44	\$10.30	\$0.00	\$7.50	\$0.00	\$47.24
4	65.00	\$31.89	\$10.30	\$0.00	\$8.13	\$0.00	\$50.32
5	70.00	\$34.34	\$10.30	\$11.95	\$8.75	\$0.00	\$65.34
6	75.00	\$36.80	\$10.30	\$11.95	\$9.38	\$0.00	\$68.43
7	80.00	\$39.25	\$10.30	\$11.95	\$10.00	\$0.00	\$71.50
8	90.00	\$44.15	\$10.30	\$11.95	\$11.25	\$0.00	\$77.65

Apprentice to Journeyworker Ratio: 1:1

HOISTING ENGINEER/CRANES/GRADALLS	12/1/2025	\$59.28	\$16.05	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.58	\$16.05	\$13.25	\$3.25	\$0.00	\$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$62.03	\$16.05	\$13.25	\$3.25	\$0.00	\$94.58

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS							
Effective Date: 12/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$32.88	\$0.00	\$0.00	\$0.00	\$0.00	\$32.88
2	60.00	\$35.87	\$16.05	\$13.25	\$3.25	\$0.00	\$68.42
3	65.00	\$38.86	\$16.05	\$13.25	\$3.25	\$0.00	\$71.41
4	70.00	\$41.85	\$16.05	\$13.25	\$3.25	\$0.00	\$74.40
5	75.00	\$44.84	\$16.05	\$13.25	\$3.25	\$0.00	\$77.39
6	80.00	\$47.82	\$16.05	\$13.25	\$3.25	\$0.00	\$80.37
7	85.00	\$50.81	\$16.05	\$13.25	\$3.25	\$0.00	\$83.36
8	90.00	\$53.80	\$16.05	\$13.25	\$3.25	\$0.00	\$86.35

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS							
Effective Date: 6/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$33.32	\$0.00	\$0.00	\$0.00	\$0.00	\$33.32
2	60.00	\$36.35	\$16.05	\$13.25	\$3.25	\$0.00	\$68.90
3	65.00	\$39.38	\$16.05	\$13.25	\$3.25	\$0.00	\$71.93
4	70.00	\$42.41	\$16.50	\$13.25	\$3.25	\$0.00	\$75.41
5	75.00	\$45.44	\$16.50	\$13.25	\$3.25	\$0.00	\$78.44
6	80.00	\$48.46	\$16.50	\$13.25	\$3.25	\$0.00	\$81.46
7	85.00	\$51.49	\$16.50	\$13.25	\$3.25	\$0.00	\$84.49
8	90.00	\$54.52	\$16.50	\$13.25	\$3.25	\$0.00	\$87.52

Apprentice to Journeyworker Ratio: 1:6

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
HVAC (DUCTWORK)	8/1/2025	\$60.98	\$14.91	\$18.74	\$9.53	\$2.98	\$107.14
SHEETMETAL WORKERS LOCAL 17	2/1/2026	\$62.93	\$14.91	\$18.74	\$9.53	\$2.98	\$109.09
SHEETMETAL WORKERS LOCAL 17 - A							

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS)	9/1/2025	\$66.17	\$13.00	\$14.37	\$8.72	\$0.00	\$102.26
ELECTRICIANS LOCAL 103	3/1/2026	\$66.86	\$13.00	\$14.64	\$9.00	\$0.00	\$103.50
ELECTRICIANS LOCAL 103	9/1/2026	\$68.78	\$13.00	\$14.69	\$9.00	\$0.00	\$105.47
	3/1/2027	\$69.97	\$13.00	\$14.73	\$9.00	\$0.00	\$106.70
	9/1/2027	\$71.88	\$13.00	\$14.79	\$9.00	\$0.00	\$108.67
	3/1/2028	\$73.08	\$13.00	\$14.82	\$9.00	\$0.00	\$109.90

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR)	8/1/2025	\$60.98	\$14.91	\$18.74	\$9.53	\$2.98	\$107.14
SHEETMETAL WORKERS LOCAL 17	2/1/2026	\$62.93	\$14.91	\$18.74	\$9.53	\$2.98	\$109.09
SHEETMETAL WORKERS LOCAL 17 - A							

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING -WATER)	9/1/2025	\$69.08	\$13.45	\$13.75	\$9.30	\$0.00	\$105.58
PIPEFITTERS LOCAL 537							
PIPEFITTERS LOCAL 537							

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

HVAC MECHANIC	9/1/2025	\$69.08	\$13.45	\$13.75	\$9.30	\$0.00	\$105.58
PIPEFITTERS LOCAL 537							
PIPEFITTERS LOCAL 537							

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

HYDRAULIC DRILLS	12/1/2025	\$41.97	\$10.15	\$9.50	\$9.11	\$0.00	\$70.73
LABORERS	6/1/2026	\$43.41	\$10.15	\$9.50	\$9.11	\$0.00	\$72.17
LABORERS - ZONE 2	12/1/2026	\$44.85	\$10.15	\$9.50	\$9.11	\$0.00	\$73.61
	6/1/2027	\$46.30	\$10.15	\$9.50	\$9.11	\$0.00	\$75.06
	12/1/2027	\$47.75	\$10.15	\$9.50	\$9.11	\$0.00	\$76.51
	6/1/2028	\$49.25	\$10.15	\$9.50	\$9.11	\$0.00	\$78.01
	12/1/2028	\$50.75	\$10.15	\$9.50	\$9.11	\$0.00	\$79.51

For apprentice rates see "Apprentice- LABORER"

HYDRAULIC DRILLS (HEAVY & HIGHWAY)	12/1/2025	\$41.97	\$10.15	\$9.50	\$9.21	\$0.00	\$70.83
LABORERS	6/1/2026	\$43.41	\$10.15	\$9.50	\$9.21	\$0.00	\$72.27
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.85	\$10.15	\$9.50	\$9.21	\$0.00	\$73.71

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

INSULATOR (PIPES & TANKS)	9/1/2025	\$60.34	\$14.75	\$9.52	\$10.09	\$0.00	\$94.70
HEAT & FROST INSULATORS LOCAL 6	9/1/2026	\$63.76	\$14.75	\$9.52	\$10.09	\$0.00	\$98.12
HEAT & FROST INSULATORS LOCAL 6 (BOSTON)							

Apprentice: INSULATOR (PIPES & TANKS)**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$30.17	\$14.75	\$9.27	\$5.05	\$0.00	\$59.24

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: INSULATOR (PIPES & TANKS) Effective Date: 9/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	60.00	\$36.20	\$14.75	\$9.32	\$6.05	\$0.00	\$66.32
3	70.00	\$42.24	\$14.75	\$9.37	\$7.06	\$0.00	\$73.42
4	80.00	\$48.27	\$14.75	\$9.42	\$8.07	\$0.00	\$80.51
Apprentice: INSULATOR (PIPES & TANKS) Effective Date: 9/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$31.88	\$14.75	\$9.27	\$5.05	\$0.00	\$60.95
2	60.00	\$38.26	\$14.75	\$9.32	\$6.05	\$0.00	\$68.38
3	70.00	\$44.63	\$14.75	\$9.37	\$7.06	\$0.00	\$75.81
4	80.00	\$51.01	\$14.75	\$9.42	\$8.07	\$0.00	\$83.25
Apprentice to Journeyworker Ratio: 1:4							
IRONWORKER/WELDER	9/16/2025	\$53.46	\$9.05	\$12.75	\$14.50	\$0.00	\$89.76
IRONWORKERS LOCAL 7							
IRONWORKERS LOCAL 7 (LAWRENCE AREA)							
Apprentice: IRONWORKER/WELDER Effective Date: 9/16/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$32.08	\$9.05	\$12.75	\$4.50	\$0.00	\$58.38
2	75.00	\$40.10	\$9.05	\$12.75	\$4.50	\$0.00	\$66.40
3	85.00	\$45.44	\$9.05	\$12.75	\$4.50	\$0.00	\$71.74
4	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Apprentice to Journeyworker Ratio: 1:4							
JACKHAMMER & PAVING BREAKER OPERATOR	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER	12/1/2025	\$41.22	\$10.15	\$9.50	\$9.11	\$0.00	\$69.98
LABORERS	6/1/2026	\$42.66	\$10.15	\$9.50	\$9.11	\$0.00	\$71.42
LABORERS - ZONE 2	12/1/2026	\$44.10	\$10.15	\$9.50	\$9.11	\$0.00	\$72.86

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/1/2027	\$45.55	\$10.15	\$9.50	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.00	\$10.15	\$9.50	\$9.11	\$0.00	\$75.76
	6/1/2028	\$48.50	\$10.15	\$9.50	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.00	\$10.15	\$9.50	\$9.11	\$0.00	\$78.76

Apprentice: LABORER							
Effective Date: 12/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$25.03	\$10.15	\$9.50	\$9.11	\$0.00	\$53.79
2	70.00	\$29.20	\$10.15	\$9.50	\$9.11	\$0.00	\$57.96
3	80.00	\$33.38	\$10.15	\$9.50	\$9.11	\$0.00	\$62.14
4	90.00	\$37.55	\$10.15	\$9.50	\$9.11	\$0.00	\$66.31

Apprentice: LABORER							
Effective Date: 6/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$25.60	\$10.15	\$9.50	\$9.11	\$0.00	\$54.36
2	70.00	\$29.86	\$10.15	\$9.50	\$9.11	\$0.00	\$58.62
3	80.00	\$34.13	\$10.15	\$9.50	\$9.11	\$0.00	\$62.89
4	90.00	\$38.39	\$10.15	\$9.50	\$9.11	\$0.00	\$67.15

Apprentice to Journeyworker Ratio: 1:5

LABORER (HEAVY & HIGHWAY)	12/1/2025	\$41.22	\$10.15	\$9.50	\$9.21	\$0.00	\$70.08
LABORERS	6/1/2026	\$42.66	\$10.15	\$9.50	\$9.21	\$0.00	\$71.52
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.10	\$10.15	\$9.50	\$9.21	\$0.00	\$72.96

Apprentice: LABORER (HEAVY & HIGHWAY)							
Effective Date: 12/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$25.03	\$9.90	\$9.25	\$9.21	\$0.00	\$53.39
2	70.00	\$29.20	\$9.90	\$9.25	\$9.21	\$0.00	\$57.56
3	80.00	\$33.38	\$9.90	\$9.25	\$9.21	\$0.00	\$61.74
4	90.00	\$37.55	\$9.90	\$9.25	\$9.21	\$0.00	\$65.91

Apprentice: LABORER (HEAVY & HIGHWAY)							
Effective Date: 6/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$25.60	\$10.15	\$9.50	\$9.21	\$0.00	\$54.46
2	70.00	\$29.86	\$10.15	\$9.50	\$9.21	\$0.00	\$58.72
3	80.00	\$34.13	\$10.15	\$9.50	\$9.21	\$0.00	\$62.99

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate																
Apprentice: LABORER (HEAVY & HIGHWAY) Effective Date: 6/1/2026 <table> <tr> <th>Step</th><th>Percent</th><th>Apprentice Base Wage</th><th>Health</th><th>Pension</th><th>Annuity</th><th>Supplemental Unemployment</th><th>Total Rate</th></tr> <tr> <td>4</td><td>90.00</td><td>\$38.39</td><td>\$10.15</td><td>\$9.50</td><td>\$9.10</td><td>\$0.00</td><td>\$67.14</td></tr> </table>								Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate	4	90.00	\$38.39	\$10.15	\$9.50	\$9.10	\$0.00	\$67.14
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate																
4	90.00	\$38.39	\$10.15	\$9.50	\$9.10	\$0.00	\$67.14																
Apprentice to Journeyworker Ratio: 1:5																							
LABORER: CARPENTER TENDER	12/1/2025	\$41.22	\$10.15	\$9.50	\$9.11	\$0.00	\$69.98																
LABORERS	6/1/2026	\$42.66	\$10.15	\$9.50	\$9.11	\$0.00	\$71.42																
LABORERS - ZONE 2	12/1/2026	\$44.10	\$10.15	\$9.50	\$9.11	\$0.00	\$72.86																
	6/1/2027	\$45.55	\$10.15	\$9.50	\$9.11	\$0.00	\$74.31																
	12/1/2027	\$47.00	\$10.15	\$9.50	\$9.11	\$0.00	\$75.76																
	6/1/2028	\$48.50	\$10.15	\$9.50	\$9.11	\$0.00	\$77.26																
	12/1/2028	\$50.00	\$10.15	\$9.50	\$9.11	\$0.00	\$78.76																
For apprentice rates see "Apprentice- LABORER"																							
LABORER: CEMENT FINISHER TENDER	12/1/2025	\$41.22	\$10.15	\$9.50	\$9.11	\$0.00	\$69.98																
LABORERS	6/1/2026	\$42.66	\$10.15	\$9.50	\$9.11	\$0.00	\$71.42																
LABORERS - ZONE 2	12/1/2026	\$44.10	\$10.15	\$9.50	\$9.11	\$0.00	\$72.86																
	6/1/2027	\$45.55	\$10.15	\$9.50	\$9.11	\$0.00	\$74.31																
	12/1/2027	\$47.00	\$10.15	\$9.50	\$9.11	\$0.00	\$75.76																
	6/1/2028	\$48.50	\$10.15	\$9.50	\$9.11	\$0.00	\$77.26																
	12/1/2028	\$50.00	\$10.15	\$9.50	\$9.11	\$0.00	\$78.76																
For apprentice rates see "Apprentice- LABORER"																							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER	12/1/2025	\$41.31	\$10.15	\$9.50	\$9.65	\$0.00	\$70.61																
LABORERS	6/1/2026	\$42.75	\$10.15	\$9.50	\$9.65	\$0.00	\$72.05																
LABORERS - ZONE 2	12/7/2026	\$44.19	\$10.15	\$9.50	\$9.65	\$0.00	\$73.49																
	6/7/2027	\$45.64	\$10.15	\$9.50	\$9.65	\$0.00	\$74.94																
	12/6/2027	\$47.09	\$10.15	\$9.50	\$9.65	\$0.00	\$76.39																
	6/5/2028	\$48.59	\$10.15	\$9.50	\$9.65	\$0.00	\$77.89																
	12/4/2028	\$50.09	\$10.15	\$9.50	\$9.65	\$0.00	\$79.39																
For apprentice rates see "Apprentice- LABORER"																							
LABORER: MASON TENDER	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23																
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67																
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11																
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56																
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01																
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51																
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01																
For apprentice rates see "Apprentice- LABORER"																							
LABORER: MASON TENDER (HEAVY & HIGHWAY)	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.21	\$0.00	\$70.33																
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.21	\$0.00	\$71.77																
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.21	\$0.00	\$73.21																
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"																							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORER: MULTI-TRADE TENDER	12/1/2025	\$41.22	\$10.15	\$9.50	\$9.11	\$0.00	\$69.98
LABORERS	6/1/2026	\$42.66	\$10.15	\$9.50	\$9.11	\$0.00	\$71.42
LABORERS - ZONE 2	12/1/2026	\$44.10	\$10.15	\$9.50	\$9.11	\$0.00	\$72.86
	6/1/2027	\$45.55	\$10.15	\$9.50	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.00	\$10.15	\$9.50	\$9.11	\$0.00	\$75.76
	6/1/2028	\$48.50	\$10.15	\$9.50	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.00	\$10.15	\$9.50	\$9.11	\$0.00	\$78.76

For apprentice rates see "Apprentice- LABORER"

LABORER: TREE REMOVER	12/1/2025	\$41.22	\$10.15	\$9.50	\$9.11	\$0.00	\$69.98
LABORERS	6/1/2026	\$42.66	\$10.15	\$9.50	\$9.11	\$0.00	\$71.42
LABORERS - ZONE 2	12/1/2026	\$44.10	\$10.15	\$9.50	\$9.11	\$0.00	\$72.86
	6/1/2027	\$45.55	\$10.15	\$9.50	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.00	\$10.15	\$9.50	\$9.11	\$0.00	\$75.76
	6/1/2028	\$48.50	\$10.15	\$9.50	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.00	\$10.15	\$9.50	\$9.11	\$0.00	\$78.76

This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01

For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR (HEAVY & HIGHWAY)	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.21	\$0.00	\$70.33
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.21	\$0.00	\$71.77
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.21	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

MARBLE & TILE FINISHERS	8/1/2025	\$52.08	\$11.49	\$15.57	\$6.05	\$0.00	\$85.19
BRICKLAYERS LOCAL 3	2/1/2026	\$53.16	\$11.49	\$15.57	\$6.05	\$0.00	\$86.27
BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	\$54.92	\$11.49	\$15.57	\$6.05	\$0.00	\$88.03
	2/1/2027	\$56.04	\$11.49	\$15.57	\$6.05	\$0.00	\$89.15

Apprentice: MARBLE & TILE FINISHERS**Effective Date: 8/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$26.04	\$11.49	\$15.57	\$6.05	\$0.00	\$59.15
2	60.00	\$31.25	\$11.49	\$15.57	\$6.05	\$0.00	\$64.36
3	70.00	\$36.46	\$11.49	\$15.57	\$6.05	\$0.00	\$69.57
4	80.00	\$41.66	\$11.49	\$15.57	\$6.05	\$0.00	\$74.77
5	90.00	\$46.87	\$11.49	\$15.57	\$6.05	\$0.00	\$79.98

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: MARBLE & TILE FINISHERS Effective Date: 2/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$26.58	\$11.49	\$15.57	\$6.05	\$0.00	\$59.69
2	60.00	\$31.90	\$11.49	\$15.57	\$6.05	\$0.00	\$65.01
3	70.00	\$37.21	\$11.49	\$15.57	\$6.05	\$0.00	\$70.32
4	80.00	\$42.53	\$11.49	\$15.57	\$6.05	\$0.00	\$75.64
5	90.00	\$47.84	\$11.49	\$15.57	\$6.05	\$0.00	\$80.95
Apprentice to Journeyworker Ratio: 1:5							
MARBLE MASONS,TILELAYERS & TERRAZZO MECH	8/1/2025	\$67.97	\$11.49	\$15.57	\$7.99	\$0.00	\$103.02
BRICKLAYERS LOCAL 3	2/1/2026	\$69.32	\$11.49	\$15.57	\$7.99	\$0.00	\$104.37
BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	\$71.52	\$11.49	\$15.57	\$7.99	\$0.00	\$106.57
	2/1/2027	\$72.92	\$11.49	\$15.57	\$7.99	\$0.00	\$107.97
Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$33.99	\$11.49	\$15.57	\$7.99	\$0.00	\$69.04
2	60.00	\$40.78	\$11.49	\$15.57	\$7.99	\$0.00	\$75.83
3	70.00	\$47.58	\$11.49	\$15.57	\$7.99	\$0.00	\$82.63
4	80.00	\$54.38	\$11.49	\$15.57	\$7.99	\$0.00	\$89.43
5	90.00	\$61.17	\$11.49	\$15.57	\$7.99	\$0.00	\$96.22
Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH Effective Date: 2/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$34.66	\$11.49	\$15.57	\$7.99	\$0.00	\$69.71
2	60.00	\$41.59	\$11.49	\$15.57	\$7.99	\$0.00	\$76.64
3	70.00	\$48.52	\$11.49	\$15.57	\$7.99	\$0.00	\$83.57
4	80.00	\$55.46	\$11.49	\$15.57	\$7.99	\$0.00	\$90.51
5	90.00	\$62.39	\$11.49	\$15.57	\$7.99	\$0.00	\$97.44
Apprentice to Journeyworker Ratio: 1:5							
MECH. SWEEPER OPERATOR (ON CONST. SITES)	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
MECHANICS MAINTENANCE	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 2)	1/6/2025	\$45.03	\$10.08	\$11.47	\$10.00	\$0.00	\$76.58
MILLWRIGHTS LOCAL 1121	1/5/2026	\$47.36	\$10.08	\$11.47	\$10.00	\$0.00	\$78.91
MILLWRIGHTS LOCAL 1121 - Zone 2							

Apprentice: MILLWRIGHT (Zone 2)**Effective Date: 1/6/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$24.77	\$10.08	\$0.00	\$5.50	\$0.00	\$40.35
2	65.00	\$29.27	\$10.08	\$0.00	\$6.50	\$0.00	\$45.85
3	75.00	\$33.77	\$10.08	\$11.47	\$7.50	\$0.00	\$62.82
4	85.00	\$38.28	\$10.08	\$11.47	\$8.50	\$0.00	\$68.33

Apprentice: MILLWRIGHT (Zone 2)**Effective Date: 1/5/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$26.05	\$10.08	\$0.00	\$5.50	\$0.00	\$41.63
2	65.00	\$30.78	\$10.08	\$0.00	\$6.50	\$0.00	\$47.36
3	75.00	\$35.52	\$10.08	\$11.47	\$7.50	\$0.00	\$64.57
4	85.00	\$40.26	\$10.08	\$11.47	\$8.50	\$0.00	\$70.31

Apprentice Notes

Step 1&2 Appr. indentured after 1/6/2020 receive no pension,

Apprentice to Journeyworker Ratio: 1:4

MORTAR MIXER	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES,GRADALLS)	12/1/2025	\$25.68	\$16.05	\$13.25	\$3.25	\$0.00	\$58.23
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$26.27	\$16.05	\$13.25	\$3.25	\$0.00	\$58.82
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$26.94	\$16.05	\$13.25	\$3.25	\$0.00	\$59.49

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS)	12/1/2025	\$31.65	\$16.05	\$13.25	\$3.25	\$0.00	\$64.20
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$32.37	\$16.05	\$13.25	\$3.25	\$0.00	\$64.92
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$33.17	\$16.05	\$13.25	\$3.25	\$0.00	\$65.72

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OTHER POWER DRIVEN EQUIPMENT - CLASS II	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS)	7/1/2025	\$58.51	\$10.30	\$11.95	\$12.50	\$0.00	\$93.26
PAINTERS LOCAL 35	1/1/2026	\$59.56	\$10.35	\$12.00	\$12.50	\$0.00	\$94.41
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER (BRIDGES/TANKS)**Effective Date: 7/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.26	\$10.30	\$0.00	\$0.00	\$0.00	\$39.56
2	55.00	\$32.18	\$10.30	\$0.00	\$6.88	\$0.00	\$49.36
3	60.00	\$35.11	\$10.30	\$0.00	\$7.50	\$0.00	\$52.91
4	65.00	\$38.03	\$10.30	\$0.00	\$8.13	\$0.00	\$56.46
5	70.00	\$40.96	\$10.30	\$11.95	\$8.75	\$0.00	\$71.96
6	75.00	\$43.88	\$10.30	\$11.95	\$9.38	\$0.00	\$75.51
7	80.00	\$46.81	\$10.30	\$11.95	\$10.00	\$0.00	\$79.06
8	90.00	\$52.66	\$10.30	\$11.95	\$11.25	\$0.00	\$86.16

Apprentice: PAINTER (BRIDGES/TANKS)**Effective Date: 1/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.78	\$10.35	\$0.00	\$0.00	\$0.00	\$40.13
2	55.00	\$32.76	\$10.35	\$0.00	\$6.93	\$0.00	\$50.04
3	60.00	\$35.74	\$10.35	\$0.00	\$7.56	\$0.00	\$53.65
4	65.00	\$38.71	\$10.35	\$0.00	\$8.19	\$0.00	\$57.25
5	70.00	\$41.69	\$10.35	\$12.00	\$8.82	\$0.00	\$72.86
6	75.00	\$44.67	\$10.35	\$12.00	\$9.45	\$0.00	\$76.47
7	80.00	\$47.65	\$10.35	\$12.00	\$10.08	\$0.00	\$80.08
8	90.00	\$53.60	\$10.35	\$12.00	\$11.34	\$0.00	\$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	7/1/2025	\$49.41	\$10.30	\$11.95	\$12.50	\$0.00	\$84.16
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.	1/1/2026	\$50.46	\$10.35	\$12.00	\$12.60	\$0.00	\$85.41
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) ***Effective Date: 7/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.71	\$10.30	\$0.00	\$0.00	\$0.00	\$35.01

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) ***Effective Date: 7/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	55.00	\$27.18	\$10.30	\$0.00	\$6.88	\$0.00	\$44.36
3	60.00	\$29.65	\$10.30	\$0.00	\$7.50	\$0.00	\$47.45
4	65.00	\$32.12	\$10.30	\$0.00	\$8.13	\$0.00	\$50.55
5	70.00	\$34.59	\$10.30	\$11.95	\$8.75	\$0.00	\$65.59
6	75.00	\$37.06	\$10.30	\$11.95	\$9.38	\$0.00	\$68.69
7	80.00	\$39.53	\$10.30	\$11.95	\$10.00	\$0.00	\$71.78
8	90.00	\$44.47	\$10.30	\$11.95	\$11.25	\$0.00	\$77.97

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) ***Effective Date: 1/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$25.23	\$10.35	\$0.00	\$0.00	\$0.00	\$35.58
2	55.00	\$27.75	\$10.35	\$0.00	\$6.93	\$0.00	\$45.03
3	60.00	\$30.28	\$10.35	\$0.00	\$7.56	\$0.00	\$48.19
4	65.00	\$32.80	\$10.35	\$0.00	\$8.19	\$0.00	\$51.34
5	70.00	\$35.32	\$10.35	\$12.00	\$8.82	\$0.00	\$66.49
6	75.00	\$37.85	\$10.35	\$12.00	\$9.45	\$0.00	\$69.65
7	80.00	\$40.37	\$10.35	\$12.00	\$10.08	\$0.00	\$72.80
8	90.00	\$45.41	\$10.35	\$12.00	\$11.34	\$0.00	\$79.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	7/1/2025	\$47.47	\$10.30	\$11.95	\$12.50	\$0.00	\$82.22
PAINTERS LOCAL 35	1/1/2026	\$48.52	\$10.35	\$12.00	\$12.60	\$0.00	\$83.47
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)**Effective Date: 7/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$23.74	\$10.30	\$0.00	\$0.00	\$0.00	\$34.04
2	55.00	\$26.11	\$10.30	\$0.00	\$6.88	\$0.00	\$43.29
3	60.00	\$28.48	\$10.30	\$0.00	\$7.50	\$0.00	\$46.28
4	65.00	\$30.86	\$10.30	\$0.00	\$8.13	\$0.00	\$49.29
5	70.00	\$33.23	\$10.30	\$11.95	\$8.75	\$0.00	\$64.23
6	75.00	\$35.60	\$10.30	\$11.95	\$9.38	\$0.00	\$67.23
7	80.00	\$37.98	\$10.30	\$11.95	\$10.00	\$0.00	\$70.23
8	90.00	\$42.72	\$10.30	\$11.95	\$11.25	\$0.00	\$76.22

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.26	\$10.35	\$0.00	\$0.00	\$0.00	\$34.61
2	55.00	\$26.69	\$10.35	\$0.00	\$6.93	\$0.00	\$43.97
3	60.00	\$29.11	\$10.35	\$0.00	\$7.56	\$0.00	\$47.02
4	65.00	\$31.54	\$10.35	\$0.00	\$8.19	\$0.00	\$50.08
5	70.00	\$33.96	\$10.35	\$12.00	\$8.82	\$0.00	\$65.13
6	75.00	\$36.39	\$10.35	\$12.00	\$9.45	\$0.00	\$68.19
7	80.00	\$38.82	\$10.35	\$12.00	\$10.08	\$0.00	\$71.25
8	90.00	\$43.67	\$10.35	\$12.00	\$11.34	\$0.00	\$77.36

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) *	7/1/2025	\$48.01	\$10.30	\$11.95	\$12.50	\$0.00	\$82.76
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.	1/1/2026	\$49.06	\$10.35	\$12.00	\$12.60	\$0.00	\$84.01
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER / TAPER (BRUSH, NEW) *							
Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.01	\$10.30	\$0.00	\$0.00	\$0.00	\$34.31
2	55.00	\$26.41	\$10.30	\$0.00	\$6.88	\$0.00	\$43.59
3	60.00	\$28.81	\$10.30	\$0.00	\$7.50	\$0.00	\$46.61
4	65.00	\$31.21	\$10.30	\$0.00	\$8.13	\$0.00	\$49.64
5	70.00	\$33.61	\$10.30	\$11.95	\$8.75	\$0.00	\$64.61
6	75.00	\$36.01	\$10.30	\$11.95	\$9.38	\$0.00	\$67.64
7	80.00	\$38.41	\$10.30	\$11.95	\$10.00	\$0.00	\$70.66
8	90.00	\$43.21	\$10.30	\$11.95	\$11.25	\$0.00	\$76.71

Apprentice: PAINTER / TAPER (BRUSH, NEW) *							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.53	\$10.35	\$0.00	\$0.00	\$0.00	\$34.88
2	55.00	\$26.98	\$10.35	\$0.00	\$6.93	\$0.00	\$44.26
3	60.00	\$29.44	\$10.35	\$0.00	\$7.56	\$0.00	\$47.35
4	65.00	\$31.89	\$10.35	\$0.00	\$8.19	\$0.00	\$50.43
5	70.00	\$34.34	\$10.35	\$12.00	\$8.82	\$0.00	\$65.51
6	75.00	\$36.80	\$10.35	\$12.00	\$9.45	\$0.00	\$68.60
7	80.00	\$39.25	\$10.35	\$12.00	\$10.08	\$0.00	\$71.68
8	90.00	\$44.15	\$10.35	\$12.00	\$11.34	\$0.00	\$77.84

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:1							
PAINTER / TAPER (BRUSH, REPAINT)	7/1/2025	\$46.07	\$10.30	\$11.95	\$12.50	\$0.00	\$80.82
PAINTERS LOCAL 35	1/1/2026	\$47.12	\$10.35	\$12.00	\$12.60	\$0.00	\$82.07
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)							
Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$23.04	\$10.30	\$0.00	\$0.00	\$0.00	\$33.34
2	55.00	\$25.34	\$10.30	\$0.00	\$6.88	\$0.00	\$42.52
3	60.00	\$27.64	\$10.30	\$0.00	\$7.50	\$0.00	\$45.44
4	65.00	\$29.95	\$10.30	\$0.00	\$8.13	\$0.00	\$48.38
5	70.00	\$32.25	\$10.30	\$11.95	\$8.75	\$0.00	\$63.25
6	75.00	\$34.55	\$10.30	\$11.95	\$9.38	\$0.00	\$66.18
7	80.00	\$36.86	\$10.30	\$11.95	\$10.00	\$0.00	\$69.11
8	90.00	\$41.46	\$10.30	\$11.95	\$11.25	\$0.00	\$74.96

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$23.56	\$10.35	\$0.00	\$0.00	\$0.00	\$33.91
2	55.00	\$25.92	\$10.35	\$0.00	\$6.93	\$0.00	\$43.20
3	60.00	\$28.27	\$10.35	\$0.00	\$7.56	\$0.00	\$46.18
4	65.00	\$30.63	\$10.35	\$0.00	\$8.19	\$0.00	\$49.17
5	70.00	\$32.98	\$10.35	\$12.00	\$8.82	\$0.00	\$64.15
6	75.00	\$35.34	\$10.35	\$12.00	\$9.45	\$0.00	\$67.14
7	80.00	\$37.70	\$10.35	\$12.00	\$10.08	\$0.00	\$70.13
8	90.00	\$42.41	\$10.35	\$12.00	\$11.34	\$0.00	\$76.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	12/1/2025	\$41.22	\$10.15	\$9.50	\$9.21	\$0.00	\$70.08
LABORERS	6/1/2026	\$42.66	\$10.15	\$9.50	\$9.21	\$0.00	\$71.52
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.10	\$10.15	\$9.50	\$9.21	\$0.00	\$72.96

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

PANEL & PICKUP TRUCKS DRIVER	12/1/2025	\$40.78	\$15.57	\$21.78	\$0.00	\$0.00	\$78.13
TEAMSTERS JOINT COUNCIL NO. 10	1/1/2026	\$40.78	\$16.17	\$21.78	\$0.00	\$0.00	\$78.73
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	\$41.78	\$16.17	\$21.78	\$0.00	\$0.00	\$79.73
	12/1/2026	\$41.78	\$16.17	\$23.52	\$0.00	\$0.00	\$81.47
	1/1/2027	\$41.78	\$16.77	\$23.52	\$0.00	\$0.00	\$82.07

PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	8/1/2024	\$55.79	\$10.08	\$11.62	\$12.67	\$0.00	\$90.16
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER	8/1/2024	\$55.79	\$10.08	\$11.62	\$12.67	\$0.00	\$90.16
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							

Apprentice: PILE DRIVER**Effective Date: 8/1/2024**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$25.11	\$10.08	\$0.00	\$2.53	\$0.00	\$37.72
2	55.00	\$30.68	\$10.08	\$0.00	\$5.07	\$0.00	\$45.83
3	70.00	\$39.05	\$10.08	\$11.62	\$7.60	\$0.00	\$68.35
4	80.00	\$44.63	\$10.08	\$11.62	\$10.14	\$0.00	\$76.47

Apprentice to Journeyworker Ratio: 1:5

PIPEFITTER & STEAMFITTER	9/1/2025	\$69.08	\$13.45	\$13.75	\$9.30	\$0.00	\$105.58
PIPEFITTERS LOCAL 537							
PIPEFITTERS LOCAL 537							

Apprentice: PIPEFITTER & STEAMFITTER**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$27.63	\$13.45	\$13.75	\$9.30	\$0.00	\$64.13
2	45.00	\$31.09	\$13.45	\$13.75	\$9.30	\$0.00	\$67.59
3	60.00	\$41.45	\$13.45	\$13.75	\$9.30	\$0.00	\$77.95
4	70.00	\$48.36	\$13.45	\$13.75	\$9.30	\$0.00	\$84.86
5	80.00	\$55.26	\$13.45	\$13.75	\$9.30	\$0.00	\$91.76

Apprentice to Journeyworker Ratio: 1:3

PIPELAYER	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY)	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.21	\$0.00	\$70.33
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.21	\$0.00	\$71.77
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.21	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

PLUMBERS & GASFITTERS	9/1/2025	\$71.74	\$14.32	\$12.61	\$8.00	\$0.00	\$106.67
PLUMBERS & GASFITTERS LOCAL 12	3/2/2026	\$73.89	\$14.32	\$12.61	\$8.00	\$0.00	\$108.82
PLUMBERS & GASFITTERS LOCAL 12	8/31/2026	\$76.04	\$14.32	\$12.61	\$8.00	\$0.00	\$110.97

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	3/1/2027	\$78.19	\$14.32	\$12.61	\$8.00	\$0.00	\$113.12
	8/30/2027	\$80.34	\$14.32	\$12.61	\$8.00	\$0.00	\$115.27
	2/28/2028	\$82.54	\$14.32	\$12.61	\$8.00	\$0.00	\$117.47
	9/4/2028	\$84.74	\$14.32	\$12.61	\$8.00	\$0.00	\$119.67
	3/5/2029	\$86.94	\$14.32	\$12.61	\$8.00	\$0.00	\$121.87
	9/3/2029	\$89.14	\$14.32	\$12.61	\$8.00	\$0.00	\$124.07
	3/4/2030	\$91.09	\$14.32	\$12.61	\$8.00	\$0.00	\$126.02

Apprentice: PLUMBERS & GASFITTERS**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	\$25.11	\$14.32	\$4.61	\$2.80	\$0.00	\$46.84
2	40.00	\$28.70	\$14.32	\$5.22	\$3.20	\$0.00	\$51.44
3	55.00	\$39.46	\$14.32	\$7.07	\$4.40	\$0.00	\$65.25
4	65.00	\$46.63	\$14.32	\$8.30	\$5.20	\$0.00	\$74.45
5	75.00	\$53.81	\$14.32	\$9.53	\$6.00	\$0.00	\$83.66

Apprentice: PLUMBERS & GASFITTERS**Effective Date: 3/2/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	\$25.86	\$14.32	\$4.61	\$2.80	\$0.00	\$47.59
2	40.00	\$29.56	\$14.32	\$5.22	\$3.20	\$0.00	\$52.30
3	55.00	\$40.64	\$14.32	\$7.07	\$4.40	\$0.00	\$66.43
4	65.00	\$48.03	\$14.32	\$8.30	\$5.20	\$0.00	\$75.85
5	75.00	\$55.42	\$14.32	\$9.53	\$6.00	\$0.00	\$85.27

Apprentice to Journeyworker Ratio: 1:2

PNEUMATIC CONTROLS (TEMP.)	9/1/2025	\$69.08	\$13.45	\$13.75	\$9.30	\$0.00	\$105.58
PIPEFITTERS LOCAL 537							
PIPEFITTERS LOCAL 537							

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.21	\$0.00	\$70.33
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.21	\$0.00	\$71.77
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.21	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
POWDERMAN & BLASTER	12/1/2025	\$42.22	\$10.15	\$9.50	\$9.11	\$0.00	\$70.98
LABORERS	6/1/2026	\$43.66	\$10.15	\$9.50	\$9.11	\$0.00	\$72.42
LABORERS - ZONE 2	12/1/2026	\$45.10	\$10.15	\$9.50	\$9.11	\$0.00	\$73.86
	6/1/2027	\$46.55	\$10.15	\$9.50	\$9.11	\$0.00	\$75.31
	12/1/2027	\$48.00	\$10.15	\$9.50	\$9.11	\$0.00	\$76.76
	6/1/2028	\$49.50	\$10.15	\$9.50	\$9.11	\$0.00	\$78.26
	12/1/2028	\$51.00	\$10.15	\$9.50	\$9.11	\$0.00	\$79.76
For apprentice rates see "Apprentice- LABORER"							
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	12/1/2025	\$42.22	\$9.90	\$9.50	\$9.21	\$0.00	\$70.83
LABORERS	6/1/2026	\$43.66	\$9.90	\$9.50	\$9.21	\$0.00	\$72.27
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	\$45.10	\$9.90	\$9.50	\$9.21	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
POWER SHOVEL/DERRICK/TRENCHING MACHINE	12/1/2025	\$59.28	\$16.05	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.58	\$16.05	\$13.25	\$3.25	\$0.00	\$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$62.03	\$16.05	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (CONCRETE)	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (DEWATERING, OTHER)	12/1/2025	\$37.97	\$16.05	\$13.25	\$3.25	\$0.00	\$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$38.83	\$16.05	\$13.25	\$3.25	\$0.00	\$71.38
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$39.78	\$16.05	\$13.25	\$3.25	\$0.00	\$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
READY-MIX CONCRETE DRIVER	5/1/2025	\$30.50	\$11.57	\$6.65	\$0.00	\$0.00	\$48.72
TEAMSTERS 170	1/1/2026	\$30.50	\$11.97	\$6.65	\$0.00	\$0.00	\$49.12
TEAMSTERS 170 - J.G. MacLellan (Lowell)							
RECLAIMERS	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
RIDE-ON MOTORIZED BUGGY OPERATOR	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
LABORERS - ZONE 2	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
ROLLER/SPREADER/MULCHING MACHINE	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg)	8/1/2025	\$53.53	\$13.28	\$12.67	\$9.03	\$0.00	\$88.51
ROOFERS LOCAL 33	2/1/2026	\$54.78	\$13.28	\$12.67	\$9.03	\$0.00	\$89.76
ROOFERS LOCAL 33							

Apprentice: ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg)							
Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$26.77	\$13.28	\$6.52	\$9.03	\$0.00	\$55.60
2	60.00	\$32.12	\$13.28	\$12.67	\$9.03	\$0.00	\$67.10
3	65.00	\$34.79	\$13.28	\$12.67	\$9.03	\$0.00	\$69.77
4	75.00	\$40.15	\$13.28	\$12.67	\$9.03	\$0.00	\$75.13
5	85.00	\$45.50	\$13.28	\$12.67	\$9.03	\$0.00	\$80.48

Apprentice: ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg)							
Effective Date: 2/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$27.39	\$13.28	\$6.52	\$9.03	\$0.00	\$56.22
2	60.00	\$32.87	\$13.28	\$12.67	\$9.03	\$0.00	\$67.85
3	65.00	\$35.61	\$13.28	\$12.67	\$9.03	\$0.00	\$70.59
4	75.00	\$41.09	\$13.28	\$12.67	\$9.03	\$0.00	\$76.07
5	85.00	\$46.56	\$13.28	\$12.67	\$9.03	\$0.00	\$81.54

Apprentice Notes							
** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1							

Apprentice to Journeyworker Ratio: 1:5

ROOFER SLATE / TILE / PRECAST CONCRETE	8/1/2025	\$53.78	\$13.28	\$12.67	\$9.03	\$0.00	\$88.76
ROOFERS LOCAL 33	2/1/2026	\$55.03	\$13.28	\$12.67	\$9.03	\$0.00	\$90.01
ROOFERS LOCAL 33							

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER	8/1/2025	\$60.98	\$14.91	\$18.74	\$9.53	\$2.98	\$107.14
SHEETMETAL WORKERS LOCAL 17	2/1/2026	\$62.93	\$14.91	\$18.74	\$9.53	\$2.98	\$109.09
SHEETMETAL WORKERS LOCAL 17 - A							

Apprentice: SHEETMETAL WORKER							
Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	42.00	\$25.61	\$14.91	\$6.13	\$0.00	\$0.00	\$46.65
2	42.00	\$25.61	\$14.91	\$6.13	\$0.00	\$0.00	\$46.65
3	47.00	\$28.66	\$14.91	\$11.01	\$1.25	\$1.62	\$57.45
4	47.00	\$28.66	\$14.91	\$11.01	\$1.25	\$1.62	\$57.45
5	52.00	\$31.71	\$14.91	\$11.74	\$1.50	\$1.74	\$61.60

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SHEETMETAL WORKER							
Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
6	52.00	\$31.71	\$14.91	\$11.74	\$1.75	\$1.75	\$61.86
7	60.00	\$36.59	\$14.91	\$12.90	\$2.00	\$1.93	\$68.33
8	65.00	\$39.64	\$14.91	\$13.63	\$2.25	\$2.04	\$72.47
9	75.00	\$45.74	\$14.91	\$15.09	\$2.75	\$2.28	\$80.77
10	85.00	\$51.83	\$14.91	\$16.55	\$2.75	\$2.49	\$88.53
Apprentice: SHEETMETAL WORKER							
Effective Date: 2/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	42.00	\$26.43	\$14.91	\$6.19	\$0.00	\$0.00	\$47.53
2	42.00	\$26.43	\$14.91	\$6.19	\$0.00	\$0.00	\$47.53
3	47.00	\$29.58	\$14.91	\$10.93	\$1.25	\$1.62	\$58.29
4	47.00	\$29.58	\$14.91	\$10.93	\$1.25	\$1.62	\$58.29
5	52.00	\$32.72	\$14.91	\$11.66	\$1.50	\$1.74	\$62.53
6	52.00	\$32.72	\$14.91	\$11.66	\$1.75	\$1.75	\$62.79
7	60.00	\$37.76	\$14.91	\$12.84	\$2.00	\$1.93	\$69.44
8	65.00	\$40.90	\$14.91	\$13.58	\$2.25	\$2.04	\$73.68
9	75.00	\$47.20	\$14.91	\$15.06	\$2.75	\$2.28	\$82.20
10	85.00	\$53.49	\$14.91	\$16.53	\$2.75	\$2.49	\$90.17
Apprentice to Journeyworker Ratio: 1:4							
SPECIALIZED EARTH MOVING EQUIP < 35 TONS	12/1/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$0.00	\$78.59
TEAMSTERS JOINT COUNCIL NO. 10	1/1/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$0.00	\$79.19
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$0.00	\$80.19
	12/1/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$0.00	\$81.93
	1/1/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$0.00	\$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS	12/1/2025	\$41.53	\$15.57	\$21.78	\$0.00	\$0.00	\$78.88
TEAMSTERS JOINT COUNCIL NO. 10	1/1/2026	\$41.53	\$16.17	\$21.78	\$0.00	\$0.00	\$79.48
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	\$42.53	\$16.17	\$21.78	\$0.00	\$0.00	\$80.48
	12/1/2026	\$42.53	\$16.17	\$23.52	\$0.00	\$0.00	\$82.22
	1/1/2027	\$42.53	\$16.77	\$23.52	\$0.00	\$0.00	\$82.82
SPRINKLER FITTER	10/1/2025	\$72.05	\$12.25	\$7.40	\$19.50	\$0.00	\$111.20
SPRINKLER FITTERS LOCAL 550	1/1/2026	\$72.05	\$13.45	\$7.45	\$18.25	\$0.00	\$111.20
SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1							

Apprentice: SPRINKLER FITTER**Effective Date: 10/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SPRINKLER FITTER Effective Date: 10/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	\$25.22	\$12.25	\$14.22	\$0.00	\$0.00	\$51.69
2	40.00	\$28.82	\$12.25	\$15.20	\$0.00	\$0.00	\$56.27
3	45.00	\$32.42	\$12.25	\$16.18	\$0.00	\$0.00	\$60.85
4	50.00	\$36.03	\$12.25	\$17.15	\$0.00	\$0.00	\$65.43
5	55.00	\$39.63	\$12.25	\$18.12	\$0.00	\$0.00	\$70.00
6	60.00	\$43.23	\$12.25	\$19.10	\$0.00	\$0.00	\$74.58
7	65.00	\$46.83	\$12.25	\$20.08	\$0.00	\$0.00	\$79.16
8	70.00	\$50.44	\$12.25	\$21.04	\$0.00	\$0.00	\$83.73
9	75.00	\$54.04	\$12.25	\$22.02	\$0.00	\$0.00	\$88.31
10	80.00	\$57.64	\$12.25	\$23.00	\$0.00	\$0.00	\$92.89
Apprentice: SPRINKLER FITTER Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	\$25.22	\$13.45	\$13.84	\$0.00	\$0.00	\$52.51
2	40.00	\$28.82	\$13.45	\$14.75	\$0.00	\$0.00	\$57.02
3	45.00	\$32.42	\$13.45	\$15.67	\$0.00	\$0.00	\$61.54
4	50.00	\$36.03	\$13.45	\$16.57	\$0.00	\$0.00	\$66.05
5	55.00	\$39.63	\$13.45	\$17.49	\$0.00	\$0.00	\$70.57
6	60.00	\$43.23	\$13.45	\$18.40	\$0.00	\$0.00	\$75.08
7	65.00	\$46.83	\$13.45	\$19.32	\$0.00	\$0.00	\$79.60
8	70.00	\$50.44	\$13.45	\$20.22	\$0.00	\$0.00	\$84.11
9	75.00	\$54.04	\$13.45	\$21.15	\$0.00	\$0.00	\$88.64
10	80.00	\$57.64	\$13.45	\$22.05	\$0.00	\$0.00	\$93.14
Apprentice Notes Apprentice entered prior 9/30/10:							
Apprentice to Journeyworker Ratio: 1:3							
STEAM BOILER OPERATOR	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TELECOMMUNICATION TECHNICIAN	9/1/2025	\$52.94	\$13.00	\$13.97	\$6.98	\$0.00	\$86.89
TELECOMMUNICATION TECHNICIAN	3/1/2026	\$53.49	\$13.00	\$14.23	\$7.20	\$0.00	\$87.92

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELECTRICIANS LOCAL 103	9/1/2026	\$55.02	\$13.00	\$14.28	\$7.20	\$0.00	\$89.50
ELECTRICIANS LOCAL 103	3/1/2027	\$55.98	\$13.00	\$14.31	\$7.20	\$0.00	\$90.49
	9/1/2027	\$57.50	\$13.00	\$14.36	\$7.20	\$0.00	\$92.06
	3/1/2028	\$58.46	\$13.00	\$14.38	\$7.20	\$0.00	\$93.04

For apprentice rates and ratios see "Apprentice- ELECTRICIAN"

Apprentice: TELECOMMUNICATION TECHNICIAN							
Effective Date: 9/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$23.82	\$13.00	\$0.71	\$0.00	\$0.00	\$37.53
2	45.00	\$23.82	\$13.00	\$0.71	\$0.00	\$0.00	\$37.53
3	50.00	\$26.47	\$13.00	\$13.17	\$3.49	\$0.00	\$56.13
4	50.00	\$26.47	\$13.00	\$13.17	\$3.49	\$0.00	\$56.13
5	55.00	\$29.12	\$13.00	\$13.25	\$3.84	\$0.00	\$59.21
6	60.00	\$31.76	\$13.00	\$13.33	\$4.19	\$0.00	\$62.28
7	65.00	\$34.41	\$13.00	\$13.41	\$4.54	\$0.00	\$65.36
8	70.00	\$37.06	\$13.00	\$13.49	\$4.89	\$0.00	\$68.44
9	75.00	\$39.71	\$13.00	\$13.57	\$5.24	\$0.00	\$71.52
10	80.00	\$42.35	\$13.00	\$13.65	\$5.58	\$0.00	\$74.58

Apprentice: TELECOMMUNICATION TECHNICIAN							
Effective Date: 3/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$24.07	\$13.00	\$0.72	\$0.00	\$0.00	\$37.79
2	45.00	\$24.07	\$13.00	\$0.72	\$0.00	\$0.00	\$37.79
3	50.00	\$26.75	\$13.00	\$13.43	\$3.60	\$0.00	\$56.78
4	50.00	\$26.75	\$13.00	\$13.43	\$3.60	\$0.00	\$56.78
5	55.00	\$29.42	\$13.00	\$13.51	\$3.96	\$0.00	\$59.89
6	60.00	\$32.09	\$13.00	\$13.59	\$4.32	\$0.00	\$63.00
7	65.00	\$34.77	\$13.00	\$13.67	\$4.68	\$0.00	\$66.12
8	70.00	\$37.44	\$13.00	\$13.75	\$5.04	\$0.00	\$69.23
9	75.00	\$40.12	\$13.00	\$13.83	\$5.40	\$0.00	\$72.35
10	80.00	\$42.79	\$13.00	\$13.91	\$5.76	\$0.00	\$75.46

Apprentice to Journeyworker Ratio: 1:1

TERRAZZO FINISHERS	8/1/2025	\$66.89	\$11.49	\$15.57	\$8.02	\$0.00	\$101.97
BRICKLAYERS LOCAL 3	2/1/2026	\$68.24	\$11.49	\$15.57	\$8.02	\$0.00	\$103.32
BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	\$70.44	\$11.49	\$15.57	\$8.02	\$0.00	\$105.52
	2/1/2027	\$71.84	\$11.49	\$15.57	\$8.02	\$0.00	\$106.92

Apprentice: TERRAZZO FINISHERS							
Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: TERRAZZO FINISHERS Effective Date: 8/1/2025							
	Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment Total Rate
	1	50.00	\$33.45	\$11.49	\$15.57	\$8.02	\$0.00 \$68.53
	2	60.00	\$40.13	\$11.49	\$15.57	\$8.02	\$0.00 \$75.21
	3	70.00	\$46.82	\$11.49	\$15.57	\$8.02	\$0.00 \$81.90
	4	80.00	\$53.51	\$11.49	\$15.57	\$8.02	\$0.00 \$88.59
	5	90.00	\$60.20	\$11.49	\$15.57	\$8.02	\$0.00 \$95.28
Apprentice: TERRAZZO FINISHERS Effective Date: 2/1/2026							
	Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment Total Rate
	1	50.00	\$34.12	\$11.49	\$15.57	\$8.02	\$0.00 \$69.20
	2	60.00	\$40.94	\$11.49	\$15.57	\$8.02	\$0.00 \$76.02
	3	70.00	\$47.77	\$11.49	\$15.57	\$8.02	\$0.00 \$82.85
	4	80.00	\$54.59	\$11.49	\$15.57	\$8.02	\$0.00 \$89.67
	5	90.00	\$61.42	\$11.49	\$15.57	\$8.02	\$0.00 \$96.50
Apprentice to Journeyworker Ratio: 1:5							
TEST BORING DRILLER	12/1/2025	\$52.70	\$10.15	\$9.50	\$9.80	\$0.00	\$82.15
LABORERS	6/1/2026	\$54.25	\$10.15	\$9.50	\$9.80	\$0.00	\$83.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	\$55.75	\$10.15	\$9.50	\$9.80	\$0.00	\$85.20
For apprentice rates see "Apprentice- LABORER"							
TEST BORING DRILLER HELPER	12/1/2025	\$48.82	\$10.15	\$9.50	\$9.80	\$0.00	\$78.27
LABORERS	6/1/2026	\$50.37	\$10.15	\$9.50	\$9.80	\$0.00	\$79.82
LABORERS - FOUNDATION AND MARINE	12/1/2026	\$51.87	\$10.15	\$9.50	\$9.80	\$0.00	\$81.32
For apprentice rates see "Apprentice- LABORER"							
TEST BORING LABORER	12/1/2025	\$48.70	\$10.15	\$9.50	\$9.80	\$0.00	\$78.15
LABORERS	6/1/2026	\$50.25	\$10.15	\$9.50	\$9.80	\$0.00	\$79.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	\$51.75	\$10.15	\$9.50	\$9.80	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"							
TRACTORS/PORTABLE STEAM GENERATORS	12/1/2025	\$58.62	\$16.05	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.90	\$16.05	\$13.25	\$3.25	\$0.00	\$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	\$61.34	\$16.05	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TRAILERS FOR EARTH MOVING EQUIPMENT	12/1/2025	\$41.82	\$15.57	\$21.78	\$0.00	\$0.00	\$79.17
TEAMSTERS JOINT COUNCIL NO. 10	1/1/2026	\$41.82	\$16.17	\$21.78	\$0.00	\$0.00	\$79.77
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	\$42.82	\$16.17	\$21.78	\$0.00	\$0.00	\$80.77
	12/1/2026	\$42.82	\$16.17	\$23.52	\$0.00	\$0.00	\$82.51
	1/1/2027	\$42.82	\$16.77	\$23.52	\$0.00	\$0.00	\$83.11

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TUNNEL WORK - COMPRESSED AIR LABORERS	12/1/2025	\$60.93	\$10.15	\$9.50	\$10.25	\$0.00	\$90.83
LABORERS (COMPRESSED AIR)	6/1/2026	\$62.48	\$10.15	\$9.50	\$10.25	\$0.00	\$92.38
	12/1/2026	\$63.98	\$10.15	\$9.50	\$10.25	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) LABORERS	12/1/2025	\$62.93	\$10.15	\$9.50	\$10.25	\$0.00	\$92.83
LABORERS (COMPRESSED AIR)	6/1/2026	\$64.48	\$10.15	\$9.50	\$10.25	\$0.00	\$94.38
	12/1/2026	\$65.98	\$10.15	\$9.50	\$10.25	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR LABORERS	12/1/2025	\$53.00	\$10.15	\$9.50	\$10.25	\$0.00	\$82.90
LABORERS (FREE AIR TUNNEL)	6/1/2026	\$54.55	\$10.15	\$9.50	\$10.25	\$0.00	\$84.45
	12/1/2026	\$56.05	\$10.15	\$9.50	\$10.25	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE) LABORERS	12/1/2025	\$55.00	\$10.15	\$9.50	\$10.25	\$0.00	\$84.90
LABORERS (FREE AIR TUNNEL)	6/1/2026	\$56.55	\$10.15	\$9.50	\$10.25	\$0.00	\$86.45
	12/1/2026	\$58.05	\$10.15	\$9.50	\$10.25	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$0.00	\$78.59
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$0.00	\$79.19
	6/1/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$0.00	\$80.19
	12/1/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$0.00	\$81.93
	1/1/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$0.00	\$82.53
WAGON DRILL OPERATOR LABORERS	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.11	\$0.00	\$73.11
	6/1/2027	\$45.80	\$10.15	\$9.50	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.25	\$10.15	\$9.50	\$9.11	\$0.00	\$76.01
	6/1/2028	\$48.75	\$10.15	\$9.50	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.25	\$10.15	\$9.50	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) LABORERS	12/1/2025	\$41.47	\$10.15	\$9.50	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$42.91	\$10.15	\$9.50	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.35	\$10.15	\$9.50	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
WASTE WATER PUMP OPERATOR OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.28	\$16.05	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.58	\$16.05	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.03	\$16.05	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
WATER METER INSTALLER PLUMBERS & GASFITTERS LOCAL 12	9/1/2025	\$71.74	\$14.32	\$12.61	\$8.00	\$0.00	\$106.67
PLUMBERS & GASFITTERS LOCAL 12	3/2/2026	\$73.89	\$14.32	\$12.61	\$8.00	\$0.00	\$108.82
	8/31/2026	\$76.04	\$14.32	\$12.61	\$8.00	\$0.00	\$110.97
	3/1/2027	\$78.19	\$14.32	\$12.61	\$8.00	\$0.00	\$113.12
	8/30/2027	\$80.34	\$14.32	\$12.61	\$8.00	\$0.00	\$115.27

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	2/2/2028	\$82.54	\$14.32	\$12.61	\$8.00	\$0.00	\$117.47
	9/4/2028	\$84.74	\$14.32	\$12.61	\$8.00	\$0.00	\$119.67
	3/5/2029	\$86.94	\$14.32	\$12.61	\$8.00	\$0.00	\$121.87
	9/3/2029	\$89.14	\$14.32	\$12.61	\$8.00	\$0.00	\$124.07
	3/4/2030	\$91.09	\$14.32	\$12.61	\$8.00	\$0.00	\$126.02

For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"

Additional Apprentice Information

All apprentices must be registered with the Division of Apprenticeship Training(DAS) in accordance with M.G.L.c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L.c. 149, §§ 26-27D.

Apprentice ratios are established by DAS pursuant to M.G.L.c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements(CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate.

Parties having questions regarding what ratio to use should contact DAS.

WEEKLY 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 project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at mass.gov/dols/pw and 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 contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly **and** within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or email, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

WEEKLY STATEMENT OF COMPLIANCE	
_____, 20____	
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	_____

Massachusetts Weekly Certified Payroll Report and Workforce Participation Form

Certified Payroll Report: Pursuant to MGL c. 149, s. 27B, every contractor and subcontractor is required to submit a true and accurate copy of their certified weekly payroll records to the awarding authority by first-class mail or email. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

Workforce Participation Goals: The Commonwealth of Massachusetts has set the following goals for workforce participation for minorities and women. The participation goals for this project shall be 15.3% for minorities and 6.9% for women. The Contractor shall strive to achieve on this project the labor workforce participation goals contained herein. **The Contractor shall enter the number of hours worked in each trade by each employee, identified as woman, minority, or non-minority below.**

[illegible]

Apprenticeship Documentation: Please answer the questions below.

1. Are any apprentice employees identified above? Yes ☐ No ☐
2. If yes, are all apprentice employees identified above currently registered with the Massachusetts Department of Labor Standards' (DLS) Division of Apprenticeship Standards (DAS)? Yes ☐ No ☐
3. If yes, is a copy of the apprentice Identification (ID) card issued by the MA Department of Labor Standards' (DLS), Division of Apprenticeship Standards (DAS) included for all apprentice employees identified above? Yes ☐ No ☐

ATTACHMENT D

Contract Drawings (under separate cover)

- **CULVERT #1**
East Prescott Street and North Main Street over Reed Brook Culvert Replacement
Dated: January 2026 & Prepared by: Tighe & Bond
- **CULVERT #2**
Proposed Culvert Replacement – PS&E Submission – Acton Road over Unnamed Stream
Dated 12/31/2025 & Prepared by: TEC, Inc.