

# Town of Millbury, Massachusetts



## CONTRACT DOCUMENTS

### Proposed Bridge Replacement

# WHEELLOCK AVENUE OVER DOROTHY POND

BRIDGE NO. M-22-022

October 2024

Owner:  
Town of Millbury  
Public Works Department

Designer:  
Weston & Sampson Engineers, Inc.  
427 Main Street, Suite 400, Worcester, MA  
1 (508) 698-3034 1 (800) 726-7766  
[www.westonandsampson.com](http://www.westonandsampson.com)



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SECTION 00100

Millbury, MA  
Wheelock Ave Bridge Replacement  
Bridge No. M-22-022

LEGAL NOTICE  
ADVERTISEMENT FOR BIDS

Town of Millbury, Massachusetts  
(Owner)

Sealed bids for construction of **Wheelock Avenue Over Dorothy Pond Bridge Replacement** for the Town of Millbury, Massachusetts, will be received at the **Millbury Town Hall, 127 Elm Street, Millbury, MA** until **11:00 AM** prevailing time, on **Wednesday, November 6, 2024** at which time and place said bids will be publicly opened and read aloud.

The scope of work includes demolition and removal of the existing bridge superstructure and substructure, the design, construction and installation of a new precast concrete box culvert bridge and wingwalls, and roadway & stone masonry wall reconstruction, and safety improvements.

The required contract completion period is 180 consecutive days.

Bid Security in the form of a bid bond, cash, certified check, treasurer's or cashier's check payable to the Owner, is required in the amount of five percent of the bid, in accordance with Section 00200, INSTRUCTIONS TO BIDDERS.

The Instructions to Bidders, Form of General Bid, Agreement, Plans, Specifications, Performance and Payment Bond, and other Contract Documents may be examined at the following:

Accent Printing, Inc., 99 Chelmsford Road, North Billerica, Massachusetts

Contract Documents may be viewed and downloaded as a Portable Document Format (PDF) file free of charge at [www.accentblueprints.com](http://www.accentblueprints.com). Copies may be obtained for a fee by completing an order online or by calling 978-362-8038 for each set. Completed orders may be picked up at the office of Accent Printing located at 99 Chelmsford Road, North Billerica, MA 01862 (978-362-8038), from 9 a.m. to 4 p.m. Copies may also be shipped to prospective bidders for an additional charge to cover handling and mailing fees. All payments for printing and shipping are nonrefundable. For addition to the project plan holder's list to guarantee receipt of addenda, it is recommended interested bidders obtain the Contract Documents directly from Accent. Interested bidders will be prompted to register an email address with Accent to access the documents.

The selected contractor shall furnish a performance bond and a payment bond in amount at least equal to one hundred percent (100%) of the contract price as stipulated in Section 00700 GENERAL CONDITIONS of these specifications.

All bids for this project are subject to applicable bidding laws of Massachusetts, including General Laws Chapter 30, Section 39M as amended.

MassDOT prequalification of contractors with the class of work as, Bridge – Construction, will be required for all bids for this project.

Prevailing Wage Rates as determined by the Director of the Executive Office of Labor and Workforce Development under the provisions of the Massachusetts General Laws Chapter 149, Section 26 to 27H, as amended, apply to this project. It is the responsibility of the Bidder, before bid opening, to request if necessary, any additional information on Prevailing Wage Rates for those trades people who may be employed for the proposed work under this contract.

By submission of a bid, 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.

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

TOWN OF MILLBURY , MASSACHUSETTS

BY ITS

Town Manager

Karyn Clark

127 Elm Street, Millbury MA, 01527

Weston & Sampson Engineers, Inc.  
Worcester, Massachusetts



SECTION 00200

INSTRUCTIONS TO BIDDERS

1. Receipt and Opening of Bids
2. Location and Work to be Done
3. Preparation of Bid
4. Modification of Bids
5. Obligation of Bidder
6. Information not Guaranteed
7. Bid Security
8. Time for Completion
9. Addenda and Interpretations
10. Bid Opening Procedure
11. Comparison of Bids
12. Statutes Regulating Competitive Bidding
13. Right to Reject Bid
14. Ability and Experience of Bidder
15. Conditions of Work
16. Security for Faithful Performance
17. Power of Attorney
18. Laws and Regulations
19. Liquidated Damages for Failure to Enter into Contract
20. Indeterminate Items and Estimated Quantities
21. CONTRACTOR Records
22. Bidder Certification – OSHA Training
23. Prevailing Wage Rates
24. Price Adjustments

1. Receipt and Opening of Bids

The Town of Millbury herein called the OWNER, acting by and through its Town Manager will receive sealed Bids for the construction of Wheelock Avenue Over Dorothy Pond Bridge Replacement.

Such bids addressed to the Town of Millbury and endorsed Bid Wheelock Avenue Over Dorothy Pond Bridge Replacement will be received at the **Millbury Town Hall, 127 Elm Street, Millbury, MA 01527** until **11:00 AM** on **Wednesday, November 6th, 2024** at which time and place said bids will be publicly opened and read aloud.

If the building at which bids are to be received is closed for any reason on the date and time that bids are due, receipt of bids by the Owner will be postponed until the next business day at the time originally stated for receipt of bids.

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. By submission of a bid, the bidder agrees that this bid shall be good and may not be withdrawn for the number of days, after the opening of bids, as stipulated in the FORM OF GENERAL BID.

2. Location and Work to be Done

The location, general characteristics, and principal details of the Work are indicated on two (2) pdf sets of total 26 drawings titled "Millbury-Wheelock Ave Bridge Replacement M-22-022-Plans Volumes I and II".

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 ENGINEER, and shall then become a part of the Contract Documents.

The CONTRACTOR shall furnish all superintendence, labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies, bailing, shoring, removal, 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 in Section 00410. 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, its 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. Modification of Bids

Any bidder may modify its 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, for any telegraphic communication that modifies a bid the OWNER is satisfied that a written confirmation of the modification over the signature of the bidder was mailed prior to the closing time.

The modification 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. If written confirmation is not received within two days from the closing time, no consideration will be given to the

facsimile transmission.

5. 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 its bid.

6. 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 it or obtained in any examination made by it in any manner as a basis of or grounds for any claim or demand against the OWNER or the ENGINEER, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other conditions, natural phenomena, existing pipes or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

7. Bid Security

Each bid must be accompanied by a certified check, a bid bond, cash, a treasurer's or cashier's check, payable to the OWNER, in the amount stated in Section 00100, ADVERTISEMENT FOR BIDS. Such deposits 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 deposits 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 any bidder within 30 days, Saturdays, Sundays and legal holidays excluded, after the date of the opening of bids, upon demand of the bidder at any time thereafter.

8. Time for Completion

The successful general bidder must agree to commence work on or before a date to be specified in the written "Notice to Proceed" from the OWNER and to fully complete the project within the time limit stated in Section 00410, FORM OF GENERAL BID.

9. Addenda and Interpretations

No interpretation of the meaning of the plans, specifications or other prebid documents will be made to any bidder orally, and if provided orally, shall not be relied upon by bidders unless confirmed in a written addendum. 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 or the ENGINEER.

Every request for such interpretation should be in writing (typed, not handwritten) addressed to Weston & Sampson Engineers, Inc., 55 Walkers Brook Drive, Reading, Massachusetts 01867 Attention: CSD, or sent via email to Mahoney.Carolyn@wseinc.com and to be given consideration must be received at least ten working 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, may be viewed and downloaded as a Portable Document File (PDF) at [www.accentblueprints.com](http://www.accentblueprints.com). A notification of addenda will be emailed to all prospective bidders to email addresses furnished by them for such purposes. Bidders picking up sets of bid documents will be given all addenda issued to date and will be required to sign for all documents, acknowledging receipt. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under its bid as submitted, and each bidder must confirm for itself that it has received all addenda. All addenda so issued shall become part of the Contract Documents.

10. Bid Opening Procedure

The following list of requirements shall be met by each filed bid.

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

The bid and all accompanying documents so required shall be signed by the Bidder or its authorized representative before submission.

All bidders shall include with their bids written acknowledgment of receipt of all addenda. Refer to acknowledgment form provided in Section 00410, 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 except for the DCAMM Update Statements if contained therein, which are not public records.

11. Comparison of Bids

Bids will be compared on the basis of the quantities and unit and lump sum prices stated in the bid forms.

In the event that there is a discrepancy in Section 00410, FORM OF GENERAL BID between the lump sum or unit prices written in words and figures, the prices written in words will govern.

The OWNER agrees to examine and consider each FORM OF GENERAL BID submitted in accordance with the terms and conditions set forth herein and as set forth in Section 00410, FORM OF GENERAL BID.

12. 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.

13. Right to Reject Bid

The OWNER may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or 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, and may reject bids for any other reason permitted by law, or the OWNER may waive such omissions, conditions or irregularities.

14. Ability and Experience of Bidder

MassDOT prequalification of contractors with the class of work as, Bridge – Construction, will be required for all bids for this project.

No award will be made to any bidder who cannot satisfy the OWNER that it has sufficient ability and experience in this class of work and sufficient capital and plant to enable it 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 to the fullest extent permitted by law.

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.

15. Conditions of Work

Each bidder must inform itself fully of 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 its obligation to furnish all material and labor necessary to carry out the provisions of its contract. Insofar as possible the CONTRACTOR, in carrying out its work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

16. Security for Faithful Performance

Simultaneously with its 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 as specified in Section 00700, GENERAL CONDITIONS included herein, each in the amount of 100 percent of its bid. 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.

17. 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.

18. Laws and Regulations

Applicable provisions of Massachusetts General Laws and Regulations and/or the United States Code and Code of Federal Regulations govern this Contract and any provision in violation of the foregoing shall be deemed null, void and of no effect. Where a conflict between Federal and State Laws and Regulations exists, the more stringent requirement shall apply.

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 herein written out in full.

Attention is directed to Section 00830 STATE REGULATIONS and to other applicable sections of this specification. In the event of any conflict between provisions of law or regulation quoted or paraphrased in the Contract Documents, the actual provisions of law or regulation shall control.

19. Liquidated Damages for Failure to Enter into Contract

The successful bidder, upon its failure or refusal to execute and deliver the Contract, Bonds and Certificates of Insurance required within 10 days after receipt of notice of the acceptance of the bid, shall, except as otherwise provided by applicable law, forfeit to the

OWNER, as liquidated damages for such failure or refusal, the security deposited with its bid, provided that the amount forfeited shall not exceed the difference between its bid price and the bid price of the next lowest responsible and eligible bidder. In case of death, disability, bonafide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the bidder, its bid deposit will be returned.

20. Indeterminate Items and Estimated Quantities

The work to be done under this Contract has been divided into parts or items, if applicable, to enable each bidder to bid on different portions of the work in accordance with its estimate of their cost and so that the actual quantity of work executed under each item may be paid for at the price bid for that particular item, even though each bidder may have judged that such quantity may be greater or less than the estimated quantity stated in Section 00410, FORM OF GENERAL BID.

21. CONTRACTOR Records

The CONTRACTOR shall comply with the provisions of Massachusetts General Laws, Chapter 30, Section 39R, concerning CONTRACTOR records. This section has been reprinted in Section 00830, STATE REGULATIONS.

22. Bidder Certification – OSHA Training

All employees who work on Massachusetts public works construction sites, on projects estimated to cost more than \$10,000, must have no less than ten (10) hours of OSHA-approved safety and health training.

The Massachusetts Attorney General is authorized to restrain award of construction contracts to any contractor who is in violation of this requirement and to restrain the performance of these contracts by non-complying contractors.

Noncompliance with this law will disqualify contractors from bidding on public contracts.

23. Prevailing Wage Rates

Prevailing Wage Rates as determined by the Director of the Executive Office of Labor and Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H, as amended, apply to this project. It is the responsibility of the bidder, before bid opening, to request if necessary, any additional information on Prevailing Wage Rates for those trades people who may be employed for the proposed work under this contract.

The Contractor is responsible for requesting up to date wage rates from the Owner prior to the one-year anniversary of the notice to proceed of this contract. The Owner shall obtain updated wage rates from the Director and provide them to the Contractor upon said request.

24. Price Adjustments

This Contract is subject to the provisions for material price adjustments in accordance with Chapter 30, Section 38A of the Massachusetts General Laws.

END OF SECTION



## SECTION 00320

### SUBSURFACE DATA

#### PART I - GENERAL

##### 1.01 SCOPE:

- A. A subsurface exploration program consisting of soil borings, test pits, geotechnical laboratory testing, and monitoring well installation has been performed, with reasonable care. The following geotechnical report is appended hereto and is for informational purposes as described below:

**“Geotechnical Engineering Report, Wheelock Avenue Bridge Replacement, Millbury, Massachusetts” dated August 16, 2024.**

- B. Laboratory analytical data for the site soil and groundwater samples are summarized in the data tables attached to this Section. Associated laboratory analytical reports summarized in the attached data tables are available upon request. The project area includes the Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Number (RTN) 3-0425. An Activity and Use Limitation (AUL) shown on the drawings is present on portions of the work area and the Contractor shall be familiar with the AUL deed restrictions and requirements. Selected AUL pages are attached to this Section.
- C. The Contractor shall review environmental reports to familiarize themselves with the property conditions including but not limited to the RTN listed above at the following MassDEP website: <https://eeaonline.eea.state.ma.us/portal#!/search/wastesite>. The Contractor shall note excavation and management of impacted materials will be conducted under an Engineer-prepared Release Abatement Measure (RAM) Plan in accordance with the requirements of the Massachusetts Contingency Plan (MCP). The RAM Plan will include the requirements of the Contract Documents.
- D. The attached subsurface data is provided for informational purposes only. The Contractor shall not rely on the interpretations, opinions, conclusions, or recommendations included in the report, only the factual data relative to the specific times, locations, and depths/elevations. Specific project requirements are referenced only in the drawings and specifications.
- E. If Contractors deem the subsurface information insufficient, they may, after obtaining Owner’s permission, carry out additional subsurface explorations, at no expense to the Owner.
- F. Subsurface information provided in the Contract Documents is limited by the methods used for obtaining and expressing such data and is subject to various interpretations. The

terms used to describe soils, rock, groundwater, and such other conditions are subject to local usage and individual interpretation.

- G. Borings and test pits have been completed substantially at the locations indicated on the drawings and advanced to the depths shown on the logs. Soil information presented in the boring logs, as to classification, gradation, properties, density and consistency, is based on visual observation of recovered samples. Reported groundwater levels are those measured in the field at the particular location and at the time measurements were made, and do not necessarily represent permanent or seasonal groundwater elevations. Groundwater elevations may be affected by temperature, rainfall, tidal fluctuation, and other factors that may not have been present at the time the measurements were made. The Contractors should be aware that groundwater level fluctuations may affect methods of construction.
- H. Subsurface exploration, soil and rock data are for the general information of the Contractors. The Contractors are obligated to examine the site, review boring and test pit logs, all available information and records of explorations, investigations and other pertinent data for the site, and then based upon their own interpretations and investigations decide the character of material to be encountered and excavated, the suitability of the materials to be used for backfilling and such other purposes, the groundwater conditions, difficulties or obstacles likely to be encountered, and other conditions affecting the work. The subsurface data is accurate only at the particular locations and times the subsurface explorations were made. No other warranty either expressed or implied by the Owner, Engineer or their agents is made as to the accuracy of the subsurface information and data shown on the drawings or presented in the Contract Documents.

## PART 2 – PRODUCTS

Not used.

## PART 3 – EXECUTION

Not used.

END OF SECTION

\\Wse03.local\WSE\Projects\MA\Millbury MA\2180493 - Wheelock Avenue\Specs\Division 00\00320 - Subsurface Data.docx

SECTION 00410  
FORM OF GENERAL BID

Proposal of \_\_\_\_\_ (hereinafter called "Bidder")\*

- a corporation, organized and existing under the laws of the State of \_\_\_\_\_
- a partnership
- a joint venture
- a limited liability company
- an individual doing business as \_\_\_\_\_

\*Insert corporation, partnership, joint venture, limited liability company or individual as applicable.

To the \_\_\_\_\_ (hereinafter called "Owner").

Everyone:

The undersigned Bidder, in compliance with your invitation for bids for construction of the **Wheelock Avenue Over Dorothy Pond Bridge Replacement**, having examined the plans and specifications with 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 superintendence, labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies, bailing, shoring, removal, and all other things necessary to construct the project in accordance with the contract documents, as prepared by Weston & Sampson Engineers, Inc., 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 that if selected as the Contractor it will commence work under this contract on or before a date to be fixed in the written "Notice to Proceed" given by the Owner to the Contractor and to fully complete the project within 180 consecutive days of the start date fixed in the "Notice to Proceed." The Bidder further agrees to pay as liquidated damages the sum of \$2,000 for each consecutive calendar day thereafter during which the work has not been fully completed, as provided in the "Liquidated Damages" provisions of Section 00800 SUPPLEMENTARY CONDITIONS.

Bidder acknowledges receipt of the following addenda:

No.	Dated:
_____	_____
No.	Dated:
_____	_____
No.	Dated:
_____	_____
No.	Dated:
_____	_____

The Bidder agrees to perform the work described in the specifications and shown on the plans for the following lump sum or unit prices:

**PROPOSED BRIDGE REPLACEMENT BRIDGE NO. N-22-022 WHEELLOCK AVENUE  
OVER DOROTHY POND  
Form of General Bid**

The Bidder agrees to perform the work described in the specifications and shown on the plans for the following lump sum or unit prices:

Page 1 of 5

ITEM NO.	ITEM OF WORK	EST. QTY	UNIT	UNIT PRICE (WORDS)	UNIT PRICE	AMOUNT
101.	CLEARING AND GRUBBING	0.2	A		\$	\$
115.1	DEMOLITION OF BRIDGE NO. M-22-022 (6TH)	1	LS		\$	\$
120.1	UNCLASSIFIED EXCAVATION	390	CY		\$	\$
140.	BRIDGE EXCAVATION	575	CY		\$	\$
141.1	TEST PIT FOR EXPLORATION	10	CY		\$	\$
143.	CHANNEL EXCAVATION	110	CY		\$	\$
144.	CLASS B ROCK EXCAVATION	30	CY		\$	\$
151.	GRAVEL BORROW	240	CY		\$	\$
151.2	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	245	CY		\$	\$
151.6	NATURAL STREAMBED MATERIAL	70	CY		\$	\$
153.1	CONTROLLED DENSITY FILL - NON-EXCAVATABLE	3	CY		\$	\$
156.1	CRUSHED STONE FOR BRIDGE FOUNDATIONS	95	TON		\$	\$
156.5	CRUSHED STONE FOR FILTER BLANKET	25	CY		\$	\$
170.	FINE GRADING AND COMPACTING - SUBGRADE AREA	1000	SY		\$	\$

ITEM NO.	ITEM OF WORK	EST. QTY	UNIT	UNIT PRICE (WORDS)	UNIT PRICE	AMOUNT
180.01	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM	1	LS		\$	\$
180.03	LICENSED SITE PROFESSIONAL SERVICES	105	HR		\$	\$
181.11	DISPOSAL OF UNREGULATED SOIL	700	TON		\$	\$
181.12	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY	900	TON		\$	\$
181.13	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY	200	TON		\$	\$
201.	CATCH BASIN	4	EA		\$	\$
202.	MANHOLE	1	EA		\$	\$
203.2	STORMWATER TREATMENT UNIT	2	EA		\$	\$
220.	DRAINAGE STRUCTURE ADJUSTED	3	EA		\$	\$
220.7	SANITARY STRUCTURE ADJUSTED	1	EA		\$	\$
221.	FRAME AND COVER	1	EA		\$	\$
222.3	FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD	4	EA		\$	\$
238.12	12 INCH DUCTILE IRON PIPE	60	FT		\$	\$
241.12	12 INCH REINFORCED CONCRETE PIPE	35	FT		\$	\$
358.	GATE BOX ADJUSTED	2	EA		\$	\$
402.	DENSE GRADED CRUSHED STONE FOR SUB-BASE	100	CY		\$	\$

ITEM NO.	ITEM OF WORK	EST. QTY	UNIT	UNIT PRICE (WORDS)	UNIT PRICE	AMOUNT
415.3	PAVEMENT MICRO MILLING	200	SY		\$	\$
440.	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL	1070	LB		\$	\$
443.	WATER FOR ROADWAY DUST CONTROL	1.1	MGL		\$	\$
450.31	SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC -12.5)	170	TON		\$	\$
450.41	SUPERPAVE BASE COURSE - 25.0 (SBC - 25.0)	10	TON		\$	\$
450.60	SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B - 9.5)	90	TON		\$	\$
450.70	SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 (SPC-B - 9.5)	4	TON		\$	\$
452.	ASPHALT EMULSION FOR TACK COAT	100	GAL		\$	\$
453.	HMA JOINT SEALANT	1040	FT		\$	\$
470.	HOT MIX ASPHALT BERM	10	TON		\$	\$
482.3	SAWCUTTING ASPHALT PAVEMENT	220	FT		\$	\$
504.	GRANITE CURB TYPE VA4 - STRAIGHT	170	FT		\$	\$
509.	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT	10	FT		\$	\$
509.1	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED	10	FT		\$	\$
594.	CURB REMOVED AND DISCARDED	85	FT		\$	\$
620.13	GUARDRAIL, TL-3 (SINGLE FACED)	130	FT		\$	\$

ITEM NO.	ITEM OF WORK	EST. QTY	UNIT	UNIT PRICE (WORDS)	UNIT PRICE	AMOUNT
627.1	TRAILING ANCHORAGE	3	EA		\$	\$
628.21	TRANSITION TO NCHRP 350 GUARDRAIL	1	EA		\$	\$
628.24	TRANSITION TO BRIDGE RAIL	4	EA		\$	\$
657.	TEMPORARY FENCE	80	FT		\$	\$
690.	STONE MASONRY WALL REMOVED AND REBUILT IN CEMENT MORTAR	20	CY		\$	\$
697.1	SILT SACK	7	EA		\$	\$
697.2	FLOATING SILT FENCE	245	FT		\$	\$
698.4	GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL	310	SY		\$	\$
701.	CEMENT CONCRETE SIDEWALK	110	SY		\$	\$
701.2	CEMENT CONCRETE PEDESTRIAN CURB RAMP	15	SY		\$	\$
702.	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY	5	TON		\$	\$
734.	SIGN REMOVED AND RESET	12	EA		\$	\$
748.	MOBILIZATION	1	LS		\$	\$
751.	LOAM FOR ROADSIDES	35	CY		\$	\$
765.	SEEDING	290	SY		\$	\$
767.121	SEDIMENT CONTROL BARRIER	370	FT		\$	\$



ITEM NO.	ITEM OF WORK	EST. QTY	UNIT	UNIT PRICE (WORDS)	UNIT PRICE	AMOUNT
769.	PAVEMENT MILLING MULCH UNDER GUARD RAIL	130	FT		\$	\$
847.1	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL	2	EA		\$	\$
852.	SAFETY SIGNING FOR TRAFFIC MANAGEMENT	570	SF		\$	\$
853.1	PORTABLE BREAKAWAY BARRICADE TYPE III	6	EA		\$	\$
853.2	TEMPORARY BARRIER (TL-2)	60	FT		\$	\$
859.	REFLECTORIZED DRUM	1440	DAY		\$	\$
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	430	FT		\$	\$
866.112	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	170	FT		\$	\$
867.106	6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)	390	FT		\$	\$
953.1	TEMPORARY SUPPORT OF EXCAVATION	1	LS		\$	\$
983.1	RIPRAP	46	TON		\$	\$
991.1	CONTROL OF WATER - STRUCTURE NO. M-22- 022 (CPC)	1	LS		\$	\$
995.01	BRIDGE STRUCTURE, BRIDGE NO. M-22-022 (CPC)	1	LS		\$	\$
999.3	POLICE DETAIL	1	ALL	TEN THOUSAND	\$10,000	\$10,000
<b>TOTAL:</b>						\$

\*The bidder is requested to fill in the "Amount." In case of discrepancy, the "Unit Price Bid" written in words shall govern.

TOTAL OF BID

The proposed contract price for all Items 101. through 995.01 inclusive is:

\_\_\_\_\_

All entries shall be made clearly in ink or typewritten. Amounts are to be shown in both words and figures. In the event of a discrepancy between the prices written in words and those written in figures, the amount shown in words shall govern. In the event there is a discrepancy between the unit prices and the total sum of all of the items (the proposed contract price), the unit prices shall govern.

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, bond premiums, 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 30, Section 39M, as amended.

The contract will be awarded to the lowest eligible and responsible bidder.

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 attached in Section 00520 AGREEMENT and provide the requisite payment and performance bonds and certificates of insurance.

Bid security is attached in the sum of five percent (5%) of the total bid in accordance with the conditions of Section 00200 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 prices in accordance with Section 00610 PERFORMANCE BOND, Section 00615 PAYMENT BOND, and as stipulated in Section 00700 GENERAL CONDITIONS of these specifications.

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

1. Have been in business under the 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:

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(Attach supplementary list if necessary)

03/30/2021

00410-17

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

Completion Date	Project Name	Contract Amount	Design Engineer	Reference Name	Telephone No.
-----------------	--------------	-----------------	-----------------	----------------	---------------

a.

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b.

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c.

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d.

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e.

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f.

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Pursuant to M.G.L. CH. 62C, Sec 49A, I certify under the penalties of perjury that I, to my best knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

Disadvantaged Business Enterprise (DBE) goals are applicable to the total dollars paid to the construction contract. The goals for this project are a minimum of 4.2% D/MBE participation and 4.5% D/WBE participation by certified DBEs. The two low Bidders shall submit completed DBE forms (EEO-DEP-190C, EEO-DEP-191C and the DBE Certification of United States Citizenship form) by the close of business on the third business day after bid opening. Failure to comply with the requirements of this paragraph may be deemed to render a proposal nonresponsive. No waiver of any provision of this section will be granted unless approved by the Department of Environmental Protection (MassDEP).

The undersigned Bidder hereby certifies it will comply with the minority workforce percentage ratio and specific affirmative action steps contained in the EEO/AA provisions of this Contract, including compliance with the Disadvantaged Business Enterprise as required under these contract provisions. The contractor receiving the award of the contract shall be required to obtain from each of its subcontractors a copy of the certification by said subcontractor, regardless of tier, that it will comply with the minority workforce ratio and specific affirmative action steps contained in these EEO/AA contract provisions prior to the award of such subcontract.

The undersigned Bidder hereby certifies that (1) it 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.

The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provisions of Section Twenty-Nine F of Chapter Twenty-Nine, Section 25C (10) of Chapter 152 (workers' compensation) or any other applicable debarment provisions of any other Chapter of the General Laws or any rule or regulations promulgated thereunder.

Respectfully submitted:

Date \_\_\_\_\_

By \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Name - Typed or Printed)

\_\_\_\_\_  
(Title)

(SEAL - if bid is by a corporation)

\_\_\_\_\_  
(Business Name)

\_\_\_\_\_  
(Federal ID Number)

\_\_\_\_\_  
(Business Address)

---

(City and State)

---

(Telephone Number)

---

(Fax Number)

SECTION 00520

AGREEMENT

THIS AGREEMENT, made this \_\_\_\_\_ day of \_\_\_\_\_, 2024, by and between the Town of Millbury, hereinafter called "OWNER," acting herein through its \_\_\_\_\_ and \_\_\_\_\_ doing business as (a corporation) (a limited liability company) (a partnership) (a joint venture) (an individual)\* 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:

**WHEELOCK AVENUE OVER DOROTHY POND BRIDGE  
REPLACEMENT**

hereinafter called the project, for the sum of one million forty-four thousand dollars (\$1,044,000) and all extra work in connection therewith, under the terms as stated in the Contract Documents; and at its own proper cost and expense to furnish superintendence, labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies, bailing, shoring, removal, and all other things necessary to complete the said project in accordance with the conditions and prices stated in Section 00410, FORM OF GENERAL BID, Section 00700, GENERAL CONDITIONS, Section 00800, SUPPLEMENTARY CONDITIONS, Section 00830, STATE REGULATIONS, the plans, which include all maps, plates, drawings, blue prints, and the specifications and all other contract documents therefor as prepared by Weston & Sampson Engineers, Inc., including all bid documents.

The CONTRACTOR hereby agrees to commence work under this contract on or before a date to be fixed in the written Notice to Proceed given by the OWNER to the CONTRACTOR and to fully complete the project within \_\_\_\_\_ consecutive days of the start date fixed in the Notice to Proceed. The CONTRACTOR further agrees to pay as liquidated damages the sum of \$ \_\_\_\_\_ for each consecutive calendar day thereafter during which the work has not been fully completed, as provided in the Liquidated Damages provisions of Section 00800 SUPPLEMENTARY CONDITIONS.

The fair share goals for disadvantaged business enterprise (DBE) participation for this contract are a minimum of **4.2 percent (%)** Disadvantaged Minority Business Enterprise D/MBE participation and **4.5 percent (%)** Disadvantaged Women Business Enterprise D/WBE participation, applicable to the total dollar amount paid for the construction contract. The CONTRACTOR shall take all affirmative steps necessary to achieve this goal and shall provide



reports documenting the portion of contract and subcontract dollars paid to DBEs, and its efforts to achieve the goals, with each invoice submitted or at such greater intervals as specified by the (municipality). The CONTRACTOR shall require similar reports from its subcontractors.

The CONTRACTOR shall not discriminate against or exclude any person from participation herein on grounds of race, color, religious creed, national origin, sex, sexual orientation, ancestry, or age; 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, color, religious creed, national origin, sex, sexual orientation, ancestry, age, or handicapped status.

The CONTRACTOR shall not participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue Code of 1986, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.

Applicable provisions of Massachusetts General Laws and Regulations and/or the United States Code and Code of Federal Regulations govern this Agreement and any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflict between Federal and State Laws and Regulations exists, the more stringent requirement shall apply.

Subject to G.L. c.30, sec. 39K and/or sec. 39G and G.L. c.30, sec. 39F, as applicable, the OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Agreement, subject to additions and deductions, as provided in Section 00700, GENERAL CONDITIONS, and to make payments on account thereof as provided in Section 00700, GENERAL CONDITIONS and Section 00800, SUPPLEMENTARY CONDITIONS

In accordance with the requirements of G.L. c.149, §27B, the Contractor shall submit, and shall require all of its subcontractors required to keep a record of hours and wages paid to laborers employed on the project to submit, to the awarding authority on a weekly basis, copies of such records. All such weekly submissions shall be accompanied by the following certification:

The undersigned contractor hereby certifies, under the pains and penalties of perjury, that the foregoing payroll records are true and accurate records of the wages paid to laborers employed on the project for the period stated and said wages are in an amount no less than the prevailing wage rates established for the project by the Massachusetts Department of Labor and Workforce Development. The undersigned contractor agrees, in addition to any other remedies available to the awarding authority, 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 contractor's failure to pay laborers employed on the project the said applicable prevailing wage rates; (2) the failure of the foregoing payroll records to accurately state the said applicable prevailing wage rates; or (3) the failure of the foregoing payroll records to accurately represent the wages actually paid to laborers employed on the project.

The Agreed upon DIRECT LABOR MARKUP (percentage) for Change Orders on this project shall be \_\_\_\_\_ percent.

IN WITNESS WHEREOF, the parties to these presents have executed this Agreement in six (6) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

AGREED:

\_\_\_\_\_, 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 and acting Secretary of  
(Secretary of Corporation)  
\_\_\_\_\_ and I further certify that a meeting of the Directors of said company,  
(Name of Corporation)  
duly called and held on \_\_\_\_\_, at which all members were present and voting, the  
(Date of Meeting)  
following vote was unanimously passed:

VOTED: To authorize and empower

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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)

Contractor's Certification

A Contractor will not be eligible for award of a contract unless such Contractor has submitted the following certification, which is deemed a part of the resulting contract:

CONTRACTOR'S CERTIFICATION

---

Name of the General Contractor

certifies that it:

1. Will not discriminate in their employment practices;
2. Intends to use the following listed construction trades in the work under the contract:

---

and

3. Will make good faith efforts to comply with the minority employee and women employee workforce participation ratio goals and specific affirmative action steps contained herein; and
4. Is in compliance with all applicable federal and state laws, rules, and regulations governing fair labor and employment practices; and
5. Will provide the provisions of the "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" to each and every subcontractor employed on the Project and will incorporate the terms of this Section into all subcontracts and work orders entered into on the Project.
6. Agrees to comply with all provisions contained herein.

---

Signature of authorized representative of Contractor

Date

---

Printed name of authorized representative of Contractor

Contractor's Certification (Continued)

**CERTIFICATE OF NON-COLLUSION**

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean natural person, business, partnership, corporation, committee, union, club or other organization, entity, or group of individuals.

Signature \_\_\_\_\_

Date \_\_\_\_\_

\_\_\_\_\_  
Print Name & Title

\_\_\_\_\_  
Company Name

**CERTIFICATE OF TAX COMPLIANCE**

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A (b), I

\_\_\_\_\_, authorized signatory for \_\_\_\_\_  
*Name of individual* *Name of 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.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**LABOR HARMONY AND OSHA TRAINING REQUIREMENTS**

The undersigned certifies under penalties of perjury that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed at the work ***and*** that all employees to be employed at the worksite and in the work will have completed an OSHA-approved construction safety and health course lasting at least ten (10) hours.

Signature \_\_\_\_\_

Date \_\_\_\_\_

\_\_\_\_\_  
Print Name & Title

\_\_\_\_\_  
Company Name

Subcontractor's Certification

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

SUBCONTRACTOR'S CERTIFICATION

---

Name of the Subcontractor

certifies that it:

- 7. Will not discriminate in their employment practices;
- 8. Intends to use the following listed construction trades in the work under the contract:

---

and

---

- 9. Will make good faith efforts to comply with the minority employee and women employee workforce participation ratio goals and specific affirmative action steps contained herein; and
- 10. Is in compliance with all applicable federal and state laws, rules, and regulations governing fair labor and employment practices; and
- 11. Will provide the provisions of the "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" to each and every subcontractor employed on the Project and will incorporate the terms of this Section into all subcontracts and work orders entered into on the Project.
- 12. Agrees to comply with all provisions contained herein.

---

Signature of authorized representative of Subcontractor

Date

---

Printed name of authorized representative of Subcontractor

Date

END OF SECTION

SECTION 00610

PERFORMANCE BOND

KNOW EVERYONE BY THESE PRESENTS: That we \_\_\_\_\_  
(Name of Contractor)  
a \_\_\_\_\_ hereinafter called "Principal" and  
(Corporation, Partnership, Joint Venture, LLC or Individual)  
\_\_\_\_\_ of \_\_\_\_\_, State of \_\_\_\_\_  
(Surety) (City)

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 Millbury, Massachusetts, hereinafter called "Owner", in the penal sum of \_\_\_\_\_ Dollars and \_\_\_\_\_ Cents(\$ \_\_\_\_\_) 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 has entered into a certain contract with the Owner (the "Contract"), dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, which Contract is by reference made a part hereof, for the construction described as follows:

**WHEELOCK AVENUE OVER DOROTHY POND BRIDGE REPLACEMENT**

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of the 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 it shall satisfy all claims and demands incurred under the 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, this obligation shall 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 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 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 Contract to declare a Contractor Default or to invoke its rights under this Bond, and Contractor hereby agrees not to assert any claims against Surety under any indemnity or similar agreements on the grounds that Surety has interfered with the Contract by fulfilling its obligations hereunder in the absence of a termination of said Contract.

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 following steps: (1) arrange for the Principal to perform and complete the work of the Contract; (2) arrange for a contractor other than the Principal to perform and complete the work of the Contract; (3) reimburse the Owner, in



a manner and at such time as the Owner shall reasonably decide, for all costs and expenses incurred by the Owner in performing and completing the work of the 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 Contract; (2) additional design, professional services, and legal costs, including attorney's fees, resulting from the Contractor Default or from the default of the Surety under this Bond; (3) any additional work beyond the Contract made necessary by the Contractor Default or default of the Surety under this Bond; (4) indemnification obligations of the Principal, if any, as provided in the Contract; and (5) liquidated damages as provided in the Contract, or if no such damages are specified, actual damages and consequential damages resulting from the Contractor Default or any 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 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 Contract or to the work or to the specifications.

The Surety providing the Bond shall have a rating of A or better within Best's Key Rating Guide.

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

ATTEST:

_____ Principal	_____ Witness as to Principal Signature
By _____ Signature	_____ Name and Title
_____ Name and Title	_____ Address
_____ Address	_____ City and State
_____ City and State	(SEAL)

ATTEST:

_____ Surety	_____ Witness as to Surety Signature
By _____ Attorney-in-Fact Signature	_____ Name and Title
_____ Name and Title	_____ Address
_____ Address	_____ City and State
_____ City and State	(SEAL)

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

END OF SECTION

SECTION 00615

PAYMENT BOND

KNOW EVERYONE BY THESE PRESENTS: That we \_\_\_\_\_  
(Name of Contractor)  
a \_\_\_\_\_ hereinafter called "Principal" and  
(Corporation, Partnership, Joint Venture, Limited Liability Company, or Individual)  
\_\_\_\_\_ of \_\_\_\_\_, State of \_\_\_\_\_  
(Surety) (City) (State)

hereinafter called "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 Millbury, Massachusetts, hereinafter called "Owner," in the penal sum of \_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_) 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 has entered into a certain contract with the Owner (the "Contract"), dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, which Contract is by reference made a part hereof, for the construction described as follows:

**WHEELOCK AVENUE OVER DOROTHY POND BRIDGE REPLACEMENT**

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, 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. The Surety Company providing the bond shall have a rating of A or better within the Best Key Rating Guide.

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:

_____	_____
Principal	Witness as to Principal Signature
By _____	_____
Signature	Name and Title
_____	_____
Name and Title	Address
_____	_____
Address	City and State
_____	
City and State	(SEAL)

ATTEST:

_____	_____
Surety	Witness as to Surety Signature
By _____	_____
Attorney-in-Fact Signature	Name and Title
_____	_____
Name and Title	Address
_____	_____
Address	City and State
_____	
City and State	(SEAL)

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

END OF SECTION

SECTION 00700

GENERAL CONDITIONS

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

## STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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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

SUPPLEMENTARY CONDITIONS

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5	SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS
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15	PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD
16	SUSPENSION OF WORK AND TERMINATION
17	FINAL RESOLUTION OF DISPUTES
18	MISCELLANEOUS

## SUPPLEMENTARY CONDITIONS

### AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2018 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

#### ARTICLE 1. DEFINITIONS AND TERMINOLOGY

The individual or entity duly appointed by the Owner to undertake the duties and powers herein assigned to the Engineer, acting either directly or through duly appointed representatives.

#### ARTICLE 2. PRELIMINARY MATTERS

##### SC-2.02

Owner shall furnish to Contractor one (1) printed copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

##### SC-2.03

A preliminary Schedule of Values for each Lump Sum item listed in the Bid, which includes quantities and prices of items which when added together equal the Lump Sum Bid Price and subdivides the Lump Sum Bid item 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.

##### SC-2.04

Contractor's Schedule of Values for Lump Sum Items will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Lump Sum Price to the component parts of the Work associated with the Lump Sum Item.

## ARTICLE 3. CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

### SC-3.01

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

## ARTICLE 4. COMMENCEMENT AND PROGRESS OF THE WORK

### SC-4.01

Notwithstanding the time limitations provided in paragraph 4.01A, the OWNER may desire to commence the Contract Times later than the sixtieth day after the bid opening. The OWNER and CONTRACTOR, upon mutual agreement, may extend the commencement of the Contract Times to any date that they elect. OWNER must obtain CONTRACTOR's approval for extending the time beyond the dates/times stated in the Contract Documents.

### SC-4.02

The Engineer may check the lines, elevations and reference marks set by the 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 construction of the entire Work in accordance with the Contract Documents. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

### SC-4.03

The Contractor's resident superintendent shall attend monthly progress meetings at the site of the work with the Engineer and others as appropriate to review schedule status and such other pertinent subjects as may be listed on the agenda by the Engineer.

### SC-4.04

The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner or the Engineer on account of any delay in the commencement or performance of any of the work or any delay or suspension of any portion of the work, whether such delay is caused by the Owner, the Engineer, or otherwise except as provided for within the prevailing statutes. The Contractor acknowledges that the Contractor's sole remedy for any such delay and/or suspension will be an extension of time as provided in the Contract Documents. The Contractor will under no circumstances be eligible for additional compensation on account of any delay even if an extension of time is granted by the Owner.

#### SC-4.05

Accumulating the amount of time required to complete a series of additional work items or delays and adding this time to the original Contract Time will not be considered justification for an extension of time. To justify an extension of Contract Time, the Contractor must prove clearly and convincingly that the critical path for construction has been impacted by circumstances beyond the control of the Contractor and that the CPM schedule cannot be revised to eliminate the need for the requested time extension.

#### 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; Provided, further, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:
  - 1) to any preference, priority or allocation order duly issued by the Government;
  - 2) to unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the

Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and

3) to any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections C (1) and C (2) above;

- D. Provided, further, that the Contractor shall, within thirty (30) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the Contract, notify the Owner, in writing, of the causes of the delay, who
- E. shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter."

## ARTICLE 5. SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

## ARTICLE 6. BONDS AND INSURANCE

### NOTICE TO CONTRACTOR:

1. Proof of Insurance coverage shall be furnished to the Owner in accordance with the schedule for submittal of Bonds and Agreements.
2. Additionally, refer to Article 2. PRELIMINARY MATTERS, Paragraph SC-2.01 B of the General Conditions.

### SC-6.01

The Surety Company providing the bonds shall have a rating of A or better within the Best Key Rating Guide and be licensed by the Massachusetts Division of Insurance. The CONTRACTOR shall pay the premiums for such Bonds.

### SC-6.02

The Contractor shall immediately stop work on the Project and shall not resume work until the Contractor provides evidence, to the Owner and Engineer, in the form of an acceptable insurance certificate, of new insurance coverage that replaces all cancelled coverage that is required for the Project.

### SC-6.03

If the aggregate limits of liability indicated in Contractor's insurance provided in accordance with paragraph 6.03 are not sufficient to cover all claims for damages arising from its operations under this Contract and from any other work performed by it or if the commercial general liability insurance policy of insurance does not provide that the general aggregate limits apply on a per project and per location basis, Contractor shall have the policy amended



so that the aggregate limits of liability required by this Contract will be available to cover all claims for damages due to operations under this Contract.

1. Include by endorsement that the insurer shall waive all rights of subrogation in favor of the Owner, Engineer and any other party named in the written contract against whom the insurer must agree to waive rights of subrogation.”

D. *Workers’ Compensation and Employer’s Liability:* Contractor shall purchase and maintain workers’ compensation and employer’s liability insurance, including, as applicable, United States Longshoreman and Harbor Workers’ Compensation Act, Jones Act, stop-gap employer’s liability coverage for monopolistic states, and foreign voluntary workers’ compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

<b>Workers’ Compensation and Related Policies</b>	<b>Policy limits of not less than:</b>
<b>Workers’ Compensation</b>	
State	Statutory
Applicable Federal (e.g., Longshoreman’s)	Statutory
Foreign voluntary workers’ compensation (employer’s responsibility coverage), if applicable	Statutory
<b>Jones Act (if applicable) *</b>	
Bodily injury by accident—each accident	\$
Bodily injury by disease—aggregate	\$
<b>Employer’s Liability</b>	
Each accident	\$100,000
Each employee	\$100,000
Policy limit	\$500,000
<b>Stop-gap Liability Coverage***</b>	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker’s compensation or commercial general liability policy with a minimum limit of:	\$

E. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor’s employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

F. *Commercial General Liability—Form and Content:* Contractor’s commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
  - a. Such insurance must be maintained for three years after final payment.
  - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Contractor’s contractual indemnity obligations in Paragraph 7.18.
3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10, CG 20 33 and CG 20 37 or insurer’s endorsement offering similar coverage. If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
7. For design professional additional insureds, ISO Endorsement CG 20 32 or insurer’s endorsement offering similar coverage.
8. Independent Contractors Coverage.

G. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of “insured contract” (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.

4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured’s vicarious liability, strict liability, or statutory liability (other than worker’s compensation).
6. Any limitation or exclusion based on the nature of Contractor’s work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

H. *Commercial General Liability—Minimum Policy Limits*

<b>Commercial General Liability</b>	<b>Policy limits of not less than:</b>
General Aggregate	\$2,000,000
Products—Completed Operations Aggregate	\$2,000,000
Personal and Advertising Injury	\$1,000,000
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000

- I. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

<b>Automobile Liability</b>	<b>Policy limits of not less than:</b>
<b>Bodily Injury</b>	
Each Person	\$1,000,000
Each Accident	\$1,000,000
<b>Property Damage</b>	
Each Accident	\$1,000,000
<b>Combined Single Limit</b>	
Combined Single Limit (Bodily Injury and Property Damage)	\$2,000,000

- J. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

<b>Excess or Umbrella Liability</b>	<b>Policy limits of not less than:</b>
Each Occurrence	\$5,000,000
General Aggregate	\$5,000,000

- K. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer’s liability,

commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limits equivalent to those required in paragraph 6.03J after accounting for partial attribution of its limits to underlying policies, as allowed above.

- L. *Contractor's Pollution Liability Insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

<b>Contractor's Pollution Liability</b>	<b>Policy limits of not less than:</b>
Each Occurrence/Claim	\$2,000,000
General Aggregate	\$2,000,000

- M. *Contractor's Professional Liability Insurance:* If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

<b>Contractor's Professional Liability</b>	<b>Policy limits of not less than:</b>
Each Claim	\$1,000,000
Annual Aggregate	\$1,000,000

- N. *Railroad Protective Liability Insurance:* Not Applicable.

- O. *Unmanned Aerial Vehicle Liability Insurance:* If Contractor uses unmanned aerial vehicles (UAV—commonly *referred* to as drones) at the Site or in support of any aspect of the Work, Contractor shall obtain UAV liability insurance in the amounts stated; name Owner, Engineer, and all individuals and entities identified in the Supplementary Conditions as additional insureds; and provide a certificate to Owner confirming Contractor's compliance with this requirement. Such insurance will provide coverage for property damage, bodily injury or death, and invasion of privacy.

<b>Unmanned Aerial Vehicle Liability Insurance</b>	<b>Policy limits of not less than:</b>
Each Claim	\$500,000
General Aggregate	\$1,000,000

P. *Other Required Insurance:* None

SC-6.04

**Note – When builder’s risk insurance is required add the following:**

“Add the following paragraphs after 6.04E:

F. *Builder’s Risk Requirements:* The builder’s risk insurance must:

1. be written on a builder’s risk “all risk” policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).
  - a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.
  - b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder’s risk policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.
2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).
4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier). If this coverage is subject to a sublimit, such sublimit will be a minimum of \$2,000,000
5. extend to cover damage or loss to insured property while in transit. If this coverage is subject to a sublimit, such sublimit will be a minimum of \$2,000,000.
6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.
7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.
8. include performance/hot testing and start-up, if applicable.
9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.
10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:
  - a. Entities to be named by the Owner as Owner's representative.
11. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:
  - a. Not Applicable. However the Owner reserves the right to name items that may apply.
12. If debris removal in connection with repair or replacement of insured property is subject to a coverage sublimit, such sublimit will be a minimum of \$1,000,000.

G. *Coverage for Completion Delays:* The builder's risk policy will include, for the benefit of Owner, loss of revenue and soft cost coverage for losses arising from delays in completion that result from covered physical losses or damage. Such coverage will include, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum

deductible of 30 days, compensation for loss of net revenues, rental costs, and attorneys' fees and engineering or other consultants' fees, if not otherwise covered."

Delete Article 6.04 of the General Conditions in its entirety.

SC-6.05

Amend the last sentence of paragraph 6.05A of the General Conditions by striking out the words "held by Owner or Contractor as trustee or fiduciary, or."

SC-6.07

Add the following paragraph 6.07 after paragraph 6.06 of the General Conditions:

"6.07 Owner's Objections to Contractor's Insurance Coverage

A. 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 6.02D. Contractor will provide such additional information in respect of insurance provided by him as Owner may reasonably request."

## ARTICLE 7. CONTRACTOR'S RESPONSIBILITIES

SC-7.02

Delete paragraph 7.02B of the General Conditions in its entirety and replace with the following:

"B. At the site of the Work the Contractor shall employ a full-time construction superintendent or foreman who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the Engineer and shall be one who will be continued in the capacity for the particular job involved unless the representative ceases to be on the Contractor's payroll. If at any time during the Work the representative is deemed by the Engineer to be no longer acceptable, the representative shall be promptly replaced by the

Contractor. All communications to the superintendent or foreman shall be as binding as if given to the Contractor."

SC-7.08

Delete the second sentence in paragraph 7.08A of the General Conditions.

SC-7.13

In line 3 of paragraph 7.13G of the General Conditions change "Supplementary Conditions" to "Contract Documents".

SC-7.16

In paragraph 7.16C.1 of the General Conditions, delete the word "timely" from the first line.

In paragraph 7.16E.1.b of the General Conditions, delete the word "timely" from the first line.

SC-7.18

Change the phrase "negligent act or omission" to "negligent or wrongful act or omission" in line 11 of paragraph 7.18A of the General Conditions.

Add the following to the end of paragraph 7.18A of the General Conditions:

"The Contractor hereby acknowledges its obligation under the foregoing paragraph to indemnify the Engineer and Owner against judgments suffered because of the Contractor's



work and to assume the cost of defending the Engineer and Owner against claims as described in the foregoing paragraph."

## ARTICLE 9. OWNER'S RESPONSIBILITIES

### SC-9.02

Delete the phrase "provided Contractor makes no reasonable objection to the replacement engineer" in paragraph 9.02A of the General Conditions.

### SC-9.06

Delete paragraph 9.06A of the General Conditions in its entirety.

### SC-9.09

Insert the following after the first sentence of paragraph 9.09A of the General Conditions:

"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

### SC-10.01

Add a new paragraph 10.01B after paragraph 10.01A of the General Conditions, 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."

SC-10.02

Insert the following at the end of paragraph 10.02B of the General Conditions:

"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."

SC-10.03

Delete the last sentence of paragraph 10.03B.

SC-10.07

Insert the following after the first sentence of paragraph 10.07B of the General Conditions:

"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."

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

Delete Article 13 of the General Conditions in its entirety and replace with the following:

- "A. The unit price of an item of Unit Price work shall be subject to reevaluation and adjustment under the following conditions:
- (1) If the total extended bid price [Estimated Quantity times the Bid Unit Price] of a particular item of Unit Price Work amounts to 5 percent or more of the Original Contract Price and the variation in the quantity of the particular item of Unit Price Work performed by Contractor differs by more than 15 percent from the estimated quantity of such item indicated in the Agreement; and
  - (2) If there is no corresponding adjustment with respect to any other item of work; and
  - (3) If Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 12 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed. If Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner shall be entitled to an adjustment in the unit price in an amount determined by the Engineer.

Engineer shall not be liable in connection with any determination relating to adjustments which is rendered in good faith."

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

SC-14.03

Delete the word "Prompt" at the beginning of paragraph 14.03C of the General Conditions.

SC-14.07

Revise paragraph 14.07A of the General Conditions as follows:

- A. Delete the word "seven" and replace it with the word "ten" so that it reads "after ten days' written notice to Contractor."

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

SC-15.01

Delete paragraph 15.01B.4 of the General Conditions and insert the following in its place:

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

Delete the word "immediate" from line 2 of subparagraph 15.01E.2 of the General Conditions.

Delete subparagraph 15.01E.3 of the General Conditions in its entirety.

SC-15.02

Delete paragraph 15.02A in its entirety and insert the following in its place:

- "A. Contractor warrants and guarantees that title to all work, material and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner

no later than at the time of Application for Payment free and clear of all liens. Contractor shall provide written transfer of title and a certified paid invoice provided by the supplier."

#### SC-15.03

Delete the third sentence of paragraph 15.03C of the General conditions and replace it with the following:

"Owner shall review the preliminary certificate and make written objection to Engineer as to any provisions of the certificate or attached punch list."

In the same paragraph, delete the phrase "within 14 days after submission of the preliminary certificate to Owner" in the fourth sentence; delete the phrase "within said 14 days" in the fifth sentence.

#### SC-15.06

Delete from lines 5 and 6 of paragraph 15.06B of the General Conditions the phrase "within 10 days after receipt of the final Application for Payment," in the first sentence.

#### SC-15.08

If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions: (i) correct such defective work, or, if it has been rejected by Owner, remove it from the site and replace it with work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other work or the work of others therefrom. If Contractor does not begin the repairs within ten (10) days of receipt of written notification and promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk, loss or damage, Owner may have the defective work corrected or the rejected work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but

not limited to all costs of repair and replacement of work by others) will be paid for by Contractor.

## ARTICLE 16. SUSPENSION OF WORK AND TERMINATION

### SC-16.02

If the Work to be done under this Contract shall be abandoned, or if this Contract or any part thereof shall be sublet, without the previous written consent of Owner, or if the contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified.

## ARTICLE 18. MISCELLANEOUS

### SC-18.08

The Contractor shall not assign the whole or any part of this Contract or any moneys due or to become due hereunder until thirty (30) days prior notice in writing has been given to the Owner of the intention to assign, which notice shall state the identity and address of the prospective assignee. No assignment shall be made without the Owner's prior written consent. Such consent shall not be unreasonably withheld. In case the Contractor assigns all or any part of the moneys due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to prior claims of all persons, firms and corporations of services rendered or materials supplied for the performance of the work called for in this Contract.

### 18.11 Liability

It is understood and agreed that members of the Owner or any agent or employees of the Owner signing this Agreement shall not be personally liable hereunder for any action incurred in connection with this Agreement.

### 18.12 State Statutes and Regulations

See Section 00830 of these Specifications for further modifications of the General Conditions due to state statutes and regulations.

### 18.13 Severability

If any provision of this Agreement shall be invalid or unenforceable to any extent or in any application, then the remainder of this Agreement and of such terms and conditions, except to such extent or in such application, shall not be affected thereby, and each and every term and condition of

this Agreement shall be valid and enforced to the fullest extent and in the broadest application permitted by law."

END OF SECTION

SECTION 00830

STATE STATUTES AND REGULATIONS  
COMMONWEALTH OF MASSACHUSETTS

A. REVISIONS TO GENERAL CONDITIONS

1. Definitions
2. Subsurface Conditions Found Different
3. Proprietary Specifications
4. Substitutions and “Or Equals” – Contractor’s Expense
5. Subcontracting
6. Permits
7. Massachusetts Sales and Use Tax
8. Contractor Records
9. Engineer’s Decisions on Requirements of Contract Documents and Acceptability of Work
10. Change of Contract Price
11. Payments
12. Suspension of Work and Termination
13. Special Requirements for Hazardous Wastes Contracts
14. Labor Classifications and Prevailing Wage Rates
15. Contractor’s Surety

B. OTHER REGULATORY REQUIREMENTS

1. Working Hours
2. M/W/DBE Participation
3. Commonwealth of Massachusetts Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program
4. DEP Community Sound Level Criteria
5. OSHA 10 Hour Certification Requirements
6. Easements and Rights-of-Way
7. Record Drawings
8. Pipe Testing

9. Access to Work
10. Documentation to Substantiate Quantities
11. Payment for Rock Excavation
12. Experience of Equipment or Materials Manufacturer
13. ARRA Funded Projects – Job Posting Requirements
14. ARPA Funded Projects

#### ATTACHMENT A

Prevailing Wage Rates

#### ATTACHMENT B

Excerpts from Chapter 149, Chapter 30, and Chapter 82 of the Massachusetts General Law

#### ATTACHMENT C

The Commonwealth of Massachusetts Supplemental Equal Employment Opportunity  
Non-Discrimination and Affirmative Action Program

#### ATTACHMENT D

Change Orders



A. REVISIONS TO GENERAL CONDITIONS:

1. Definitions

The term "Awarding Authority," as used herein, shall be considered to be synonymous with the term "Owner," described in definition 1.01 A.30.

Delete definition 1.01 A.42 entitled "Substantial Completion" in the General Conditions in its entirety and insert the following in its place:

"Substantial Completion shall be interpreted in accordance with Massachusetts General Law (MGL) c. 30, §39G or 39K as appropriate."

2. Subsurface Conditions Found Different

Add the following sentence to the end of paragraph 5.04A of the General Conditions:

"...to do so. Adjustments resulting from subsurface or latent physical conditions will be in accordance with MGL c. 30, §39N."

3. Proprietary Specifications

Revise the third sentence of Paragraph 7.05A of the General Conditions to read as follows:

"Unless the specification indicates that a proprietary item is called for, other items of material or equipment or material or equipment of other suppliers may be submitted to Engineer for review under the circumstances described below, and in accordance with MGL c. 30, §39M."

4. Substitutions and "Or Equals" – Contractor's Expense

Insert the following at the beginning of Paragraphs 7.05B and 7.06E of the General Conditions:

"Except as required by and indicated in the specifications and contract documents pursuant to MGL c. 149, §44F,".

5. Subcontracting

Add the following language at the end of paragraph 7.06J of the General Conditions:

", except as required otherwise by MGL c. 149, §44F, for Work governed by MGL c. 149, §44A through 44H."

6. Permits

Delete paragraph 7.09A of the General Conditions in its entirety and insert the following in its place:

"A. Unless otherwise provided for in Section 00890 PERMITS, the Awarding Authority shall be responsible for identifying and obtaining all federal, state, and local permits required by the nature and location of construction, including but not limited to railroad permits, building construction permits, and permits for street and highway cuts and openings. Contractor shall be responsible for obtaining all permits required of its equipment, work force, or particular operations (such as blasting) in the performance of the Work and not otherwise specified to be obtained by the Awarding Authority. These permit fees shall be paid by Contractor. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of bids, or, if there are no Bids, on the Effective Date of the Agreement."

7. Massachusetts Sales and Use Tax

Add the following paragraph after paragraph 7.10A of the General Conditions:

"B. The materials and supplies to be used by the Contractor in the Work of this Contract are exempt from the Sales and Use Tax of the Commonwealth of Massachusetts. The Awarding Authority tax exemption certificate number will be furnished to the Contractor."

8. Contractor Records

Add a new paragraph immediately after paragraph 7.11C of the General Conditions, which is to read as follows:

"D. The Contractor shall comply with all applicable provisions Chapter 30, Section 39R of the Massachusetts General Laws regarding, Contractor's records."

9. Engineer's Decisions on Requirements of Contract Documents and Acceptability of Work

Add the following language at the end of paragraph 10.06A of the General Conditions:

"The Engineer's interpretation will be made in accordance with the requirements of MGL c. 30, §39P."

10. Change of Contract Price

Delete paragraphs 11.07, 13.01, 13.02 and 13.03 of the General Conditions, having to do with Change of Contract Price. Changes in contract price will be governed by the section called

"Change Orders," in Attachment D, Section 00830 and Article 13 in the Supplementary Conditions.

11. Payments

Add the following paragraph after Paragraph 15.01B.4 of the General Conditions:

“5. The Contractor shall submit Weekly Payroll Records Report and Statement of Compliance verifying compliance with the Minimum Prevailing Wage Law, MGL c. 149, §26-27H. These Statements of Compliance shall be submitted as a condition of payment for work performed during the period the reports apply.”

Delete paragraph 15.01C.1 of the General Conditions in its entirety and insert the following in its place:

“1. Progress Payments will be made in accordance with MGL c. 30, §39G, or §39K, as applicable.”

Delete paragraph 15.01D.1 of the General Conditions in its entirety and replace it with the following:

“1. Payment shall be made in accordance with MGL c. 30, §39G, or §39K, as applicable.”

Add the following new paragraph following paragraph 15.01D.1 of the General Conditions:

“2. The Contractor shall make payments to Subcontractors in accordance with the requirements of MGL c. 30, §39F.”

Delete paragraph 15.06B of the General Conditions in its entirety and insert the following in its place:

*"Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of the Engineer's observation of the Work during construction and final inspection and, upon the Engineer's review of the final Application for Payment and accompanying documentation, the Engineer is satisfied that the Work has been completed and that the Contractor's other obligations under the Contract Documents have been fulfilled, the Engineer will indicate in writing its recommendation of payment and present the Application to the Awarding Authority for payment. Thereupon the Engineer will give written notice to the Awarding Authority and the Contractor that the Work is acceptable subject to the provisions of paragraph 15.07. Otherwise, the Engineer will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment. In such case the Contractor shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as

to form and substance, the Awarding Authority shall in accordance with the applicable provisions of the Massachusetts General Laws, make payment to the Contractor."

Delete paragraph 15.06E of the General Conditions in its entirety and replace it with the following:

"1. Payment shall be made in accordance with MGL c. 30, §39G, or §39K, as applicable."

12. Suspension of Work and Termination

Delete paragraph 16.01A of the General Conditions in its entirety and insert the following in its place:

"A. The Awarding Authority may order, at any time and without cause, the Contractor to suspend or delay the Work in accordance with MGL c. 30, §39O."

13. Special Requirements for Hazardous Wastes Contracts

Add the following at the end of the first sentence of Paragraph 18.14 of the General Conditions:

“, and to the “Rules and Regulations for the Prevention of Accidents in Construction Operations Chapter 454 CMR (Code of Massachusetts Regulations) 10.00 et seq.”

14. Labor Classifications and Prevailing Wage Rates

Add the following paragraphs under the heading "Prevailing Wage Rates" after paragraph 18.14 of the Supplementary Conditions:

"18.15 Prevailing Wage Rates

- A. Prevailing Wage Rates as determined by the Director of the Executive Office of Labor and Workforce Development under the provisions of MGL c. 149, §26-27H apply to this project. A copy of the wage schedule is included in Attachment A of Section 00830. 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 Director. Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. The Contractor shall notify the Awarding Authority of its intention to employ persons in trades or occupations not classified in the wage determinations as soon as possible in order to allow sufficient time for the Awarding Authority to obtain approved rates for such trades or occupations.
- B. The schedule of wages referred to above are minimum rates only, and the Awarding Authority will not consider any claims for additional compensation made by Contractor

because of payment by the Contractor of any wage rate in excess of the applicable rate contained in the Contract.

- C. The said schedule of wages shall continue to be the minimum rates to be paid during the life of this Agreement, except in the case of the duration of this Agreement exceeding one year, when the Contractor will be responsible for requesting and obtaining updated prevailing wage rates from the Owner before the one-year anniversary of the project's start date, and a legible copy of said schedule shall be kept posted in a conspicuous place at the site of the Work.
- D. Contractor and subcontractors shall submit a copy of weekly payroll records to the Awarding Authority and the Awarding Authority shall retain the records for a minimum of three years."

15. Contractor's Surety

Add the following sentences at the end of paragraph 6.01A:

"The Surety Company providing the bonds shall have a rating of A or better within the Best Key Rating Guide and be licensed by the Massachusetts Division of Insurance. The Contractor shall pay the premiums for such Bonds."

B. OTHER REGULATORY REQUIREMENTS:

1. Working Hours

No laborer, workman, mechanic, foreman, or inspector, working within the Commonwealth, in the employ of the Contractor, subcontractor, or other person doing or contracting to do the whole or a part of the work contemplated by this contract, shall be required or permitted to work more

than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency.

2. Minority and Women and/or DBE Participation

This project is subject to the requirements for M/W/DBE participation included in 00830 Attachment C, as applicable.

3. Commonwealth of Massachusetts Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program.

The Contractor shall abide by the Commonwealth of Massachusetts Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program, which is attached in its entirety on pages 00830 – ATT. C1.

4. DEP Community Sound Level Criteria

The Community Sound Level Criteria as established by the Commonwealth of Massachusetts' Department of Environmental Protection (DEP) must be conformed to prior to the Awarding Authority's acceptance of the structure. The following sound level criteria must be met at the construction site:

- A. The increase in the broadband noise level shall not be in excess of ten (10) dB(A) above ambient at the station boundary. The ambient level is defined as the A-weighted noise level that is exceeded ninety (90) percent of the time measured during the period in question.
- B. The primary noise source(s) shall not produce a puretone condition. Puretone is any given octave band center frequency that exceeds the two adjacent center frequencies by three (3) or more decibels.

5. OSHA 10 Hour Certification Requirements

All employees of the Contractor who work at the jobsite must have received OSHA 10 Hour safety training, and have proof, at the jobsite, of being certified by OSHA as having received the training. The Contractor must provide written proof (copy of OSHA card each employee is

required to carry is preferred) of this certification for every employee with submission of the first certified payroll report for each employee.

6. Easements and Rights-of-Way

The Awarding Authority shall obtain all easements and rights-of-way prior to the award of the Contract, in accordance with the Massachusetts Bureau of Municipal Facilities Policy Memorandum CG-1. See CG-1 in Attachment D.

7. Record Drawings

In accordance with the Massachusetts Bureau of Municipal Facilities Policy Memorandum CG-4, the Engineer will provide record drawings to the Awarding Authority upon completion of the project.

8. Pipe Testing

In accordance with the Massachusetts Bureau of Municipal Facilities Policy Memorandum CG-9, the following policy shall be followed with regard to pipe testing:

Monthly payment estimates shall be prepared in accordance with the Contract Documents. All sewer pipes shall be tested in accordance with the Contract Documents and sound engineering practice. If, after 60 days following submission of a monthly payment estimate for pipe items, the pipe for which payment is requested has not been successfully tested, the Awarding Authority may withhold up to 10% of the amount requested for such pipe items until the pipe has been so tested.

9. Access to Work

This project is funded in part by the Commonwealth of Massachusetts Bureau of Municipal Facilities. Representatives of the Commonwealth shall be authorized access to the work under

his contract wherever it is in preparation or progress and shall be provided proper facilities to conduct inspections as they deem necessary.

10. Documentation to Substantiate Quantities

In accordance with the Massachusetts Bureau of Municipal Facilities Policy Memorandum CG-16, the Engineer will submit documentation to substantiate quantities with a final payment request or change order request.

11. Payment for Rock Excavation

Payment for excavation and removal of rock will be in accordance with the Massachusetts Bureau of Municipal Facilities Policy Memorandum CG-14. Memorandum CG-14 is included in Attachment D.

12. Experience of Equipment or Materials Manufacturer

Whenever it is written that an equipment or materials manufacturer must have a specified period of experience with its product, equipment which does not meet the specified experience period can be considered if the equipment or materials supplier or manufacturer is willing to provide an efficiency guarantee bond or cash deposit for the duration of the specified time period which will guarantee replacement of the equipment or material in the event of failure.

13. ARRA Funded Projects – Job Posting Requirements

Employers and hiring agents on all projects funded in whole or in part by the American Recovery and Reinvestment Act of 2009 shall post notices of available employment opportunities to the commonwealth's job bank or the one-stop career centers closest to where the projects shall be located. The postings shall contain such information as directed by the secretary of labor and workforce development.

14. ARPA funded Projects – Job Requirements

All material and services under this bid/contract must comply with all ARPA funding regulations, including but not limited to, Buy American requirements, compliance with the Davis Bacon Act, payments bonds if the project exceeds \$100,000, and registry with SAM.gov (This will necessitate vendors to have an active federal DUNS number).

The contractor shall register on SAM.gov once selected.

<https://home.treasury.gov/system/files/136/SLFRF-Compliance-and-Reporting-Guidance.pdf>

The US Department of Labor's Office of Federal Contract Compliance Programs (OFCCP) requires that the Town, as the applicant, submit written notice to OFFCP **within 10 working days of contract award** through their Notification of Construction Award Portal (NCAP) using the following link: <https://www.dol.gov/agencies/ofccp/ncap>.

END OF SECTION



SECTION 00830

ATTACHMENT A

PREVAILING WAGE RATES



MAURA HEALEY  
Governor

KIM DRISCOLL  
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT  
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

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:** Town of Millbury  
**Contract Number:** **City/Town:** MILLBURY  
**Description of Work:** Removal of existing bridge superstructure and abutments, and replacement with a precast concrete box culvert with new wingwalls. Approach reconstruction and related safety improvements.  
**Job Location:** 30 Wheelock Ave, Millbury, MA 01527

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.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$39.95	\$15.07	\$18.67	\$0.00	\$73.69
	12/01/2024	\$39.95	\$15.07	\$20.17	\$0.00	\$75.19
	01/01/2025	\$39.95	\$15.57	\$20.17	\$0.00	\$75.69
	06/01/2025	\$40.95	\$15.57	\$20.17	\$0.00	\$76.69
	12/01/2025	\$40.95	\$15.57	\$21.78	\$0.00	\$78.30
	01/01/2026	\$40.95	\$16.17	\$21.78	\$0.00	\$78.90
	06/01/2026	\$41.95	\$16.17	\$21.78	\$0.00	\$79.90
	12/01/2026	\$41.95	\$16.17	\$23.52	\$0.00	\$81.64
	01/01/2027	\$41.95	\$16.77	\$23.52	\$0.00	\$82.24
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.02	\$15.07	\$18.67	\$0.00	\$73.76
	12/01/2024	\$40.02	\$15.07	\$20.17	\$0.00	\$75.26
	01/01/2025	\$40.02	\$15.57	\$20.17	\$0.00	\$75.76
	06/01/2025	\$41.02	\$15.57	\$20.17	\$0.00	\$76.76
	12/01/2025	\$41.02	\$15.57	\$21.78	\$0.00	\$78.37
	01/01/2026	\$41.02	\$16.17	\$21.78	\$0.00	\$78.97
	06/01/2026	\$42.02	\$16.17	\$21.78	\$0.00	\$79.97
	12/01/2026	\$42.02	\$16.17	\$23.52	\$0.00	\$81.71
	01/01/2027	\$42.02	\$16.77	\$23.52	\$0.00	\$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.14	\$15.07	\$18.67	\$0.00	\$73.88
	12/01/2024	\$40.14	\$15.07	\$20.17	\$0.00	\$75.38
	01/01/2025	\$40.14	\$15.57	\$20.17	\$0.00	\$75.88
	06/01/2025	\$41.14	\$15.57	\$20.17	\$0.00	\$76.88
	12/01/2025	\$41.14	\$15.57	\$21.78	\$0.00	\$78.49
	01/01/2026	\$41.14	\$16.17	\$21.78	\$0.00	\$79.09
	06/01/2026	\$42.14	\$16.17	\$21.78	\$0.00	\$80.09
	12/01/2026	\$42.14	\$16.17	\$23.52	\$0.00	\$81.83
	01/01/2027	\$42.14	\$16.77	\$23.52	\$0.00	\$82.43
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2024	\$39.28	\$9.65	\$18.40	\$0.00	\$67.33
	12/01/2024	\$40.61	\$9.65	\$18.40	\$0.00	\$68.66
	06/01/2025	\$42.00	\$9.65	\$18.40	\$0.00	\$70.05
	12/01/2025	\$43.38	\$9.65	\$18.40	\$0.00	\$71.43
	06/01/2026	\$44.82	\$9.65	\$18.40	\$0.00	\$72.87
	12/01/2026	\$46.26	\$9.65	\$18.40	\$0.00	\$74.31
	06/01/2027	\$47.71	\$9.65	\$18.40	\$0.00	\$75.76
	12/01/2027	\$49.16	\$9.65	\$18.40	\$0.00	\$77.21
	06/01/2028	\$50.66	\$9.65	\$18.40	\$0.00	\$78.71
	12/01/2028	\$52.16	\$9.65	\$18.40	\$0.00	\$80.21
For apprentice rates see "Apprentice- LABORER"						

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>AIR TRACK OPERATOR (HEAVY &amp; HIGHWAY)</b> <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$39.28	\$9.65	\$17.80	\$0.00	\$66.73
	12/01/2024	\$40.61	\$9.65	\$17.80	\$0.00	\$68.06
	06/01/2025	\$42.00	\$9.65	\$17.80	\$0.00	\$69.45
	12/01/2025	\$43.38	\$9.65	\$17.80	\$0.00	\$70.83
	06/01/2026	\$44.82	\$9.65	\$17.80	\$0.00	\$72.27
	12/01/2026	\$46.26	\$9.65	\$17.80	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
<b>ASBESTOS WORKER (PIPES &amp; TANKS)</b> <i>HEAT &amp; FROST INSULATORS LOCAL 6 (WORCESTER)</i>	06/01/2024	\$41.80	\$14.50	\$11.05	\$0.00	\$67.35
	12/01/2024	\$42.80	\$14.50	\$11.05	\$0.00	\$68.35
	06/01/2025	\$43.80	\$14.50	\$11.05	\$0.00	\$69.35
	12/01/2025	\$44.80	\$14.50	\$11.05	\$0.00	\$70.35
<b>ASPHALT RAKER</b> <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
	12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71
For apprentice rates see "Apprentice- LABORER"						
<b>ASPHALT RAKER (HEAVY &amp; HIGHWAY)</b> <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
<b>ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>BACKHOE/FRONT-END LOADER</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
	12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	06/01/2024	\$39.28	\$9.65	\$18.40	\$0.00	\$67.33
	12/01/2024	\$40.61	\$9.65	\$18.40	\$0.00	\$68.66
	06/01/2025	\$42.00	\$9.65	\$18.40	\$0.00	\$70.05
	12/01/2025	\$43.38	\$9.65	\$18.40	\$0.00	\$71.43
	06/01/2026	\$44.82	\$9.65	\$18.40	\$0.00	\$72.87
	12/01/2026	\$46.26	\$9.65	\$18.40	\$0.00	\$74.31
	06/01/2027	\$47.71	\$9.65	\$18.40	\$0.00	\$75.76
	12/01/2027	\$49.16	\$9.65	\$18.40	\$0.00	\$77.21
	06/01/2028	\$50.66	\$9.65	\$18.40	\$0.00	\$78.71
	12/01/2028	\$52.16	\$9.65	\$18.40	\$0.00	\$80.21
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$39.28	\$9.65	\$17.80	\$0.00	\$66.73
	12/01/2024	\$40.61	\$9.65	\$17.80	\$0.00	\$68.06
	06/01/2025	\$42.00	\$9.65	\$17.80	\$0.00	\$69.45
	12/01/2025	\$43.38	\$9.65	\$17.80	\$0.00	\$70.83
	06/01/2026	\$44.82	\$9.65	\$17.80	\$0.00	\$72.27
	12/01/2026	\$46.26	\$9.65	\$17.80	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - BOILERMAKER - Local 29**

**Effective Date - 01/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$31.28	\$7.07	\$13.22	\$0.00	\$51.57
2	65	\$31.28	\$7.07	\$13.22	\$0.00	\$51.57
3	70	\$33.68	\$7.07	\$14.23	\$0.00	\$54.98
4	75	\$36.09	\$7.07	\$15.24	\$0.00	\$58.40
5	80	\$38.50	\$7.07	\$16.25	\$0.00	\$61.82
6	85	\$40.90	\$7.07	\$17.28	\$0.00	\$65.25
7	90	\$43.31	\$7.07	\$18.28	\$0.00	\$68.66
8	95	\$45.71	\$7.07	\$19.32	\$0.00	\$72.10

**Notes:**

**Apprentice to Journeyworker Ratio:1:4**

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	08/01/2024	\$62.36	\$11.49	\$22.90	\$0.00	\$96.75
BRICKLAYERS LOCAL 3 (WORCESTER)	02/01/2025	\$63.66	\$11.49	\$22.90	\$0.00	\$98.05
	08/01/2025	\$65.81	\$11.49	\$22.90	\$0.00	\$100.20
	02/01/2026	\$67.16	\$11.49	\$22.90	\$0.00	\$101.55
	08/01/2026	\$69.36	\$11.49	\$22.90	\$0.00	\$103.75
	02/01/2027	\$70.76	\$11.49	\$22.90	\$0.00	\$105.15

**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Worcester**

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.18	\$11.49	\$22.90	\$0.00	\$65.57
2	60	\$37.42	\$11.49	\$22.90	\$0.00	\$71.81
3	70	\$43.65	\$11.49	\$22.90	\$0.00	\$78.04
4	80	\$49.89	\$11.49	\$22.90	\$0.00	\$84.28
5	90	\$56.12	\$11.49	\$22.90	\$0.00	\$90.51

**Effective Date - 02/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.83	\$11.49	\$22.90	\$0.00	\$66.22
2	60	\$38.20	\$11.49	\$22.90	\$0.00	\$72.59
3	70	\$44.56	\$11.49	\$22.90	\$0.00	\$78.95
4	80	\$50.93	\$11.49	\$22.90	\$0.00	\$85.32
5	90	\$57.29	\$11.49	\$22.90	\$0.00	\$91.68

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$46.63	\$9.65	\$18.22	\$0.00	\$74.50
	12/01/2024	\$48.10	\$9.65	\$18.22	\$0.00	\$75.97
	06/01/2025	\$49.60	\$9.65	\$18.22	\$0.00	\$77.47
	12/01/2025	\$51.10	\$9.65	\$18.22	\$0.00	\$78.97
	06/01/2026	\$52.65	\$9.65	\$18.22	\$0.00	\$80.52
	12/01/2026	\$54.15	\$9.65	\$18.22	\$0.00	\$82.02
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.48	\$9.65	\$18.22	\$0.00	\$73.35
	12/01/2024	\$46.95	\$9.65	\$18.22	\$0.00	\$74.82
	06/01/2025	\$48.45	\$9.65	\$18.22	\$0.00	\$76.32
	12/01/2025	\$49.95	\$9.65	\$18.22	\$0.00	\$77.82
	06/01/2026	\$51.50	\$9.65	\$18.22	\$0.00	\$79.37
	12/01/2026	\$53.00	\$9.65	\$18.22	\$0.00	\$80.87
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71	
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	09/01/2024	\$48.37	\$9.83	\$19.97	\$0.00	\$78.17
	03/01/2025	\$49.62	\$9.83	\$19.97	\$0.00	\$79.42
	09/01/2025	\$50.87	\$9.83	\$19.97	\$0.00	\$80.67
	03/01/2026	\$52.12	\$9.83	\$19.97	\$0.00	\$81.92
	09/01/2026	\$53.37	\$9.83	\$19.97	\$0.00	\$83.17
	03/01/2027	\$54.62	\$9.83	\$19.97	\$0.00	\$84.42

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - CARPENTER - Zone 2 Eastern MA**

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.77	\$9.83	\$1.73	\$0.00	\$33.33
2	45	\$21.77	\$9.83	\$1.73	\$0.00	\$33.33
3	55	\$26.60	\$9.83	\$3.40	\$0.00	\$39.83
4	55	\$26.60	\$9.83	\$3.40	\$0.00	\$39.83
5	70	\$33.86	\$9.83	\$16.51	\$0.00	\$60.20
6	70	\$33.86	\$9.83	\$16.51	\$0.00	\$60.20
7	80	\$38.70	\$9.83	\$18.24	\$0.00	\$66.77
8	80	\$38.70	\$9.83	\$18.24	\$0.00	\$66.77

**Effective Date - 03/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$22.33	\$9.83	\$1.73	\$0.00	\$33.89
2	45	\$22.33	\$9.83	\$1.73	\$0.00	\$33.89
3	55	\$27.29	\$9.83	\$3.40	\$0.00	\$40.52
4	55	\$27.29	\$9.83	\$3.40	\$0.00	\$40.52
5	70	\$34.73	\$9.83	\$16.51	\$0.00	\$61.07
6	70	\$34.73	\$9.83	\$16.51	\$0.00	\$61.07
7	80	\$39.70	\$9.83	\$18.24	\$0.00	\$67.77
8	80	\$39.70	\$9.83	\$18.24	\$0.00	\$67.77

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

CARPENTER WOOD FRAME	10/01/2023	\$25.55	\$7.02	\$4.80	\$0.00	\$37.37
CARPENTERS-ZONE 3 (Wood Frame)	10/01/2024	\$26.65	\$7.02	\$4.80	\$0.00	\$38.47
	10/01/2025	\$27.75	\$7.02	\$4.80	\$0.00	\$39.57
	10/01/2026	\$28.85	\$7.02	\$4.80	\$0.00	\$40.67

All Aspects of New Wood Frame Work



**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - CARPENTER (Wood Frame) - Zone 3**

**Effective Date - 10/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.33	\$7.02	\$0.00	\$0.00	\$22.35
2	60	\$15.33	\$7.02	\$0.00	\$0.00	\$22.35
3	65	\$16.61	\$7.02	\$1.00	\$0.00	\$24.63
4	70	\$17.89	\$7.02	\$1.00	\$0.00	\$25.91
5	75	\$19.16	\$7.02	\$4.80	\$0.00	\$30.98
6	80	\$20.44	\$7.02	\$4.80	\$0.00	\$32.26
7	85	\$21.72	\$7.02	\$4.80	\$0.00	\$33.54
8	90	\$23.00	\$7.02	\$4.80	\$0.00	\$34.82

**Effective Date - 10/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.99	\$7.02	\$0.00	\$0.00	\$23.01
2	60	\$15.99	\$7.02	\$0.00	\$0.00	\$23.01
3	65	\$17.32	\$7.02	\$1.00	\$0.00	\$25.34
4	70	\$18.66	\$7.02	\$1.00	\$0.00	\$26.68
5	75	\$19.99	\$7.02	\$4.80	\$0.00	\$31.81
6	80	\$21.32	\$7.02	\$4.80	\$0.00	\$33.14
7	85	\$22.65	\$7.02	\$4.80	\$0.00	\$34.47
8	90	\$23.99	\$7.02	\$4.80	\$0.00	\$35.81

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$18.52/ 3&4 \$21.07/ 5&6 \$28.70/ 7&8 \$31.26

**Apprentice to Journeyworker Ratio:1:5**

CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (WORCESTER)	01/01/2024	\$49.33	\$13.00	\$23.57	\$1.30	\$87.20
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**Apprentice - CEMENT MASONRY/PLASTERING - Worcester**

**Effective Date - 01/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.67	\$13.00	\$15.93	\$0.00	\$53.60
2	60	\$29.60	\$13.00	\$18.57	\$1.30	\$62.47
3	65	\$32.06	\$13.00	\$19.57	\$1.30	\$65.93
4	70	\$34.53	\$13.00	\$20.57	\$1.30	\$69.40
5	75	\$37.00	\$13.00	\$21.57	\$1.30	\$72.87
6	80	\$39.46	\$13.00	\$22.57	\$1.30	\$76.33
7	90	\$44.40	\$13.00	\$23.57	\$1.30	\$82.27

**Notes:**

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

**Apprentice to Journeyworker Ratio:1:3**

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
	12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$57.15	\$15.30	\$16.40	\$0.00	\$88.85
	12/01/2024	\$58.63	\$15.30	\$16.40	\$0.00	\$90.33
	06/01/2025	\$59.96	\$15.30	\$16.40	\$0.00	\$91.66
	12/01/2025	\$61.43	\$15.30	\$16.40	\$0.00	\$93.13
	06/01/2026	\$62.76	\$15.30	\$16.40	\$0.00	\$94.46
	12/01/2026	\$64.24	\$15.30	\$16.40	\$0.00	\$95.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$9.95	\$0.00	\$0.00	\$38.58
2	55	\$31.49	\$9.95	\$6.66	\$0.00	\$48.10
3	60	\$34.36	\$9.95	\$7.26	\$0.00	\$51.57
4	65	\$37.22	\$9.95	\$7.87	\$0.00	\$55.04
5	70	\$40.08	\$9.95	\$20.32	\$0.00	\$70.35
6	75	\$42.95	\$9.95	\$20.93	\$0.00	\$73.83
7	80	\$45.81	\$9.95	\$21.53	\$0.00	\$77.29
8	90	\$51.53	\$9.95	\$22.74	\$0.00	\$84.22

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$29.23	\$9.95	\$0.00	\$0.00	\$39.18
2	55	\$32.15	\$9.95	\$6.66	\$0.00	\$48.76
3	60	\$35.08	\$9.95	\$7.26	\$0.00	\$52.29
4	65	\$38.00	\$9.95	\$7.87	\$0.00	\$55.82
5	70	\$40.92	\$9.95	\$20.32	\$0.00	\$71.19
6	75	\$43.85	\$9.95	\$20.93	\$0.00	\$74.73
7	80	\$46.77	\$9.95	\$21.53	\$0.00	\$78.25
8	90	\$52.61	\$9.95	\$22.74	\$0.00	\$85.30

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

DEMO: ADZEMAN	06/10/2024	\$45.53	\$9.65	\$18.40	\$0.00	\$73.58
LABORERS - ZONE 2	12/02/2024	\$47.00	\$9.65	\$18.40	\$0.00	\$75.05
	06/02/2025	\$48.50	\$9.65	\$18.40	\$0.00	\$76.55
	12/01/2025	\$50.00	\$9.65	\$18.40	\$0.00	\$78.05
	06/01/2026	\$51.55	\$9.65	\$18.40	\$0.00	\$79.60
	12/07/2026	\$53.05	\$9.65	\$18.40	\$0.00	\$81.10
	06/07/2027	\$54.65	\$9.65	\$18.40	\$0.00	\$82.70
	12/06/2027	\$56.25	\$9.65	\$18.40	\$0.00	\$84.30
	06/05/2028	\$57.93	\$9.65	\$18.40	\$0.00	\$85.98
	12/04/2028	\$59.60	\$9.65	\$18.40	\$0.00	\$87.65

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/10/2024	\$46.53	\$9.65	\$18.40	\$0.00	\$74.58
	12/02/2024	\$48.00	\$9.65	\$18.40	\$0.00	\$76.05
	06/02/2025	\$49.50	\$9.65	\$18.40	\$0.00	\$77.55
	12/01/2025	\$51.00	\$9.65	\$18.40	\$0.00	\$79.05
	06/01/2026	\$52.55	\$9.65	\$18.40	\$0.00	\$80.60
	12/07/2026	\$54.05	\$9.65	\$18.40	\$0.00	\$82.10
	06/07/2027	\$55.65	\$9.65	\$18.40	\$0.00	\$83.70
	12/06/2027	\$57.25	\$9.65	\$18.40	\$0.00	\$85.30
	06/05/2028	\$58.93	\$9.65	\$18.40	\$0.00	\$86.98
	12/04/2028	\$60.60	\$9.65	\$18.40	\$0.00	\$88.65

For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS <i>LABORERS - ZONE 2</i>	06/10/2024	\$46.28	\$9.65	\$18.40	\$0.00	\$74.33
	12/02/2024	\$47.75	\$9.65	\$18.40	\$0.00	\$75.80
	06/02/2025	\$49.25	\$9.65	\$18.40	\$0.00	\$77.30
	12/01/2025	\$50.75	\$9.65	\$18.40	\$0.00	\$78.80
	06/01/2026	\$52.30	\$9.65	\$18.40	\$0.00	\$80.35
	12/07/2026	\$53.80	\$9.65	\$18.40	\$0.00	\$81.85
	06/07/2027	\$55.40	\$9.65	\$18.40	\$0.00	\$83.45
	12/06/2027	\$57.00	\$9.65	\$18.40	\$0.00	\$85.05
	06/05/2028	\$58.68	\$9.65	\$18.40	\$0.00	\$86.73
	12/04/2028	\$60.35	\$9.65	\$18.40	\$0.00	\$88.40

For apprentice rates see "Apprentice- LABORER"

DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	06/10/2024	\$46.53	\$9.65	\$18.40	\$0.00	\$74.58
	12/02/2024	\$48.00	\$9.65	\$18.40	\$0.00	\$76.05
	06/02/2025	\$49.50	\$9.65	\$18.40	\$0.00	\$77.55
	12/01/2025	\$51.00	\$9.65	\$18.40	\$0.00	\$79.05
	06/01/2026	\$52.55	\$9.65	\$18.40	\$0.00	\$80.60
	12/07/2026	\$54.05	\$9.65	\$18.40	\$0.00	\$82.10
	06/07/2027	\$55.65	\$9.65	\$18.40	\$0.00	\$83.70
	12/06/2027	\$57.25	\$9.65	\$18.40	\$0.00	\$85.30
	06/05/2028	\$58.93	\$9.65	\$18.40	\$0.00	\$86.98
	12/04/2028	\$60.60	\$9.65	\$18.40	\$0.00	\$88.65

For apprentice rates see "Apprentice- LABORER"

DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/10/2024	\$46.28	\$9.65	\$18.40	\$0.00	\$74.33
	12/02/2024	\$47.75	\$9.65	\$18.40	\$0.00	\$75.80
	06/02/2025	\$49.25	\$9.65	\$18.40	\$0.00	\$77.30
	12/01/2025	\$50.75	\$9.65	\$18.40	\$0.00	\$78.80
	06/01/2026	\$52.30	\$9.65	\$18.40	\$0.00	\$80.35
	12/07/2026	\$53.80	\$9.65	\$18.40	\$0.00	\$81.85
	06/07/2027	\$55.40	\$9.65	\$18.40	\$0.00	\$83.45
	12/06/2027	\$57.00	\$9.65	\$18.40	\$0.00	\$85.05
	06/05/2028	\$58.68	\$9.65	\$18.40	\$0.00	\$86.73
	12/04/2028	\$60.35	\$9.65	\$18.40	\$0.00	\$88.40

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	06/10/2024	\$45.53	\$9.65	\$18.40	\$0.00	\$73.58
	12/02/2024	\$47.00	\$9.65	\$18.40	\$0.00	\$75.05
	06/02/2025	\$48.50	\$9.65	\$18.40	\$0.00	\$76.55
	12/01/2025	\$50.00	\$9.65	\$18.40	\$0.00	\$78.05
	06/01/2026	\$51.55	\$9.65	\$18.40	\$0.00	\$79.60
	12/07/2026	\$53.05	\$9.65	\$18.40	\$0.00	\$81.10
	06/07/2027	\$54.65	\$9.65	\$18.40	\$0.00	\$82.70
	12/06/2027	\$56.25	\$9.65	\$18.40	\$0.00	\$84.30
	06/05/2028	\$57.93	\$9.65	\$18.40	\$0.00	\$85.98
	12/04/2028	\$59.60	\$9.65	\$18.40	\$0.00	\$87.65
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 96</i>	09/01/2024	\$47.05	\$13.99	\$19.22	\$0.00	\$80.26
	09/07/2025	\$48.16	\$14.98	\$19.60	\$0.00	\$82.74
	09/06/2026	\$49.38	\$15.96	\$20.00	\$0.00	\$85.34

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - ELECTRICIAN - Local 96**

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.82	\$13.99	\$0.56	\$0.00	\$33.37
2	45	\$21.17	\$13.99	\$0.64	\$0.00	\$35.80
3	48	\$22.58	\$13.99	\$15.79	\$0.00	\$52.36
4	55	\$25.88	\$13.99	\$16.26	\$0.00	\$56.13
5	65	\$30.58	\$13.99	\$16.91	\$0.00	\$61.48
6	80	\$37.64	\$13.99	\$17.90	\$0.00	\$69.53

**Effective Date - 09/07/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.26	\$14.98	\$0.58	\$0.00	\$34.82
2	45	\$21.67	\$14.98	\$0.65	\$0.00	\$37.30
3	48	\$23.12	\$14.98	\$16.09	\$0.00	\$54.19
4	55	\$26.49	\$14.98	\$16.57	\$0.00	\$58.04
5	65	\$31.30	\$14.98	\$17.25	\$0.00	\$63.53
6	80	\$38.53	\$14.98	\$18.26	\$0.00	\$71.77

**Notes:**

Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

**Apprentice to Journeyworker Ratio:2:3\*\*\***

ELEVATOR CONSTRUCTOR	01/01/2024	\$61.98	\$16.18	\$20.96	\$0.00	\$99.12
ELEVATOR CONSTRUCTORS LOCAL 41	01/01/2025	\$62.83	\$16.28	\$21.36	\$0.00	\$100.47
	01/01/2026	\$63.68	\$16.38	\$21.76	\$0.00	\$101.82
	01/01/2027	\$64.53	\$16.48	\$22.16	\$0.00	\$103.17

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - ELEVATOR CONSTRUCTOR - Local 41**

**Effective Date - 01/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.99	\$16.18	\$0.00	\$0.00	\$47.17
2	55	\$34.09	\$16.18	\$20.96	\$0.00	\$71.23
3	65	\$40.29	\$16.18	\$20.96	\$0.00	\$77.43
4	70	\$43.39	\$16.18	\$20.96	\$0.00	\$80.53
5	80	\$49.58	\$16.18	\$20.96	\$0.00	\$86.72

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.42	\$16.28	\$0.00	\$0.00	\$47.70
2	55	\$34.56	\$16.28	\$21.36	\$0.00	\$72.20
3	65	\$40.84	\$16.28	\$21.36	\$0.00	\$78.48
4	70	\$43.98	\$16.28	\$21.36	\$0.00	\$81.62
5	80	\$50.26	\$16.28	\$21.36	\$0.00	\$87.90

**Notes:**

Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

**Apprentice to Journeyworker Ratio:1:1**

ELEVATOR CONSTRUCTOR HELPER	01/01/2024	\$43.39	\$16.18	\$20.96	\$0.00	\$80.53
<i>ELEVATOR CONSTRUCTORS LOCAL 41</i>	01/01/2025	\$43.98	\$16.28	\$21.36	\$0.00	\$81.62
	01/01/2026	\$44.58	\$16.38	\$21.76	\$0.00	\$82.72
	01/01/2027	\$45.17	\$16.48	\$22.16	\$0.00	\$83.81

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
<i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY	05/01/2024	\$50.79	\$15.00	\$16.40	\$0.00	\$82.19
<i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2024	\$52.08	\$15.00	\$16.40	\$0.00	\$83.48
	05/01/2025	\$53.52	\$15.00	\$16.40	\$0.00	\$84.92
	11/01/2025	\$54.81	\$15.00	\$16.40	\$0.00	\$86.21
	05/01/2026	\$56.25	\$15.00	\$16.40	\$0.00	\$87.65
	11/01/2026	\$57.54	\$15.00	\$16.40	\$0.00	\$88.94
	05/01/2027	\$58.97	\$15.00	\$16.40	\$0.00	\$90.37

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2024	\$52.37	\$15.00	\$16.40	\$0.00	\$83.77
	11/01/2024	\$53.67	\$15.00	\$16.40	\$0.00	\$85.07
	05/01/2025	\$55.12	\$15.00	\$16.40	\$0.00	\$86.52
	11/01/2025	\$56.42	\$15.00	\$16.40	\$0.00	\$87.82
	05/01/2026	\$57.87	\$15.00	\$16.40	\$0.00	\$89.27
	11/01/2026	\$59.17	\$15.00	\$16.40	\$0.00	\$90.57
	05/01/2027	\$60.62	\$15.00	\$16.40	\$0.00	\$92.02
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2024	\$24.91	\$15.00	\$16.40	\$0.00	\$56.31
	11/01/2024	\$25.67	\$15.00	\$16.40	\$0.00	\$57.07
	05/01/2025	\$26.52	\$15.00	\$16.40	\$0.00	\$57.92
	11/01/2025	\$27.28	\$15.00	\$16.40	\$0.00	\$58.68
	05/01/2026	\$28.13	\$15.00	\$16.40	\$0.00	\$59.53
	11/01/2026	\$28.89	\$15.00	\$16.40	\$0.00	\$60.29
	05/01/2027	\$29.74	\$15.00	\$16.40	\$0.00	\$61.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 96</i>	09/01/2024	\$47.05	\$13.99	\$19.22	\$0.00	\$80.26
	09/07/2025	\$48.16	\$14.98	\$19.60	\$0.00	\$82.74
	09/06/2026	\$49.38	\$15.96	\$20.00	\$0.00	\$85.34
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINT/COMMISSIONING <i>ELECTRICIANS LOCAL 96</i>	09/01/2024	\$47.05	\$13.99	\$19.22	\$0.00	\$80.26
	09/07/2025	\$48.16	\$14.98	\$19.60	\$0.00	\$82.74
	09/06/2026	\$49.38	\$15.96	\$20.00	\$0.00	\$85.34
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$45.23	\$15.30	\$16.40	\$0.00	\$76.93
	12/01/2024	\$46.41	\$15.30	\$16.40	\$0.00	\$78.11
	06/01/2025	\$47.47	\$15.30	\$16.40	\$0.00	\$79.17
	12/01/2025	\$48.64	\$15.30	\$16.40	\$0.00	\$80.34
	06/01/2026	\$49.70	\$15.30	\$16.40	\$0.00	\$81.40
	12/01/2026	\$50.88	\$15.30	\$16.40	\$0.00	\$82.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$27.01	\$9.65	\$17.80	\$0.00	\$54.46
	12/01/2024	\$27.01	\$9.65	\$17.80	\$0.00	\$54.46
	06/01/2025	\$28.09	\$9.65	\$17.80	\$0.00	\$55.54
	12/01/2025	\$28.09	\$9.65	\$17.80	\$0.00	\$55.54
	06/01/2026	\$29.21	\$9.65	\$17.80	\$0.00	\$56.66
	12/01/2026	\$29.21	\$9.65	\$17.80	\$0.00	\$56.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE II</i>	03/01/2024	\$49.47	\$8.83	\$20.27	\$0.00	\$78.57



**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - FLOORCOVERER - Local 2168 Zone II**

**Effective Date - 03/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.74	\$8.83	\$1.76	\$0.00	\$35.33
2	55	\$27.21	\$8.83	\$1.76	\$0.00	\$37.80
3	60	\$29.68	\$8.83	\$3.52	\$0.00	\$42.03
4	65	\$32.16	\$8.83	\$3.52	\$0.00	\$44.51
5	70	\$34.63	\$8.83	\$16.75	\$0.00	\$60.21
6	75	\$37.10	\$8.83	\$16.75	\$0.00	\$62.68
7	80	\$39.58	\$8.83	\$18.51	\$0.00	\$66.92
8	85	\$42.05	\$8.83	\$18.51	\$0.00	\$69.39

**Notes:** Steps are 750 hrs.  
 % After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)  
 Step 1&2 \$32.63/ 3&4 \$39.28/ 5&6 \$59.86/ 7&8 \$66.52

**Apprentice to Journeyworker Ratio:1:1**

<b>FORK LIFT/CHERRY PICKER</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>GENERATOR/LIGHTING PLANT/HEATERS</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)</b> <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	07/01/2024	\$46.76	\$9.95	\$23.95	\$0.00	\$80.66
	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - GLAZIER - Local 35 Zone 2**

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$9.95	\$0.00	\$0.00	\$33.33
2	55	\$25.72	\$9.95	\$6.66	\$0.00	\$42.33
3	60	\$28.06	\$9.95	\$7.26	\$0.00	\$45.27
4	65	\$30.39	\$9.95	\$7.87	\$0.00	\$48.21
5	70	\$32.73	\$9.95	\$20.32	\$0.00	\$63.00
6	75	\$35.07	\$9.95	\$20.93	\$0.00	\$65.95
7	80	\$37.41	\$9.95	\$21.53	\$0.00	\$68.89
8	90	\$42.08	\$9.95	\$22.74	\$0.00	\$74.77

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.98	\$9.95	\$0.00	\$0.00	\$33.93
2	55	\$26.38	\$9.95	\$6.66	\$0.00	\$42.99
3	60	\$28.78	\$9.95	\$7.26	\$0.00	\$45.99
4	65	\$31.17	\$9.95	\$7.87	\$0.00	\$48.99
5	70	\$33.57	\$9.95	\$20.32	\$0.00	\$63.84
6	75	\$35.97	\$9.95	\$20.93	\$0.00	\$66.85
7	80	\$38.37	\$9.95	\$21.53	\$0.00	\$69.85
8	90	\$43.16	\$9.95	\$22.74	\$0.00	\$75.85

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
OPERATING ENGINEERS LOCAL 4	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 06/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$30.82	\$15.30	\$0.00	\$0.00	\$46.12
2	60	\$33.62	\$15.30	\$16.40	\$0.00	\$65.32
3	65	\$36.42	\$15.30	\$16.40	\$0.00	\$68.12
4	70	\$39.22	\$15.30	\$16.40	\$0.00	\$70.92
5	75	\$42.02	\$15.30	\$16.40	\$0.00	\$73.72
6	80	\$44.82	\$15.30	\$16.40	\$0.00	\$76.52
7	85	\$47.63	\$15.30	\$16.40	\$0.00	\$79.33
8	90	\$50.43	\$15.30	\$16.40	\$0.00	\$82.13

**Effective Date - 12/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$31.61	\$0.00	\$0.00	\$0.00	\$31.61
2	60	\$34.49	\$15.30	\$16.40	\$0.00	\$66.19
3	65	\$37.36	\$15.30	\$16.40	\$0.00	\$69.06
4	70	\$40.24	\$15.30	\$16.40	\$0.00	\$71.94
5	75	\$43.11	\$15.30	\$16.40	\$0.00	\$74.81
6	80	\$45.98	\$15.30	\$16.40	\$0.00	\$77.68
7	85	\$48.86	\$15.30	\$16.40	\$0.00	\$80.56
8	90	\$51.73	\$15.30	\$16.40	\$0.00	\$83.43

**Notes:**

**Apprentice to Journeyworker Ratio:1:6**

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 63	07/01/2024	\$40.98	\$12.20	\$18.74	\$2.13	\$74.05
	01/01/2025	\$42.23	\$12.20	\$18.74	\$2.13	\$75.30

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 96	09/01/2024	\$47.05	\$13.99	\$19.22	\$0.00	\$80.26
	09/07/2025	\$48.16	\$14.98	\$19.60	\$0.00	\$82.74
	09/06/2026	\$49.38	\$15.96	\$20.00	\$0.00	\$85.34

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 63	07/01/2024	\$40.98	\$12.20	\$18.74	\$2.13	\$74.05
	01/01/2025	\$42.23	\$12.20	\$18.74	\$2.13	\$75.30

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING -WATER) PLUMBERS LOCAL 4	09/01/2024	\$55.35	\$9.90	\$17.42	\$0.00	\$82.67
	03/01/2025	\$56.75	\$9.90	\$17.42	\$0.00	\$84.07
	09/01/2025	\$58.15	\$9.90	\$17.42	\$0.00	\$85.47
	03/01/2026	\$59.55	\$9.90	\$17.42	\$0.00	\$86.87

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC MECHANIC <i>PLUMBERS LOCAL 4</i>	09/01/2024	\$55.35	\$9.90	\$17.42	\$0.00	\$82.67
	03/01/2025	\$56.75	\$9.90	\$17.42	\$0.00	\$84.07
	09/01/2025	\$58.15	\$9.90	\$17.42	\$0.00	\$85.47
	03/01/2026	\$59.55	\$9.90	\$17.42	\$0.00	\$86.87
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	06/01/2024	\$39.28	\$9.65	\$18.40	\$0.00	\$67.33
	12/01/2024	\$40.61	\$9.65	\$18.40	\$0.00	\$68.66
	06/01/2025	\$42.00	\$9.65	\$18.40	\$0.00	\$70.05
	12/01/2025	\$43.38	\$9.65	\$18.40	\$0.00	\$71.43
	06/01/2026	\$44.82	\$9.65	\$18.40	\$0.00	\$72.87
	12/01/2026	\$46.26	\$9.65	\$18.40	\$0.00	\$74.31
	06/01/2027	\$47.71	\$9.65	\$18.40	\$0.00	\$75.76
	12/01/2027	\$49.16	\$9.65	\$18.40	\$0.00	\$77.21
	06/01/2028	\$50.66	\$9.65	\$18.40	\$0.00	\$78.71
	12/01/2028	\$52.16	\$9.65	\$18.40	\$0.00	\$80.21
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$39.28	\$9.65	\$17.80	\$0.00	\$66.73
	12/01/2024	\$40.61	\$9.65	\$17.80	\$0.00	\$68.06
	06/01/2025	\$42.00	\$9.65	\$17.80	\$0.00	\$69.45
	12/01/2025	\$43.38	\$9.65	\$17.80	\$0.00	\$70.83
	06/01/2026	\$44.82	\$9.65	\$17.80	\$0.00	\$72.27
	12/01/2026	\$46.26	\$9.65	\$17.80	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (WORCESTER)</i>	09/01/2024	\$51.23	\$14.75	\$19.61	\$0.00	\$85.59
	09/01/2025	\$54.31	\$14.75	\$19.61	\$0.00	\$88.67
	09/01/2026	\$57.38	\$14.75	\$19.61	\$0.00	\$91.74

**Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Worcester**

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.62	\$14.75	\$14.32	\$0.00	\$54.69
2	60	\$30.74	\$14.75	\$15.37	\$0.00	\$60.86
3	70	\$35.86	\$14.75	\$16.43	\$0.00	\$67.04
4	80	\$40.98	\$14.75	\$17.49	\$0.00	\$73.22

**Effective Date - 09/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.16	\$14.75	\$14.32	\$0.00	\$56.23
2	60	\$32.59	\$14.75	\$15.37	\$0.00	\$62.71
3	70	\$38.02	\$14.75	\$16.43	\$0.00	\$69.20
4	80	\$43.45	\$14.75	\$17.49	\$0.00	\$75.69

**Notes:**

Steps are 1 year

**Apprentice to Journeyworker Ratio:1:4**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (WORCESTER AREA)</i>	03/16/2024	\$53.67	\$8.35	\$26.70	\$0.00	\$88.72

**Apprentice - IRONWORKER - Local 7 Worcester**

**Effective Date - 03/16/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$32.20	\$8.35	\$26.70	\$0.00	\$67.25
2	70	\$37.57	\$8.35	\$26.70	\$0.00	\$72.62
3	75	\$40.25	\$8.35	\$26.70	\$0.00	\$75.30
4	80	\$42.94	\$8.35	\$26.70	\$0.00	\$77.99
5	85	\$45.62	\$8.35	\$26.70	\$0.00	\$80.67
6	90	\$48.30	\$8.35	\$26.70	\$0.00	\$83.35

**Notes:**

**Apprentice to Journeyworker Ratio:1:4**

JACKHAMMER & PAVING BREAKER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
	12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71

For apprentice rates see "Apprentice- LABORER"

LABORER <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.53	\$9.65	\$18.40	\$0.00	\$66.58
	12/01/2024	\$39.86	\$9.65	\$18.40	\$0.00	\$67.91
	06/01/2025	\$41.25	\$9.65	\$18.40	\$0.00	\$69.30
	12/01/2025	\$42.63	\$9.65	\$18.40	\$0.00	\$70.68
	06/01/2026	\$44.07	\$9.65	\$18.40	\$0.00	\$72.12
	12/01/2026	\$45.51	\$9.65	\$18.40	\$0.00	\$73.56
	06/01/2027	\$46.96	\$9.65	\$18.40	\$0.00	\$75.01
	12/01/2027	\$48.41	\$9.65	\$18.40	\$0.00	\$76.46
	06/01/2028	\$49.91	\$9.65	\$18.40	\$0.00	\$77.96
	12/01/2028	\$51.41	\$9.65	\$18.40	\$0.00	\$79.46

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - LABORER - Zone 2**

**Effective Date - 06/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.12	\$9.65	\$18.40	\$0.00	\$51.17
2	70	\$26.97	\$9.65	\$18.40	\$0.00	\$55.02
3	80	\$30.82	\$9.65	\$18.40	\$0.00	\$58.87
4	90	\$34.68	\$9.65	\$18.40	\$0.00	\$62.73

**Effective Date - 12/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.92	\$9.65	\$18.40	\$0.00	\$51.97
2	70	\$27.90	\$9.65	\$18.40	\$0.00	\$55.95
3	80	\$31.89	\$9.65	\$18.40	\$0.00	\$59.94
4	90	\$35.87	\$9.65	\$18.40	\$0.00	\$63.92

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

LABORER (HEAVY & HIGHWAY)	06/01/2024	\$38.53	\$9.65	\$17.80	\$0.00	\$65.98
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2024	\$39.86	\$9.65	\$17.80	\$0.00	\$67.31
	06/01/2025	\$41.25	\$9.65	\$17.80	\$0.00	\$68.70
	12/01/2025	\$42.63	\$9.65	\$17.80	\$0.00	\$70.08
	06/01/2026	\$44.07	\$9.65	\$17.80	\$0.00	\$71.52
	12/01/2026	\$45.51	\$9.65	\$17.80	\$0.00	\$72.96

**Apprentice - LABORER (Heavy & Highway) - Zone 2**

**Effective Date - 06/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.12	\$9.65	\$17.80	\$0.00	\$50.57
2	70	\$26.97	\$9.65	\$17.80	\$0.00	\$54.42
3	80	\$30.82	\$9.65	\$17.80	\$0.00	\$58.27
4	90	\$34.68	\$9.65	\$17.80	\$0.00	\$62.13

**Effective Date - 12/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.92	\$9.65	\$17.80	\$0.00	\$51.37
2	70	\$27.90	\$9.65	\$17.80	\$0.00	\$55.35
3	80	\$31.89	\$9.65	\$17.80	\$0.00	\$59.34
4	90	\$35.87	\$9.65	\$17.80	\$0.00	\$63.32

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.53	\$9.65	\$18.40	\$0.00	\$66.58
	12/01/2024	\$39.86	\$9.65	\$18.40	\$0.00	\$67.91
	06/01/2025	\$41.25	\$9.65	\$18.40	\$0.00	\$69.30
	12/01/2025	\$42.63	\$9.65	\$18.40	\$0.00	\$70.68
	06/01/2026	\$44.07	\$9.65	\$18.40	\$0.00	\$72.12
	12/01/2026	\$45.51	\$9.65	\$18.40	\$0.00	\$73.56
	06/01/2027	\$46.96	\$9.65	\$18.40	\$0.00	\$75.01
	12/01/2027	\$48.41	\$9.65	\$18.40	\$0.00	\$76.46
	06/01/2028	\$49.91	\$9.65	\$18.40	\$0.00	\$77.96
	12/01/2028	\$51.41	\$9.65	\$18.40	\$0.00	\$79.46
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.53	\$9.65	\$18.40	\$0.00	\$66.58
	12/01/2024	\$39.86	\$9.65	\$18.40	\$0.00	\$67.91
	06/01/2025	\$41.25	\$9.65	\$18.40	\$0.00	\$69.30
	12/01/2025	\$42.63	\$9.65	\$18.40	\$0.00	\$70.68
	06/01/2026	\$44.07	\$9.65	\$18.40	\$0.00	\$72.12
	12/01/2026	\$45.51	\$9.65	\$18.40	\$0.00	\$73.56
	06/01/2027	\$46.96	\$9.65	\$18.40	\$0.00	\$75.01
	12/01/2027	\$48.41	\$9.65	\$18.40	\$0.00	\$76.46
	06/01/2028	\$49.91	\$9.65	\$18.40	\$0.00	\$77.96
	12/01/2028	\$51.41	\$9.65	\$18.40	\$0.00	\$79.46
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i>	06/03/2024	\$38.62	\$9.65	\$17.76	\$0.00	\$66.03
	12/02/2024	\$39.95	\$9.65	\$17.76	\$0.00	\$67.36
	06/02/2025	\$41.34	\$9.65	\$17.76	\$0.00	\$68.75
	12/01/2025	\$42.72	\$9.65	\$17.76	\$0.00	\$70.13
	06/01/2026	\$44.16	\$9.65	\$17.76	\$0.00	\$71.57
	12/07/2026	\$45.60	\$9.65	\$17.76	\$0.00	\$73.01
	06/07/2027	\$47.05	\$9.65	\$17.76	\$0.00	\$74.46
	12/06/2027	\$48.50	\$9.65	\$17.76	\$0.00	\$75.91
	06/05/2028	\$50.00	\$9.65	\$17.76	\$0.00	\$77.41
	12/04/2028	\$51.50	\$9.65	\$17.76	\$0.00	\$78.91
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
	12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.53	\$9.65	\$18.40	\$0.00	\$66.58
	12/01/2024	\$39.86	\$9.65	\$18.40	\$0.00	\$67.91
	06/01/2025	\$41.25	\$9.65	\$18.40	\$0.00	\$69.30
	12/01/2025	\$42.63	\$9.65	\$18.40	\$0.00	\$70.68
	06/01/2026	\$44.07	\$9.65	\$18.40	\$0.00	\$72.12
	12/01/2026	\$45.51	\$9.65	\$18.40	\$0.00	\$73.56
	06/01/2027	\$46.96	\$9.65	\$18.40	\$0.00	\$75.01
	12/01/2027	\$48.41	\$9.65	\$18.40	\$0.00	\$76.46
	06/01/2028	\$49.91	\$9.65	\$18.40	\$0.00	\$77.96
12/01/2028	\$51.41	\$9.65	\$18.40	\$0.00	\$79.46	
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.53	\$9.65	\$18.40	\$0.00	\$66.58
	12/01/2024	\$39.86	\$9.65	\$18.40	\$0.00	\$67.91
	06/01/2025	\$41.25	\$9.65	\$18.40	\$0.00	\$69.30
	12/01/2025	\$42.63	\$9.65	\$18.40	\$0.00	\$70.68
	06/01/2026	\$44.07	\$9.65	\$18.40	\$0.00	\$72.12
	12/01/2026	\$45.51	\$9.65	\$18.40	\$0.00	\$73.56
	06/01/2027	\$46.96	\$9.65	\$18.40	\$0.00	\$75.01
	12/01/2027	\$48.41	\$9.65	\$18.40	\$0.00	\$76.46
	06/01/2028	\$49.91	\$9.65	\$18.40	\$0.00	\$77.96
12/01/2028	\$51.41	\$9.65	\$18.40	\$0.00	\$79.46	
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 <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71	
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
MARBLE & TILE FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2024	\$49.32	\$11.49	\$21.62	\$0.00	\$82.43
	02/01/2025	\$50.36	\$11.49	\$21.62	\$0.00	\$83.47
	08/01/2025	\$52.08	\$11.49	\$21.62	\$0.00	\$85.19
	02/01/2026	\$53.16	\$11.49	\$21.62	\$0.00	\$86.27
	08/01/2026	\$54.92	\$11.49	\$21.62	\$0.00	\$88.03
	02/01/2027	\$56.04	\$11.49	\$21.62	\$0.00	\$89.15

**Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile**

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.66	\$11.49	\$21.62	\$0.00	\$57.77
2	60	\$29.59	\$11.49	\$21.62	\$0.00	\$62.70
3	70	\$34.52	\$11.49	\$21.62	\$0.00	\$67.63
4	80	\$39.46	\$11.49	\$21.62	\$0.00	\$72.57
5	90	\$44.39	\$11.49	\$21.62	\$0.00	\$77.50

**Effective Date - 02/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.18	\$11.49	\$21.62	\$0.00	\$58.29
2	60	\$30.22	\$11.49	\$21.62	\$0.00	\$63.33
3	70	\$35.25	\$11.49	\$21.62	\$0.00	\$68.36
4	80	\$40.29	\$11.49	\$21.62	\$0.00	\$73.40
5	90	\$45.32	\$11.49	\$21.62	\$0.00	\$78.43

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

MARBLE MASONS, TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2024	\$64.52	\$11.49	\$23.56	\$0.00	\$99.57
	02/01/2025	\$65.82	\$11.49	\$23.56	\$0.00	\$100.87
	08/01/2025	\$67.97	\$11.49	\$23.56	\$0.00	\$103.02
	02/01/2026	\$69.32	\$11.49	\$23.56	\$0.00	\$104.37
	08/01/2026	\$71.52	\$11.49	\$23.56	\$0.00	\$106.57
	02/01/2027	\$72.92	\$11.49	\$23.56	\$0.00	\$107.97

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile**

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.26	\$11.49	\$23.56	\$0.00	\$67.31
2	60	\$38.71	\$11.49	\$23.56	\$0.00	\$73.76
3	70	\$45.16	\$11.49	\$23.56	\$0.00	\$80.21
4	80	\$51.62	\$11.49	\$23.56	\$0.00	\$86.67
5	90	\$58.07	\$11.49	\$23.56	\$0.00	\$93.12

**Effective Date - 02/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.91	\$11.49	\$23.56	\$0.00	\$67.96
2	60	\$39.49	\$11.49	\$23.56	\$0.00	\$74.54
3	70	\$46.07	\$11.49	\$23.56	\$0.00	\$81.12
4	80	\$52.66	\$11.49	\$23.56	\$0.00	\$87.71
5	90	\$59.24	\$11.49	\$23.56	\$0.00	\$94.29

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 3) <i>MILLWRIGHTS LOCAL 1121 - Zone 3</i>	01/01/2024	\$41.20	\$10.08	\$21.22	\$0.00	\$72.50
	01/06/2025	\$43.48	\$10.08	\$21.22	\$0.00	\$74.78
	01/05/2026	\$45.76	\$10.08	\$21.22	\$0.00	\$77.06

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - MILLWRIGHT - Local 1121 Zone 3**

**Effective Date - 01/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.66	\$10.08	\$5.36	\$0.00	\$38.10
2	65	\$26.78	\$10.08	\$6.34	\$0.00	\$43.20
3	75	\$30.90	\$10.08	\$18.78	\$0.00	\$59.76
4	85	\$35.02	\$10.08	\$19.76	\$0.00	\$64.86

**Effective Date - 01/06/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.91	\$10.08	\$5.36	\$0.00	\$39.35
2	65	\$28.26	\$10.08	\$6.34	\$0.00	\$44.68
3	75	\$32.61	\$10.08	\$18.78	\$0.00	\$61.47
4	85	\$36.96	\$10.08	\$19.76	\$0.00	\$66.80

**Notes:** Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66)  
Steps are 2,000 hours

**Apprentice to Journeyworker Ratio:1:4**

MORTAR MIXER LABORERS - ZONE 2	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
	12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2024	\$24.71	\$15.30	\$16.40	\$0.00	\$56.41
	12/01/2024	\$25.37	\$15.30	\$16.40	\$0.00	\$57.07
	06/01/2025	\$25.97	\$15.30	\$16.40	\$0.00	\$57.67
	12/01/2025	\$26.63	\$15.30	\$16.40	\$0.00	\$58.33
	06/01/2026	\$27.22	\$15.30	\$16.40	\$0.00	\$58.92
	12/01/2026	\$27.89	\$15.30	\$16.40	\$0.00	\$59.59

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2024	\$30.28	\$15.30	\$16.40	\$0.00	\$61.98
	12/01/2024	\$31.08	\$15.30	\$16.40	\$0.00	\$62.78
	06/01/2025	\$31.80	\$15.30	\$16.40	\$0.00	\$63.50
	12/01/2025	\$32.60	\$15.30	\$16.40	\$0.00	\$64.30
	06/01/2026	\$33.32	\$15.30	\$16.40	\$0.00	\$65.02
	12/01/2026	\$34.12	\$15.30	\$16.40	\$0.00	\$65.82

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$9.95	\$0.00	\$0.00	\$38.58
2	55	\$31.49	\$9.95	\$6.66	\$0.00	\$48.10
3	60	\$34.36	\$9.95	\$7.26	\$0.00	\$51.57
4	65	\$37.22	\$9.95	\$7.87	\$0.00	\$55.04
5	70	\$40.08	\$9.95	\$20.32	\$0.00	\$70.35
6	75	\$42.95	\$9.95	\$20.93	\$0.00	\$73.83
7	80	\$45.81	\$9.95	\$21.53	\$0.00	\$77.29
8	90	\$51.53	\$9.95	\$22.74	\$0.00	\$84.22

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$29.23	\$9.95	\$0.00	\$0.00	\$39.18
2	55	\$32.15	\$9.95	\$6.66	\$0.00	\$48.76
3	60	\$35.08	\$9.95	\$7.26	\$0.00	\$52.29
4	65	\$38.00	\$9.95	\$7.87	\$0.00	\$55.82
5	70	\$40.92	\$9.95	\$20.32	\$0.00	\$71.19
6	75	\$43.85	\$9.95	\$20.93	\$0.00	\$74.73
7	80	\$46.77	\$9.95	\$21.53	\$0.00	\$78.25
8	90	\$52.61	\$9.95	\$22.74	\$0.00	\$85.30

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2024	\$48.16	\$9.95	\$23.95	\$0.00	\$82.06
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2025	\$49.36	\$9.95	\$23.95	\$0.00	\$83.26

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New**

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.08	\$9.95	\$0.00	\$0.00	\$34.03
2	55	\$26.49	\$9.95	\$6.66	\$0.00	\$43.10
3	60	\$28.90	\$9.95	\$7.26	\$0.00	\$46.11
4	65	\$31.30	\$9.95	\$7.87	\$0.00	\$49.12
5	70	\$33.71	\$9.95	\$20.32	\$0.00	\$63.98
6	75	\$36.12	\$9.95	\$20.93	\$0.00	\$67.00
7	80	\$38.53	\$9.95	\$21.53	\$0.00	\$70.01
8	90	\$43.34	\$9.95	\$22.74	\$0.00	\$76.03

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.68	\$9.95	\$0.00	\$0.00	\$34.63
2	55	\$27.15	\$9.95	\$6.66	\$0.00	\$43.76
3	60	\$29.62	\$9.95	\$7.26	\$0.00	\$46.83
4	65	\$32.08	\$9.95	\$7.87	\$0.00	\$49.90
5	70	\$34.55	\$9.95	\$20.32	\$0.00	\$64.82
6	75	\$37.02	\$9.95	\$20.93	\$0.00	\$67.90
7	80	\$39.49	\$9.95	\$21.53	\$0.00	\$70.97
8	90	\$44.42	\$9.95	\$22.74	\$0.00	\$77.11

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, REPAINT)	07/01/2024	\$46.22	\$9.95	\$23.95	\$0.00	\$80.12
PAINTERS LOCAL 35 - ZONE 2	01/01/2025	\$47.42	\$9.95	\$23.95	\$0.00	\$81.32

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.11	\$9.95	\$0.00	\$0.00	\$33.06
2	55	\$25.42	\$9.95	\$6.66	\$0.00	\$42.03
3	60	\$27.73	\$9.95	\$7.26	\$0.00	\$44.94
4	65	\$30.04	\$9.95	\$7.87	\$0.00	\$47.86
5	70	\$32.35	\$9.95	\$20.32	\$0.00	\$62.62
6	75	\$34.67	\$9.95	\$20.93	\$0.00	\$65.55
7	80	\$36.98	\$9.95	\$21.53	\$0.00	\$68.46
8	90	\$41.60	\$9.95	\$22.74	\$0.00	\$74.29

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.71	\$9.95	\$0.00	\$0.00	\$33.66
2	55	\$26.08	\$9.95	\$6.66	\$0.00	\$42.69
3	60	\$28.45	\$9.95	\$7.26	\$0.00	\$45.66
4	65	\$30.82	\$9.95	\$7.87	\$0.00	\$48.64
5	70	\$33.19	\$9.95	\$20.32	\$0.00	\$63.46
6	75	\$35.57	\$9.95	\$20.93	\$0.00	\$66.45
7	80	\$37.94	\$9.95	\$21.53	\$0.00	\$69.42
8	90	\$42.68	\$9.95	\$22.74	\$0.00	\$75.37

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER / TAPER (BRUSH, NEW) *	07/01/2024	\$46.76	\$9.95	\$23.95	\$0.00	\$80.66
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW**

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$9.95	\$0.00	\$0.00	\$33.33
2	55	\$25.72	\$9.95	\$6.66	\$0.00	\$42.33
3	60	\$28.06	\$9.95	\$7.26	\$0.00	\$45.27
4	65	\$30.39	\$9.95	\$7.87	\$0.00	\$48.21
5	70	\$32.73	\$9.95	\$20.32	\$0.00	\$63.00
6	75	\$35.07	\$9.95	\$20.93	\$0.00	\$65.95
7	80	\$37.41	\$9.95	\$21.53	\$0.00	\$68.89
8	90	\$42.08	\$9.95	\$22.74	\$0.00	\$74.77

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.98	\$9.95	\$0.00	\$0.00	\$33.93
2	55	\$26.38	\$9.95	\$6.66	\$0.00	\$42.99
3	60	\$28.78	\$9.95	\$7.26	\$0.00	\$45.99
4	65	\$31.17	\$9.95	\$7.87	\$0.00	\$48.99
5	70	\$33.57	\$9.95	\$20.32	\$0.00	\$63.84
6	75	\$35.97	\$9.95	\$20.93	\$0.00	\$66.85
7	80	\$38.37	\$9.95	\$21.53	\$0.00	\$69.85
8	90	\$43.16	\$9.95	\$22.74	\$0.00	\$75.85

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER / TAPER (BRUSH, REPAINT)	07/01/2024	\$44.82	\$9.95	\$23.95	\$0.00	\$78.72
PAINTERS LOCAL 35 - ZONE 2	01/01/2025	\$46.02	\$9.95	\$23.95	\$0.00	\$79.92

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT**

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.41	\$9.95	\$0.00	\$0.00	\$32.36
2	55	\$24.65	\$9.95	\$6.66	\$0.00	\$41.26
3	60	\$26.89	\$9.95	\$7.26	\$0.00	\$44.10
4	65	\$29.13	\$9.95	\$7.87	\$0.00	\$46.95
5	70	\$31.37	\$9.95	\$20.32	\$0.00	\$61.64
6	75	\$33.62	\$9.95	\$20.93	\$0.00	\$64.50
7	80	\$35.86	\$9.95	\$21.53	\$0.00	\$67.34
8	90	\$40.34	\$9.95	\$22.74	\$0.00	\$73.03

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.01	\$9.95	\$0.00	\$0.00	\$32.96
2	55	\$25.31	\$9.95	\$6.66	\$0.00	\$41.92
3	60	\$27.61	\$9.95	\$7.26	\$0.00	\$44.82
4	65	\$29.91	\$9.95	\$7.87	\$0.00	\$47.73
5	70	\$32.21	\$9.95	\$20.32	\$0.00	\$62.48
6	75	\$34.52	\$9.95	\$20.93	\$0.00	\$65.40
7	80	\$36.82	\$9.95	\$21.53	\$0.00	\$68.30
8	90	\$41.42	\$9.95	\$22.74	\$0.00	\$74.11

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	06/01/2024	\$38.53	\$9.65	\$17.80	\$0.00	\$65.98
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2024	\$39.86	\$9.65	\$17.80	\$0.00	\$67.31
	06/01/2025	\$41.25	\$9.65	\$17.80	\$0.00	\$68.70
	12/01/2025	\$42.63	\$9.65	\$17.80	\$0.00	\$70.08
	06/01/2026	\$44.07	\$9.65	\$17.80	\$0.00	\$71.52
	12/01/2026	\$45.51	\$9.65	\$17.80	\$0.00	\$72.96

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

PANEL & PICKUP TRUCKS DRIVER	06/01/2024	\$39.78	\$15.07	\$18.67	\$0.00	\$73.52
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2024	\$39.78	\$15.07	\$20.17	\$0.00	\$75.02
	01/01/2025	\$39.78	\$15.57	\$20.17	\$0.00	\$75.52
	06/01/2025	\$40.78	\$15.57	\$20.17	\$0.00	\$76.52
	12/01/2025	\$40.78	\$15.57	\$21.78	\$0.00	\$78.13
	01/01/2026	\$40.78	\$16.17	\$21.78	\$0.00	\$78.73
	06/01/2026	\$41.78	\$16.17	\$21.78	\$0.00	\$79.73
	12/01/2026	\$41.78	\$16.17	\$23.52	\$0.00	\$81.47
	01/01/2027	\$41.78	\$16.77	\$23.52	\$0.00	\$82.07



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$46.11	\$9.40	\$23.12	\$0.00	\$78.63
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2020	\$46.11	\$9.40	\$23.12	\$0.00	\$78.63

**Apprentice - PILE DRIVER - Local 56 Zone 2**

**Effective Date - 08/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

**Notes:** Apprentice wages shall be no less than the following Steps;  
(Same as set in Zone 1)  
1\$57.06/2\$61.96/3\$66.87/4\$69.32/5\$71.78/6\$71.78/7\$76.68/8\$76.68

**Apprentice to Journeyworker Ratio:1:5**

PIPELAYER <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
	12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

PLUMBER & PIPEFITTER <i>PLUMBERS LOCAL 4</i>	09/01/2024	\$55.35	\$9.90	\$17.42	\$0.00	\$82.67
	03/01/2025	\$56.75	\$9.90	\$17.42	\$0.00	\$84.07
	09/01/2025	\$58.15	\$9.90	\$17.42	\$0.00	\$85.47
	03/01/2026	\$59.55	\$9.90	\$17.42	\$0.00	\$86.87

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PLUMBER/PIPEFITTER - Local 4**

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$22.14	\$9.90	\$0.00	\$0.00	\$32.04
2	50	\$27.68	\$9.90	\$0.00	\$0.00	\$37.58
3	60	\$33.21	\$9.90	\$0.00	\$0.00	\$43.11
4	70	\$38.75	\$9.90	\$7.71	\$0.00	\$56.36
5	80	\$44.28	\$9.90	\$7.71	\$0.00	\$61.89

**Effective Date - 03/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$22.70	\$9.90	\$0.00	\$0.00	\$32.60
2	50	\$28.38	\$9.90	\$0.00	\$0.00	\$38.28
3	60	\$34.05	\$9.90	\$0.00	\$0.00	\$43.95
4	70	\$39.73	\$9.90	\$7.71	\$0.00	\$57.34
5	80	\$45.40	\$9.90	\$7.71	\$0.00	\$63.01

**Notes:**

Steps - 2000 hrs; Step 4 w/lic 75%, Step 5 w/lic 85%  
Step 4 w/lic \$52.59, Step 5 w/lic \$57.44

**Apprentice to Journeyworker Ratio:1:3**

PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS LOCAL 4</i>	09/01/2024	\$55.35	\$9.90	\$17.42	\$0.00	\$82.67
	03/01/2025	\$56.75	\$9.90	\$17.42	\$0.00	\$84.07
	09/01/2025	\$58.15	\$9.90	\$17.42	\$0.00	\$85.47
	03/01/2026	\$59.55	\$9.90	\$17.42	\$0.00	\$86.87

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2024	\$39.28	\$9.65	\$18.40	\$0.00	\$67.33
	12/01/2024	\$40.61	\$9.65	\$18.40	\$0.00	\$68.66
	06/01/2025	\$42.00	\$9.65	\$18.40	\$0.00	\$70.05
	12/01/2025	\$43.38	\$9.65	\$18.40	\$0.00	\$71.43
	06/01/2026	\$44.82	\$9.65	\$18.40	\$0.00	\$72.87
	12/01/2026	\$46.26	\$9.65	\$18.40	\$0.00	\$74.31
	06/01/2027	\$47.71	\$9.65	\$18.40	\$0.00	\$75.76
	12/01/2027	\$49.16	\$9.65	\$18.40	\$0.00	\$77.21
	06/01/2028	\$50.66	\$9.65	\$18.40	\$0.00	\$78.71
	12/01/2028	\$52.16	\$9.65	\$18.40	\$0.00	\$80.21

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	06/01/2024	\$39.53	\$9.65	\$18.40	\$0.00	\$67.58
	12/01/2024	\$40.86	\$9.65	\$18.40	\$0.00	\$68.91
	06/01/2025	\$42.25	\$9.65	\$18.40	\$0.00	\$70.30
	12/01/2025	\$43.63	\$9.65	\$18.40	\$0.00	\$71.68
	06/01/2026	\$45.07	\$9.65	\$18.40	\$0.00	\$73.12
	12/01/2026	\$46.51	\$9.65	\$18.40	\$0.00	\$74.56
	06/01/2027	\$47.96	\$9.65	\$18.40	\$0.00	\$76.01
	12/01/2027	\$49.41	\$9.65	\$18.40	\$0.00	\$77.46
	06/01/2028	\$50.91	\$9.65	\$18.40	\$0.00	\$78.96
	12/01/2028	\$52.41	\$9.65	\$18.40	\$0.00	\$80.46
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$39.53	\$9.40	\$17.55	\$0.00	\$66.48
	12/01/2024	\$40.86	\$9.40	\$17.55	\$0.00	\$67.81
	06/01/2025	\$42.25	\$9.40	\$17.55	\$0.00	\$69.20
	12/01/2025	\$43.63	\$9.40	\$17.55	\$0.00	\$70.58
	06/01/2026	\$45.07	\$9.40	\$17.55	\$0.00	\$72.02
	12/01/2026	\$46.51	\$9.40	\$17.55	\$0.00	\$73.46
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 170 - Dauphinais (Bellingham)</i>	01/01/2024	\$27.00	\$10.76	\$5.45	\$0.00	\$43.21
	12/01/2024	\$27.60	\$11.26	\$6.15	\$0.00	\$45.01
	01/01/2025	\$27.60	\$11.26	\$6.15	\$0.00	\$45.01

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2024	\$38.78	\$9.65	\$18.40	\$0.00	\$66.83
	12/01/2024	\$40.11	\$9.65	\$18.40	\$0.00	\$68.16
	06/01/2025	\$41.50	\$9.65	\$18.40	\$0.00	\$69.55
	12/01/2025	\$42.88	\$9.65	\$18.40	\$0.00	\$70.93
	06/01/2026	\$44.32	\$9.65	\$18.40	\$0.00	\$72.37
	12/01/2026	\$45.76	\$9.65	\$18.40	\$0.00	\$73.81
	06/01/2027	\$47.21	\$9.65	\$18.40	\$0.00	\$75.26
	12/01/2027	\$48.66	\$9.65	\$18.40	\$0.00	\$76.71
	06/01/2028	\$50.16	\$9.65	\$18.40	\$0.00	\$78.21
12/01/2028	\$51.66	\$9.65	\$18.40	\$0.00	\$79.71	
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	08/01/2024	\$51.03	\$13.03	\$21.70	\$0.00	\$85.76
	02/01/2025	\$52.28	\$13.03	\$21.70	\$0.00	\$87.01
	08/01/2025	\$53.78	\$13.03	\$21.70	\$0.00	\$88.51
	02/01/2026	\$55.03	\$13.03	\$21.70	\$0.00	\$89.76

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - ROOFER - Local 33**

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.52	\$13.03	\$6.52	\$0.00	\$45.07
2	60	\$30.62	\$13.03	\$21.70	\$0.00	\$65.35
3	65	\$33.17	\$13.03	\$21.70	\$0.00	\$67.90
4	75	\$38.27	\$13.03	\$21.70	\$0.00	\$73.00
5	85	\$43.38	\$13.03	\$21.70	\$0.00	\$78.11

**Effective Date - 02/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.14	\$13.03	\$6.52	\$0.00	\$45.69
2	60	\$31.37	\$13.03	\$21.70	\$0.00	\$66.10
3	65	\$33.98	\$13.03	\$21.70	\$0.00	\$68.71
4	75	\$39.21	\$13.03	\$21.70	\$0.00	\$73.94
5	85	\$44.44	\$13.03	\$21.70	\$0.00	\$79.17

**Notes:** \*\* 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1  
 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.  
 (Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

**Apprentice to Journeyworker Ratio:\*\***

ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 33</i>	08/01/2024	\$51.28	\$13.03	\$21.70	\$0.00	\$86.01
	02/01/2025	\$52.53	\$13.03	\$21.70	\$0.00	\$87.26
	08/01/2025	\$54.03	\$13.03	\$21.70	\$0.00	\$88.76
	02/01/2026	\$55.28	\$13.03	\$21.70	\$0.00	\$90.01
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 63</i>	07/01/2024	\$40.98	\$12.20	\$18.74	\$2.13	\$74.05
	01/01/2025	\$42.23	\$12.20	\$18.74	\$2.13	\$75.30

**Apprentice - SHEET METAL WORKER - Local 63**

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$18.44	\$5.49	\$4.86	\$0.85	\$29.64
2	50	\$20.49	\$6.10	\$5.40	\$0.94	\$32.93
3	55	\$22.54	\$6.71	\$9.71	\$1.15	\$40.11
4	60	\$24.59	\$7.32	\$9.71	\$1.23	\$42.85
5	65	\$26.64	\$7.93	\$9.71	\$1.31	\$45.59
6	70	\$28.69	\$8.54	\$9.71	\$1.39	\$48.33
7	75	\$30.74	\$9.15	\$9.71	\$1.47	\$51.07
8	80	\$32.78	\$9.76	\$17.66	\$1.78	\$61.98
9	85	\$34.83	\$10.37	\$17.66	\$1.86	\$64.72
10	90	\$36.88	\$10.98	\$17.66	\$1.94	\$67.46

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$19.00	\$5.49	\$4.86	\$0.85	\$30.20
2	50	\$21.12	\$6.10	\$5.40	\$0.94	\$33.56
3	55	\$23.23	\$6.71	\$9.71	\$1.15	\$40.80
4	60	\$25.34	\$7.32	\$9.71	\$1.23	\$43.60
5	65	\$27.45	\$7.93	\$9.71	\$1.31	\$46.40
6	70	\$29.56	\$8.54	\$9.71	\$1.39	\$49.20
7	75	\$31.67	\$9.15	\$9.71	\$1.47	\$52.00
8	80	\$33.78	\$9.76	\$17.66	\$1.78	\$62.98
9	85	\$35.90	\$10.37	\$17.66	\$1.86	\$65.79
10	90	\$38.01	\$10.98	\$17.66	\$1.94	\$68.59

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

SPECIALIZED EARTH MOVING EQUIP < 35 TONS	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
	01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.53	\$15.07	\$18.67	\$0.00	\$74.27
	12/01/2024	\$40.53	\$15.07	\$20.17	\$0.00	\$75.77
	01/01/2025	\$40.53	\$15.57	\$20.17	\$0.00	\$76.27
	06/01/2025	\$41.53	\$15.57	\$20.17	\$0.00	\$77.27
	12/01/2025	\$41.53	\$15.57	\$21.78	\$0.00	\$78.88
	01/01/2026	\$41.53	\$16.17	\$21.78	\$0.00	\$79.48
	06/01/2026	\$42.53	\$16.17	\$21.78	\$0.00	\$80.48
	12/01/2026	\$42.53	\$16.17	\$23.52	\$0.00	\$82.22
	01/01/2027	\$42.53	\$16.77	\$23.52	\$0.00	\$82.82
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 669</i>	04/01/2023	\$47.43	\$11.45	\$16.61	\$0.00	\$75.49

**Apprentice - SPRINKLER FITTER - Local 669**

Effective Date - 04/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.34	\$8.22	\$0.00	\$0.00	\$29.56
2	50	\$23.72	\$8.22	\$0.00	\$0.00	\$31.94
3	55	\$26.09	\$11.45	\$7.20	\$0.00	\$44.74
4	60	\$28.46	\$11.45	\$8.35	\$0.00	\$48.26
5	65	\$30.83	\$11.45	\$8.35	\$0.00	\$50.63
6	70	\$33.20	\$11.45	\$8.60	\$0.00	\$53.25
7	75	\$35.57	\$11.45	\$8.60	\$0.00	\$55.62
8	80	\$37.94	\$11.45	\$8.60	\$0.00	\$57.99
9	85	\$40.32	\$11.45	\$8.60	\$0.00	\$60.37
10	90	\$42.69	\$11.45	\$8.60	\$0.00	\$62.74

Notes:

Apprentice to Journeyworker Ratio:1:1

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2024	\$63.44	\$11.49	\$23.59	\$0.00	\$98.52
	02/01/2025	\$64.74	\$11.49	\$23.59	\$0.00	\$99.82
	08/01/2025	\$66.89	\$11.49	\$23.59	\$0.00	\$101.97
	02/01/2026	\$68.24	\$11.49	\$23.59	\$0.00	\$103.32
	08/01/2026	\$70.44	\$11.49	\$23.59	\$0.00	\$105.52
	02/01/2027	\$71.84	\$11.49	\$23.59	\$0.00	\$106.92

**Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile**

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.72	\$11.49	\$23.59	\$0.00	\$66.80
2	60	\$38.06	\$11.49	\$23.59	\$0.00	\$73.14
3	70	\$44.41	\$11.49	\$23.59	\$0.00	\$79.49
4	80	\$50.75	\$11.49	\$23.59	\$0.00	\$85.83
5	90	\$57.10	\$11.49	\$23.59	\$0.00	\$92.18

**Effective Date - 02/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.37	\$11.49	\$23.59	\$0.00	\$67.45
2	60	\$38.84	\$11.49	\$23.59	\$0.00	\$73.92
3	70	\$45.32	\$11.49	\$23.59	\$0.00	\$80.40
4	80	\$51.79	\$11.49	\$23.59	\$0.00	\$86.87
5	90	\$58.27	\$11.49	\$23.59	\$0.00	\$93.35

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

TEST BORING DRILLER LABORERS - FOUNDATION AND MARINE	06/01/2024	\$49.81	\$9.65	\$18.22	\$0.00	\$77.68
	12/01/2024	\$51.28	\$9.65	\$18.22	\$0.00	\$79.15
	06/01/2025	\$52.78	\$9.65	\$18.22	\$0.00	\$80.65
	12/01/2025	\$54.28	\$9.65	\$18.22	\$0.00	\$82.15
	06/01/2026	\$55.83	\$9.65	\$18.22	\$0.00	\$83.70
	12/01/2026	\$57.33	\$9.65	\$18.22	\$0.00	\$85.20

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER LABORERS - FOUNDATION AND MARINE	06/01/2024	\$45.60	\$9.65	\$18.22	\$0.00	\$73.47
	12/01/2024	\$47.07	\$9.65	\$18.22	\$0.00	\$74.94
	06/01/2025	\$48.57	\$9.65	\$18.22	\$0.00	\$76.44
	12/01/2025	\$50.07	\$9.65	\$18.22	\$0.00	\$77.94
	06/01/2026	\$51.62	\$9.65	\$18.22	\$0.00	\$79.49
	12/01/2026	\$53.12	\$9.65	\$18.22	\$0.00	\$80.99

For apprentice rates see "Apprentice- LABORER"



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.48	\$9.65	\$18.22	\$0.00	\$73.35
	12/01/2024	\$46.95	\$9.65	\$18.22	\$0.00	\$74.82
	06/01/2025	\$48.45	\$9.65	\$18.22	\$0.00	\$76.32
	12/01/2025	\$49.95	\$9.65	\$18.22	\$0.00	\$77.82
	06/01/2026	\$51.50	\$9.65	\$18.22	\$0.00	\$79.37
	12/01/2026	\$53.00	\$9.65	\$18.22	\$0.00	\$80.87
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.82	\$15.07	\$18.67	\$0.00	\$74.56
	12/01/2024	\$40.82	\$15.07	\$20.17	\$0.00	\$76.06
	01/01/2025	\$40.82	\$15.57	\$20.17	\$0.00	\$76.56
	06/01/2025	\$41.82	\$15.57	\$20.17	\$0.00	\$77.56
	12/01/2025	\$41.82	\$15.57	\$21.78	\$0.00	\$79.17
	01/01/2026	\$41.82	\$16.17	\$21.78	\$0.00	\$79.77
	06/01/2026	\$42.82	\$16.17	\$21.78	\$0.00	\$80.77
	12/01/2026	\$42.82	\$16.17	\$23.52	\$0.00	\$82.51
01/01/2027	\$42.82	\$16.77	\$23.52	\$0.00	\$83.11	
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2024	\$57.71	\$9.65	\$19.00	\$0.00	\$86.36
	12/01/2024	\$59.18	\$9.65	\$19.00	\$0.00	\$87.83
	06/01/2025	\$60.68	\$9.65	\$19.00	\$0.00	\$89.33
	12/01/2025	\$62.18	\$9.65	\$19.00	\$0.00	\$90.83
	06/01/2026	\$63.73	\$9.65	\$19.00	\$0.00	\$92.38
	12/01/2026	\$65.23	\$9.65	\$19.00	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2024	\$59.71	\$9.65	\$19.00	\$0.00	\$88.36
	12/01/2024	\$61.18	\$9.65	\$19.00	\$0.00	\$89.83
	06/01/2025	\$62.68	\$9.65	\$19.00	\$0.00	\$91.33
	12/01/2025	\$64.18	\$9.65	\$19.00	\$0.00	\$92.83
	06/01/2026	\$65.73	\$9.65	\$19.00	\$0.00	\$94.38
	12/01/2026	\$67.23	\$9.65	\$19.00	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2024	\$49.78	\$9.65	\$19.00	\$0.00	\$78.43
	12/01/2024	\$51.25	\$9.65	\$19.00	\$0.00	\$79.90
	06/01/2025	\$52.75	\$9.65	\$19.00	\$0.00	\$81.40
	12/01/2025	\$54.25	\$9.65	\$19.00	\$0.00	\$82.90
	06/01/2026	\$55.80	\$9.65	\$19.00	\$0.00	\$84.45
	12/01/2026	\$57.30	\$9.65	\$19.00	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"						

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2024	\$51.78	\$9.65	\$19.00	\$0.00	\$80.43
	12/01/2024	\$53.25	\$9.65	\$19.00	\$0.00	\$81.90
	06/01/2025	\$54.75	\$9.65	\$19.00	\$0.00	\$83.40
	12/01/2025	\$56.25	\$9.65	\$19.00	\$0.00	\$84.90
	06/01/2026	\$57.80	\$9.65	\$19.00	\$0.00	\$86.45
	12/01/2026	\$59.30	\$9.65	\$19.00	\$0.00	\$87.95
	For apprentice rates see "Apprentice- LABORER"					
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53	
VOICE-DATA-VIDEO TECHNICIAN <i>ELECTRICIANS LOCAL 96</i>	09/01/2024	\$35.29	\$13.99	\$17.57	\$0.00	\$66.85
	09/07/2025	\$36.12	\$14.98	\$17.91	\$0.00	\$69.01
	09/06/2026	\$37.04	\$15.96	\$18.27	\$0.00	\$71.27

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - VOICE-DATA-VIDEO TECHNICIAN - Local 96**

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.65	\$13.99	\$4.41	\$0.00	\$36.05
2	55	\$19.41	\$13.99	\$4.46	\$0.00	\$37.86
3	60	\$21.17	\$13.99	\$17.15	\$0.00	\$52.31
4	65	\$22.94	\$13.99	\$17.20	\$0.00	\$54.13
5	70	\$24.70	\$13.99	\$17.25	\$0.00	\$55.94
6	75	\$26.47	\$13.99	\$17.30	\$0.00	\$57.76
7	80	\$28.23	\$13.99	\$17.36	\$0.00	\$59.58
8	85	\$30.00	\$13.99	\$17.41	\$0.00	\$61.40

**Effective Date - 09/07/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.06	\$14.98	\$4.51	\$0.00	\$37.55
2	55	\$19.87	\$14.98	\$4.57	\$0.00	\$39.42
3	60	\$21.67	\$14.98	\$17.48	\$0.00	\$54.13
4	65	\$23.48	\$14.98	\$17.53	\$0.00	\$55.99
5	70	\$25.28	\$14.98	\$17.59	\$0.00	\$57.85
6	75	\$27.09	\$14.98	\$17.64	\$0.00	\$59.71
7	80	\$28.90	\$14.98	\$17.70	\$0.00	\$61.58
8	85	\$30.70	\$14.98	\$17.75	\$0.00	\$63.43

**Notes:**

**Apprentice to Journeyworker Ratio:1:1**

WAGON DRILL OPERATOR LABORERS - ZONE 2	06/01/2024	\$39.28	\$9.65	\$18.40	\$0.00	\$67.33
	12/01/2024	\$40.61	\$9.65	\$18.40	\$0.00	\$68.66
	06/01/2025	\$42.00	\$9.65	\$18.40	\$0.00	\$70.05
	12/01/2025	\$43.38	\$9.65	\$18.40	\$0.00	\$71.43
	06/01/2026	\$44.82	\$9.65	\$18.40	\$0.00	\$72.87
	12/01/2026	\$46.26	\$9.65	\$18.40	\$0.00	\$74.31
	06/01/2027	\$47.71	\$9.65	\$18.40	\$0.00	\$75.76
	12/01/2027	\$49.16	\$9.65	\$18.40	\$0.00	\$77.21
	06/01/2028	\$50.66	\$9.65	\$18.40	\$0.00	\$78.71
	12/01/2028	\$52.16	\$9.65	\$18.40	\$0.00	\$80.21

For apprentice rates see "Apprentice- LABORER"

WAGON DRILL OPERATOR (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS LOCAL 4</i>	09/01/2024	\$55.35	\$9.90	\$17.42	\$0.00	\$82.67
	03/01/2025	\$56.75	\$9.90	\$17.42	\$0.00	\$84.07
	09/01/2025	\$58.15	\$9.90	\$17.42	\$0.00	\$85.47
	03/01/2026	\$59.55	\$9.90	\$17.42	\$0.00	\$86.87
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

\*\* Multiple ratios are listed in the comment field.

\*\*\* APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

\*\*\*\* APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

## ATTACHMENT B

### Excerpts from Chapters 30, 82 and 149 of the Massachusetts General Laws

***NOTICE** - These are **NOT** the official versions of the Massachusetts General Laws (MGL). While reasonable efforts have been made to assure the accuracy of the excerpts provided, do not rely on this information without first checking an official edition of the MGL. If you are in need of legal advice or counsel, consult a lawyer. These excerpts include amendments to the General Laws passed before January 4, 2023. For laws enacted since that time, see the 2023 and 2024 Session Laws.*

**CERTAIN EXCERPTS FROM THE MASSACHUSETTS GENERAL LAWS ARE APPLICABLE TO CONSTRUCTION CONTRACTS. ATTENTION IS DIRECTED TO THE FOLLOWING SECTIONS OF CHAPTER 149 AS AMENDED.**

**Section 25. LODGING, BOARD AND TRADE OF PUBLIC EMPLOYEES; STATUTE PART OF EMPLOYMENT CONTRACT.**

"Every employee in public work shall lodge, board, and trade where and with whom he elects; and no person or his agents or employees under contract with the commonwealth, a county, city or town, or with a department, board, commission or officer acting therefor, for the doing of public work shall directly or indirectly require, as a condition of employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person. This section shall be made a part of the contract for such employment."

**Section 26. PUBLIC WORKS; PREFERENCE TO VETERANS AND CITIZENS; WAGES.**

"In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works by the commonwealth, or by a county, town, authority or district, or by persons contracting or subcontracting for such works, preference shall first be given to citizens of the commonwealth who have been residents of the commonwealth for at least six months at the commencement of their employment who are veterans as defined in clause Forty-third of section 7 of chapter 4 and who are qualified to perform the work to which the employment relates and, within such preference, preference shall be given to service-disabled veterans; and secondly, to citizens of the commonwealth generally who have been residents of the commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, and every contract for such work shall contain a provision to this effect..."

**Section 34. PUBLIC CONTRACTS; STIPULATION AS TO HOURS AND DAYS OF WORK; VOID CONTRACTS.**

"Every contract, except for the purchase of material or supplies, involving the employment of laborers, workmen, mechanics, foremen or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid..."

**Section 34A. CONTRACTS FOR PUBLIC WORKS; WORKERS' COMPENSATION INSURANCE; BREACH OF CONTRACT; ENFORCEMENT AND VIOLATION OF STATUTE.**

"Every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or other public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall, before commencing performance of such contract, provide by insurance for the payment of compensation and the furnishing of other benefits under chapter one hundred and fifty-two to all persons to be employed under the contract, and that the contractor shall continue such insurance in full force and effect during the term of the contract. No officer or agent contracting in behalf of the commonwealth or any political subdivision thereof shall award such a contract until he has been furnished with sufficient proof of compliance with the aforesaid

stipulations. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the officer or agent who awarded the contract at least fifteen days prior to the intended effective date thereof, which date shall be expressed in said notice. Notice of cancellation sent by the party proposing cancellation by registered mail, postage prepaid, with a return receipt of the addressee requested, shall be a sufficient notice..."

**Section 34B. CONTRACTS FOR PUBLIC WORKS; WAGES FOR RESERVE POLICE OFFICER.**

"Every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wage paid to regular police officers in such city or town."

*Whenever general bids are invited for a contract subject to Section 44A, the following provision applies:*

**Section 44E. FILING OF BIDS; FORMS; MODULAR BUILDINGS.** Second paragraph of subdivision (2), clause E.

"The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; 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 that he will comply fully with all laws and regulations applicable to awards made subject to section 44A."

*For projects estimated to cost more than \$25,000, the following provision applies to sub-bidders:*

**Section 44F. PLANS AND SPECIFICATIONS; SUB-BIDS; FORM; CONTENTS.** First paragraph of clause I of subdivision (2) of section 44F.

"The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; 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 that he will comply fully with all laws and regulations applicable to awards of subcontracts subject to section 44F."

**Section 44G. ALLOWANCES; ALTERNATES; WEATHER PROTECTION DEVICES.**

"(A) "Allowance" as used herein means a sum of money covering one or more items of labor or labor and materials which is designated in bid documents and which general bidders are required to use in computing their bids. The use of such allowances shall be prohibited in the award of any contract subject to the provisions of section forty-four A. Whenever the designer is unable to supply specifications for any item prior to the solicitation of bids, such item shall not be included in any contract subject to the provisions of section forty-four A. The awarding authority shall solicit bids for every such item separately pursuant to the provisions of section forty-four A after specifications for that item are prepared.

(B) Every alternate contained in the form for general bids shall be listed in a numerical sequence in order of priority. When the awarding authority decides to consider alternates in determining the lowest eligible and responsible bidder, the awarding authority shall consider the alternates in descending numerical sequence, such that no single alternate shall be considered unless every alternate preceding it on the list has been added to or subtracted from the base bid price.

(C) The use of options other than alternates in bid documents or bid forms subject to section forty-four A shall be prohibited under all circumstances.

(D) Every contract subject to section forty-four A shall include specifications for the installation of weather protection and shall require that the contractor shall install the same and that he shall furnish adequate heat in the area so protected during the months of November through March. Standards for such specifications shall be established by the commissioner or his designee.”

**Section 44J. INVITATIONS TO BID; NOTICE; CONTENTS; VIOLATIONS; PENALTY.**

"(1) No public agency or authority of the commonwealth or any political subdivision thereof shall award any contract for which competitive bids are required pursuant to section forty-four A of this chapter or section thirty-nine M of chapter thirty, or for which competitive proposals are required pursuant to subsection (4) of section forty-four E of this chapter or section eleven C of chapter twenty-five A, unless a notice inviting bids or proposals therefor shall have been posted no less than one week prior to the time specified in such notice for the receipt of said bids or proposals in a conspicuous place in or near the offices of the awarding authority, and shall have remained posted until the time so specified, and unless such notice shall also have been published at least once not less than two weeks prior to the time so specified in the central register published by the secretary of state pursuant to section twenty A of chapter nine and in a newspaper of general circulation in the locality of the proposed project, and on the COMMBUYS system administered by the operational services division. Said notice shall also be published at such other times and in such other newspapers or trade periodicals as the commissioner of capital asset management and maintenance may require, having regard to the locality of the work involved.

(2) Said notice shall specify the time and place where plans and specifications of the proposed work may be had; the time and place of submission of general bids; and the time and place for opening of the general bids. For contracts subject to the provisions of section forty-four A to H, inclusive, of this chapter, said notice shall also specify the time and place for submission of filed sub-bids, where required pursuant to section forty-four F; and the time and place for opening of said filed sub-bids.

Said notice shall also provide sufficient facts concerning the nature and scope of such project, the type and elements of construction, and such other information as will assist applicants in deciding to bid on such contract.

(3) No contract or preliminary plans and specifications shall be split or divided for the purpose of evading the provisions of this section.

(4) General bids and filed sub-bids for any contract subject to this section shall be in writing and shall be opened in public at the time and place specified in the posted or published notice, and after being so opened shall be open to public inspection.

(5) The provisions of this section shall not apply to any transaction between the commonwealth and any public service corporation.

(6) The provisions of this section may be waived in cases of extreme emergency involving the health and safety of the people and their property, upon the written approval of said commissioner. The written approval shall contain a description of the circumstances and the reasons for the commissioner's determination.

(7) Whoever violates any provision of this section shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than three years or in a jail or house of correction for not more than two and one-half years, or by both said fine and imprisonment; and in the event of final conviction, said person shall be incapable of holding any office of honor, trust or profit under the commonwealth or under any county, district of municipal agency.

Each and every person who shall cause or conspire to cause any contract or preliminary plans and specifications to be split or divided for the purpose of evading the provisions of this section shall forfeit and pay to the commonwealth, a political subdivision thereof or other awarding authority subject to this section, the sum of not more than five thousand dollars and, in addition, such person or persons shall pay, apportioned among them, double the amount of damages

which the commonwealth or political subdivision thereof or other awarding authority may have sustained by reason of the doing of such act, together with the costs of the action.

(8) If an awarding authority rejects all general bids or does not receive any general bids, and advertises for a second opening of general bids with the original filed sub-bids as set forth in subsection (1) of section forty-four E the notice for receipt of such general bids may be published in the central register and elsewhere as required not less than one week prior to the time specified for such second opening of general bids.

(9) No request for proposals or invitation for bids issued under sections 38A ½ to 38O, inclusive, of chapter 7, section 11C of chapter 25A, section 39M of chapter 30, this section and sections 44A to 44H, inclusive, shall be advertised if the awarding authority's cost estimate is greater than 1 year old."

**Attention is directed to the following sections of Chapter 30 of the General Laws of Massachusetts as amended to date.**

**Section 38A. PRICE ADJUSTMENT CLAUSE IN CONTRACTS FOR ROAD, BRIDGE, WATER AND SEWER PROJECTS AWARDED UNDER SEC. 39M**

"Contracts for road and bridge projects awarded as a result of a proposal or invitation for bids under section 39M shall include a price adjustment clause for each of the following materials: fuel, both diesel and gasoline; asphalt; concrete; and steel. Contracts for water and sewer projects awarded as a result of a proposal or invitation for bids under said section 39M shall include a price adjustment clause for fuel, both diesel and gasoline; liquid asphalt; and portland cement contained in cast-in-place concrete. A base price for each material shall be set by the awarding authority or agency and shall be included in the bid documents at the time the project is advertised. The awarding authority or agency shall also identify in the bid documents the price index to be used for each material. The price adjustment clause shall provide for a contract adjustment to be made on a monthly basis when the monthly cost change exceeds plus or minus 5 per cent."

**Section 39F. CONSTRUCTION CONTRACTS; ASSIGNMENT AND SUBROGATION; SUBCONTRACTOR DEFINED; ENFORCEMENT OF CLAIM FOR DIRECT PAYMENT; DEPOSIT; REDUCTION OF DISPUTED AMOUNTS.**

"(1) Every contract awarded pursuant to sections forty-four A to L inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

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

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

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



subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

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

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

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

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

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

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general

contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g), and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

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

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction."

**Section 39G. COMPLETION OF PUBLIC WORKS; SEMI-FINAL AND FINAL ESTIMATES; PAYMENTS; EXTRA WORK; DISPUTED ITEMS.**

"Upon substantial completion of the work required by a contract with the commonwealth, or any agency or political subdivision thereof, for the construction, reconstruction, alteration, remodeling, repair or improvement of public ways, including bridges and other highway structures, sewers and water mains, airports and other public works, the

contractor shall present in writing to the awarding authority its certification that the work has been substantially completed. Within twenty-one days thereafter, the awarding authority shall present to the contractor either a written declaration that the work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the contract sufficient to demonstrate that the work has not been substantially completed. The awarding authority may include with such list a notice setting forth a reasonable time, which shall not in any event be prior to the contract completion date, within which the contractor must achieve substantial completion of the work. In the event that the awarding authority fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the contractor's certification within the twenty-one-day period, the contractor's certification shall take effect as the awarding authority's declaration that the work has been substantially completed.

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

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

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

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

The awarding authority shall pay the amount due pursuant to any substantial completion or final estimate within thirty-five days after receipt of written acceptance for such estimate from the contractor and shall pay interest on the amount due pursuant to such estimate at the rate hereinabove provided from that thirty-fifth day to the date of payment.

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

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

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

#### **Section 39I. DEVIATIONS FROM PLANS AND SPECIFICATIONS.**

"Every contractor having a contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or public works for the commonwealth, or of any political subdivision thereof, shall perform all the work required by such contract in conformity with the plans and specifications contained therein. No wilful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the awarding authority or by the engineer or architect in charge of the work who is duly authorized by the awarding authority to approve such deviations. In order to avoid delays in the prosecution of the work required by such contract such deviation from the plans or specifications may be authorized by a written order of the awarding authority or such engineer or architect so authorized to approve such deviation. Within thirty days thereafter, such written order shall be confirmed by a certificate of the awarding authority stating: (1) if such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the project as a whole; (3) that either the work substituted for the work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the contracting agency and the contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the contracting authority.

Such certificate shall be signed under the penalties of perjury and shall be a permanent part of the file record of the work contracted for.

Whoever violates any provision of this section wilfully and with intent to defraud shall be punished by a fine of not more than five thousand dollars or by imprisonment for not more than six months, or both."

#### **Section 39J. PUBLIC CONSTRUCTION CONTRACTS; EFFECT OF DECISIONS OF CONTRACTING BODY OR ADMINISTRATIVE BOARD.**

"Notwithstanding any contrary provision of any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public works by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount of the contract is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district,

board, commission or other public body, a decision, by the contracting body or by any administrative board, official or agency, or by any architect or engineer, on a dispute, whether of fact or of law, arising under said contract shall not be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, or arbitrarily is unsupported by substantial evidence, or is based upon error of law.”

### **Section 39K. PUBLIC BUILDING CONSTRUCTION CONTRACTS; PAYMENTS.**

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

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

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

provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

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

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

#### **Section 39L. PUBLIC CONSTRUCTION WORK BY FOREIGN CORPORATIONS; RESTRICTIONS AND REPORTS.**

"The commonwealth and every county, city, town, district, board, commission or other public body which, as the awarding authority, requests proposals, bids or sub-bids for any work in the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or other public works (1) shall not enter into a contract for the work with, and shall not approve as a subcontractor furnishing labor and materials for a part of the work, a foreign corporation which has not filed with such awarding authority a certificate of the state secretary stating that the corporation has complied with requirements of section 15.03 of subdivision A of Part 15 of chapter 156D and the date of compliance, and further has filed all annual reports required by section 16.22 of subdivision B of Part 16 of said chapter 156D, and (2) shall report to the state secretary and to the department of corporations and taxation any foreign corporation performing work under such contract or subcontract, and any person, other than a corporation, performing work under such contract or subcontract, and residing or having a principal place of business outside the commonwealth."

#### **Section 39M. CONTRACTS FOR CONSTRUCTION AND MATERIALS; MANNER OF AWARDING.**

"(b) Specifications for such contracts, and specifications for contracts awarded pursuant to the provisions of said sections forty-four A to forty-four L of said chapter one hundred and forty-nine, shall be written to provide for full competition for each item of material to be furnished under the contract; except, however, that said specifications may be otherwise written for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefor, in either instance such writing to be prepared after reasonable investigation. Every such contract shall provide that an item equal to that named or described in the said specifications may be furnished; and an item shall be considered equal to the item so named or described if, in the opinion of the awarding authority: (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of material which

can be met by a minimum of three manufacturers or producers, and for the equal of any one of said named or described materials."

*For projects estimated to cost more than \$10,000, the following provision, section 39M subsection c, applies:*

"(c) The term "lowest responsible and eligible bidder" shall mean the bidder: (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who shall certify 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; (4) who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder; and (5) who obtains within 10 days of the notification of contract award the security by bond required under section 29 of chapter 149; provided that for the purposes of this section the term "security by bond" shall mean the bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority; provided further, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable."

**Section 39N. CONSTRUCTION CONTRACTS; EQUITABLE ADJUSTMENT IN CONTRACT PRICE FOR DIFFERING SUBSURFACE OR LATENT PHYSICAL CONDITIONS.**

"Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

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

**Section 39O. CONTRACTS FOR CONSTRUCTION AND MATERIALS; SUSPENSION, DELAY OR INTERRUPTION DUE TO ORDER OF AWARDING AUTHORITY; ADJUSTMENT IN CONTRACT PRICE; WRITTEN CLAIM.**

"Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the

awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

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

**Section 39P. CONTRACTS FOR CONSTRUCTION AND MATERIALS; AWARDING AUTHORITY’S DECISIONS ON INTERPRETATION OF SPECIFICATIONS, ETC.; TIME LIMIT; NOTICE.**

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

**Section 39Q. CONTRACTS FOR CAPITAL FACILITY CONSTRUCTION; CONTENTS; ANNUAL CLAIMS REPORT.**

“(1) Every contract awarded by any state agency as defined by section thirty-nine A of chapter seven for the construction, reconstruction, alteration, remodeling, repair or demolition of any capital facility as defined by the aforesaid section thirty-nine A shall contain the following subparagraphs (a) through (d) in their entirety:

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

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

(c) Within twenty-one calendar days of the receipt of a written decision or of the failure to issue a decision as stated in the preceding subparagraph, any aggrieved party may file a notice of claim for an adjudicatory hearing with the division of hearing officers or the aggrieved party may file an action directly in a court of competent jurisdiction and shall serve copies thereof upon all other parties in the form and manner prescribed by the rules governing the conduct of adjudicatory proceedings of the division of hearing officers. In the event an aggrieved party exercises his option to file an action directly in court as provided in the previous sentence, the twenty-one day period shall not apply to such



filing and the period of filing such action shall be the same period otherwise applicable for filing a civil action in superior court. The appeal shall be referred to a hearing officer experienced in construction law and shall be prosecuted in accordance with the formal rules of procedure for the conduct of adjudicatory hearings of the division of hearing officers, except as provided below. The hearing officer shall issue a final decision as expeditiously as possible, but in no event more than one hundred and twenty calendar days after conclusion of the adjudicatory hearing, unless the decision is delayed by a request for extension of time for filing post-hearing briefs or other submissions assented to by all parties. Whenever, because an extension of time has been granted, the hearing officer is unable to issue a decision within one hundred and twenty days, he shall notify all parties of the reasons for the delay and the date when the decision will issue. Failure to issue a decision within the one hundred and twenty-day period or within the additional period specified in such written notice shall give the petitioner the right to pursue any legal remedies available to him without further delay.

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

(2) The commissioner of administration shall require the division of hearings officers to prepare annually a report concerning the construction contract claims submitted to the division during the preceding twelve months, in such form as the commissioner shall prescribe. The report shall contain, at a minimum, the following information: the number of claims submitted; the names of all parties to each such claim; a brief description of the claim: the date of submission and of disposition of the claim; its disposition, whether by settlement, withdrawal, default or written decision; and the number of claims currently pending. The original of the report shall be submitted to the commissioner of administration by January fifteenth, and a copy shall be filed with the state librarian and shall be a public document.”

**Section 39R. KEEPING AND MAINTAINING OF BOOKS, RECORDS AND ACCOUNTS; STATEMENT OF MANAGEMENT ON INTERNAL ACCOUNTING CONTROL; FINANCIAL STATEMENTS; ENFORCEMENT.**

“(a) The words defined herein shall have the meaning stated below whenever they appear in this section:

(1) "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A to forty-four H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(2) "Contract" means any contract awarded or executed pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred and forty-nine, which is for amount or estimated amount greater than one hundred thousand dollars.

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

(4) "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof.

Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.

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

(6) "Accountant's Report," when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he has made and sets forth his opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.

(7) "Management," when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.

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

(b) Subsection (a)(2) hereof notwithstanding, every agreement or contract awarded or executed pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven, or eleven C of chapter twenty-five A, and pursuant to section thirty-nine M of chapter thirty or to section forty-four A through H, inclusive, of chapter one hundred and forty-nine, shall provide that:

(1) The contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and

(2) until the expiration of six years after final payment, the office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers or records of the contractor or of his subcontractors that directly pertain to, and involve transactions relating to, the contractor or his subcontractors, and

(3) if the agreement is a contract as defined herein, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his description the date of the change and reasons therefor, and shall accompany said description with a

letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(4) if the agreement is a contract as defined herein, the contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and

(5) if the agreement is a contract as defined herein, the contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

(c) Every contractor awarded a contract shall file with the awarding authority a statement of management as to whether the system of internal accounting controls of the contractor and subsidiaries reasonably assures that:

(1) transactions are executed in accordance with management's general and specific authorization;

(2) transactions are recorded as necessary:

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. to maintain accountability for assets;

(3) access to assets is permitted only in accordance with management's general or specific authorization; and

(4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Every contractor awarded a contract shall also file with the awarding authority a statement prepared and signed by an independent certified public accountant, stating that he has examined the statement of management on internal accounting controls, and expressing an opinion as to:

(1) whether the representations of management in response to this paragraph, and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and

(2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

(d) Every contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the awarding authority upon request.

(e) The office of inspector general, the commissioner for capital asset management and maintenance and any other awarding authority shall enforce the provisions of this section. The commissioner of capital asset management and maintenance may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. A contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to section forty-four C of chapter one hundred and forty-nine.

(f) Records and statements required to be made, kept or filed under the provisions of this section shall not be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b)."

### **Section 39S. CONTRACTS FOR CONSTRUCTION; REQUIREMENTS.**

“(a) As used in this section the word "person" shall mean any natural person, joint venture, partnership corporation or other business or legal entity. Any person submitting a bid for, or signing a contract to work on, the construction, reconstruction, alteration, remodeling or repair of any public work by the commonwealth, or political subdivision thereof, or by any county, city, town, district, or housing authority, and estimated by the awarding authority to cost more than \$10,000, and any person submitting a bid for, or signing a contract to work on, the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency, estimated to cost more than \$10,000, shall certify on the bid, or contract, under penalties of perjury, as follows:

(1) That he 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.

(b) Any employee found on a worksite subject to this section without documentation of successful completion of 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 shall be subject to immediate removal.

(c) The attorney general, or his designee, shall have the power to enforce this section including the power to institute and prosecute proceedings in the superior court to restrain the award of contracts and the performance of contracts in all cases where, after investigation of the facts, he has made a finding that the award or performance has resulted in violation, directly or indirectly, of subsection (b), and he shall not be required to pay to the clerk of the court an entry fee in connection with the institution of the proceeding.”

#### **Section 40. DISCHARGE OR RELEASE OF BONDS.**

"Bonds given to the commonwealth, any county, city, town or political subdivision to secure the performance of contracts for the construction or repair of public buildings or other public works may be discharged or released by the awarding authority, upon such terms as it deems expedient, after the expiration of one year from the time of completion, subject to section thirty-nine K, of the work contracted to be done; provided that no claim filed under said bond is pending, and provided further, that no such bonds shall be discharged or released prior to the expiration of all special guarantees provided for in the contract unless new bonds in substitution therefor specifically relating to the unexpired guarantees shall be taken."

#### **ATTENTION IS DIRECTED TO THE FOLLOWING SECTIONS OF CHAPTER 82 (THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON) OF THE GENERAL LAWS OF MASSACHUSETTS AS AMENDED TO DATE.**

#### **Section 40. DEFINITIONS APPLICABLE TO SECTIONS 40A TO 40E.**

"The following words, as used in this section and sections 40A to 40E, inclusive, shall have the following meanings:

"**Company**", natural gas pipeline company, petroleum or petroleum products pipeline company, public utility company, cable television company, municipal traffic signal department, and municipal utility company or department that supply gas, electricity, telephone, communication or cable television services or private water companies within the city or town where such excavation is to be made.

"**Description of excavation location**", such description shall include the name of the city or town, street, way, or route number where appropriate, the name of the streets at the nearest intersection to the excavation, the number of

the buildings closest to the excavation or any other description, including landmarks, utility pole numbers or other information which will accurately define the location of the excavation.

**"Emergency"**, a condition in which the safety of the public is in imminent danger, such as a threat to life or health or where immediate correction is required to maintain or restore essential public utility service.

**"Excavation"**, an operation for the purpose of movement or removal of earth, rock or the materials in the ground including, but not limited to, digging, blasting, augering, backfilling, test boring, drilling, pile driving, grading, plowing in, hammering, pulling in, jacking in, trenching, tunneling and demolition of structures.

**"Excavator"**, any entity including, but not limited to, a person, partnership, joint venture, trust, corporation, association, public utility, company or state or local government body which performs excavation operations.

**"Marking standards"**, the methods by which a company designates its facilities in accordance with standards established by the Common Ground Alliance and the American Public Works Association.

**"Non-mechanical means"**, excavation using any device or tool manipulated by human power, including air vacuum, air blowing or similar methods of excavation designed to minimize direct contact with utilities.

**"Premark"**, to delineate the general scope of the excavation or boring on the paved surface of the ground using white paint, or stakes or other suitable white markings on nonpaved surfaces. No premarking shall be acceptable if such marks can reasonably interfere with traffic or pedestrian control or are misleading to the general public. Premarking shall not be required of any continuous excavation that is over 500 feet in length.

**"Professional land surveyor"**, a professional land surveyor as defined in section 81D of chapter 112.

**"Safety zone"**, a zone designated on the surface by the use of standard color-coded markings which contains the width of the facilities plus not more than 18 inches on each side.

**"Standard color-coded markings"**, red - electric power lines, cables, conduit or light cables; yellow - gas, oil, street petroleum, or other gaseous materials; orange - communications cables or conduit, alarm or signal lines; blue - water, irrigation and slurry lines; green - sewer and drain lines; white - premark of proposed excavation.

**"System"**, the underground plant damage prevention system as defined in section 76D of chapter 164."

#### **Section 40A. EXCAVATIONS; NOTICE.**

"No excavator installing a new facility or an addition to an existing facility or the relay or repair of an existing facility shall, except in an emergency, make an excavation, in any public or private way, any company right-of-way or easement or any public or privately owned land or way, unless at least 72 hours, exclusive of Saturdays, Sundays and legal holidays but not more than 30 days before the proposed excavation is to be made, such excavator has premarked not more than 500 feet of the proposed excavation and given an initial notice to the system. Such initial notice shall set forth a description of the excavation location in the manner as herein defined. In addition, such initial notice shall indicate whether any such excavation will involve blasting and, if so, the date and the location at which such blasting is to occur.

Any professional land surveyor working on a preliminary design for a new facility or renovation where excavation is necessary shall: (i) Premark the proposed excavation; and (ii) provide initial notice to the system.

The notice requirements shall be waived in an emergency as defined herein; provided, however, that before such excavation begins or during a life-threatening emergency, notification shall be given to the system and the initial point of boring or excavation shall be premarked. The excavator shall ensure that the underground facilities of the utilities in the area of such excavation shall not be damaged or jeopardized.

In no event shall any excavation by blasting take place unless notice thereof, either in the initial notice or a subsequent notice accurately specifying the date and location of such blasting shall have been given and received at least 72 hours

in advance, except in the case of an unanticipated obstruction requiring blasting when such notice shall be not less than four hours prior to such blasting. If any such notice cannot be given as aforesaid because of an emergency requiring blasting, it shall be given as soon as may be practicable but before any explosives are discharged.”

**Section 40B. DESIGNATION OF LOCATION OF UNDERGROUND FACILITIES.**

“Within 72 hours, exclusive of Saturdays, Sundays and legal holidays, from the time the initial notice is received by the system or at such time as the company and the excavator or professional land surveyor agree, such company shall respond to the initial notice or subsequent notice by designating the location of the underground facilities within 15 feet in any direction of the premarking so that the existing facilities are to be found within a safety zone. Such safety zone shall be so designated by the use of standard color-coded markings. The providing of such designation by the company shall constitute prima facie evidence of an exercise of reasonable precaution by the company as required by this section; provided, however, that in the event that the excavator or professional land surveyor has given notice as aforesaid at a location at which because of the length of excavation the company cannot reasonably designate the entire location of its facilities within such 72 hour period, then such excavator or professional land surveyor shall identify for the company that portion of the excavation which is to be first made and the company shall designate the location of its facilities in such portion within 72 hours and shall designate the location of its facilities in the remaining portion of the location within a reasonable time thereafter. When an emergency notification has been given to the system, the company shall make every attempt to designate its facilities as promptly as possible. A company shall conduct periodic audits to ensure: (i) the accuracy of the designated location and marking of its facilities; and (ii) its adherence to marking standards.”

**Section 40C. EXCAVATOR’S RESPONSIBILITY TO MAINTAIN DESIGNATION MARKINGS; DAMAGE CAUSED BY EXCAVATOR.**

“After a company has designated the location of its facilities at the location in accordance with section 40B, the excavator shall be responsible for maintaining the designation markings at such locations, unless such excavator requests remarking at the location due to the obliteration, destruction or other removal of such markings. The company shall then remark such location within 24 hours following receipt of such request.

When excavating in close proximity to the underground facilities of any company when such facilities are to be exposed, non-mechanical means shall be employed, as necessary, to avoid damage in locating such facility and any further excavation shall be performed employing reasonable precautions to avoid damage to any underground facilities including, but not limited to, any substantial weakening of structural or lateral support of such facilities, penetration or destruction of any pipe, main, wire or conduit or the protective coating thereof, or damage to any pipe, main, wire or conduit.

If any damage to such pipe, main, wire or conduit or its protective coating occurs, the company shall be notified immediately by the excavator responsible for causing such damage.

The making of an excavation without providing the notice required by section 40A with respect to any proposed excavation which results in any damage to a pipe, main, wire or conduit, or its protective coating, shall be prima facie evidence in any legal or administrative proceeding that such damage was caused by the negligence of such person.”

**Section 40D. LOCAL LAWS REQUIRING EXCAVATION PERMITS; PUBLIC WAYS.**

“Nothing in this section shall affect or impair local ordinances or by-laws requiring a permit to be obtained before excavation in a public way or on private property; but notwithstanding any general or special law, ordinance or by-law to the contrary, to the extent that any permit issued under the provisions of the state building code or state fire code requires excavation by an excavator on a public way or on private property, the permit shall not be valid unless

the excavator notifies the system as required pursuant to sections 40 and 40A, before the commencement of the excavation, and has complied with the permitting requirements of chapter 82A.”

**Section 40E. VIOLATIONS OF SECS. 40A TO 40E; PUNISHMENT.**

“Any person or company found by the department of public utilities, after a hearing, to have violated any provision of sections 40A to 40E, inclusive, shall be fined \$1000 for the first offense and not less than \$5,000 nor more than \$10,000 for any subsequent offense within 12 consecutive months as set forth by the rules of said department; provided, however, that nothing herein shall be construed to require forfeiture of any penal sum by a state or local government body for violation of section 40A or 40C; and provided, further, that nothing herein shall be construed to require the forfeiture of any penal sum by a residential property owner for the failure to premark for an excavation on such person's residential property. The department of public utilities may require any person or company not in compliance with sections 40A to 40E, inclusive, to complete a “Dig Safe” training program in lieu of a fine for a first offense.”

**ATTENTION IS DIRECTED TO THE FOLLOWING SECTIONS OF CHAPTER 30 (AN ACT MOBILIZING ECONOMIC RECOVERY IN THE COMMONWEALTH) OF THE ACTS OF 2009.**

**Section 33.**

“(a) Notwithstanding any general or special law to the contrary, the following requirements shall apply to any public works project funded by the American Recovery and Reinvestment Act of 2009 where the amount of construction costs under any contract awarded is likely to exceed \$1,000,000. For the purposes of this section, "public works" shall mean building or work the construction of which is carried on by authority of the commonwealth, or by a county, town, authority or district, or with funds of a federal agency or the commonwealth or a county, city, town, authority or district to serve the interest of the general public, regardless of whether title thereof is in the commonwealth or in a county, city, town, authority or district; provided, however, that for the purposes of this definition, "construction" shall have the meaning provided in section 27D of chapter 149 of the General Laws.

(b) For any public works project subject to subsection (a), the specifications set forth in any request for responses shall include a requirement that, on a per project basis, not less than 20 per cent of the total hours of employees receiving an hourly wage who are directly employed on the site of the project, employed by the contractor or a subcontractor and subject to the prevailing wage, shall be performed by apprentices in bona fide apprentice training programs as provided in sections 11H and 11I of chapter 23 of the General Laws which are approved by the division of apprentice training in the executive office of labor and workforce development.

(c) During the performance of a public works project subject to subsections (a) and (b), the contractor shall submit periodic reports to the awarding authority with records indicating the total hours worked by all journeymen and apprentices in positions subject to the apprentice requirement. In any instance in which the apprentice hours do not constitute 5 per cent of the total hours of employees subject to the apprentice requirement, the contractor shall submit a plan to the awarding authority describing how the contractor shall comply with the apprentice requirement.

(d) The attorney general shall have all the necessary powers to require compliance with the requirements of subsections (a), (b) and (c) therewith, including the power to institute and prosecute proceedings in the superior court to restrain the award of contracts and the performance of contracts. Prior to award of the contract, an awarding authority may petition the attorney general for approval to adjust the requirements set forth in said subsections (a), (b) and (c). The attorney general may adjust these requirements only if he determines that compliance with these requirements is not feasible or if application of the requirements would be preempted by federal law.

(e) An awarding authority serving a low-income population may require additional specifications that address the needs of its clients including, but not limited to, preferential hiring for residents of public housing authorities for available apprenticeship positions.

(f) Subject to appropriation, the division of apprentice training shall enhance its outreach efforts to underserved populations in order to increase and diversify the number of apprentices in the commonwealth.”

**Section 39.**

“Any entity located in the commonwealth that receives federal funds through the American Recovery and Reinvestment Act of 2009 shall provide information as directed by the secretary of administration and finance regarding the use of the funds. The required information shall include, but not be limited to, the reporting information required by the federal government and any other information deemed necessary by the secretary to administer the American Recovery and Reinvestment Act of 2009 responsibly, efficiently and transparently. To the extent possible, the secretary shall work to streamline the reporting of this information, minimize duplication of data entry by recipients and ensure data consistency. The secretary may issue regulations to effectuate this reporting requirement.”

**Section 40.**

“Employers and hiring agents on all projects funded in whole or in part by the American Recovery and Reinvestment Act of 2009 shall post notices of available employment opportunities to the commonwealth’s job bank or the one-stop career centers closest to where the projects shall be located. The postings shall contain such information as directed by the secretary of labor and workforce development. The secretary may issue regulations to effectuate this job posting requirement.”

END OF SECTION



SECTION 00830-ATT. C

THE COMMONWEALTH OF MASSACHUSETTS

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

I. Definitions

For purposes of this contract,

“Minority” means a person who meets one or more of the following definitions:

- (a) American Indian or Native American means: all persons having origins in any of the original peoples of North America and who are recognized as an Indian by a tribe or tribal organization.
- (b) Asian means: All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian sub-continent, or the Pacific Islands, including, but not limited to China, Japan, Korea, Samoa, India, and the Philippine Islands.
- (c) Black means: All persons having origins in any of the Black racial groups of Africa, including, but not limited to, African-Americans, and all persons having origins in any of the original peoples of the Cape Verdean Islands.
- (d) Eskimo or Aleut means: All persons having origins in any of the peoples of Northern Canada, Greenland, Alaska, and Eastern Siberia.
- (e) Hispanic means: All persons having their origins in any of the Spanish-speaking peoples of Mexico, Puerto Rico, Cuba, Central or South America, or the Caribbean Islands.

“State construction contract” means a contract for the construction, reconstruction, installation, demolition, maintenance or repair of a building or capital facility, or a contract for the construction, reconstruction, alteration, remodeling or repair of a public work undertaken by a department, agency, board, or commission of the commonwealth.

“State assisted construction contract” means a contract for the construction, reconstruction, installation, demolition, maintenance or repair of a building or capital facility undertaken by a political subdivision of the commonwealth, or two or more political subdivisions thereof, an authority, or other instrumentality and whose costs of the contract are paid for, reimbursed, grant funded, or otherwise supported, in whole or in part, by the commonwealth.

II. Equal Opportunity, Non-Discrimination and Affirmative Action

During the performance of this Contract, the Contractor and all subcontractors (hereinafter collectively referred to as “the Contractor”) for a state construction contract or a state assisted construction contract, for him/herself, his/her assignees and successors in interest, agree to comply with all applicable equal employment opportunity, non-discrimination and affirmative

action requirements, including but not limited to the following:

In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability, shall not discriminate in the selection or retention of subcontractors, and shall not discriminate in the procurement of materials and rentals of equipment.

The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising, layoff or termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship or on-the-job training opportunity. The Contractor shall comply with the provisions of chapter 151B of the Massachusetts General Laws, as amended, and all other applicable anti-discrimination and equal opportunity laws, all of which are herein incorporated by reference and made a part of this Contract.

The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against Discrimination setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter 151B).

In connection with the performance of work under this contract, the Contractor shall undertake, in good faith, affirmative action measures to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability. Such affirmative action measures shall entail positive and aggressive measures to ensure non-discrimination and to promote equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, apprenticeship and on-the-job training programs. A list of positive and aggressive measures shall include, but not be limited to, advertising employment opportunities in minority and other community news media; notifying minority, women and other community-based organizations of employment opportunities; validating all job specifications, selection requirements, and tests; maintaining a file of names and addresses of each worker referred to the Contractor and what action was taken concerning such worker; and notifying the administering agency in writing when a union with whom the Contractor has a collective bargaining agreement has failed to refer a minority or woman worker. These and other affirmative action measures shall include all actions required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability. One purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.

### III. Minority and Women Workforce Participation

Pursuant to his/her obligations under the preceding section, the Contractor shall strive to achieve on this project the labor participation goals contained herein. Said participation goals shall apply in each job category on this project including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers and those classes of work enumerated in Section 44F of Chapter 149 of the Massachusetts General Laws. The participation goals for this project shall be 15.3% for minorities and 6.9% for women. The participation goals, as set forth herein, shall not be construed as quotas or set-asides; rather, such participation goals will be used to measure the progress of the Commonwealth's equal opportunity, non-discrimination and affirmative action program. Additionally, the participation goals contained herein should not be seen or treated as a floor or as a ceiling for the employment of particular individuals or group of individuals.

### IV. Liaison Committee

At the discretion of the agency that administers the contract for the construction project there may be established for the life of the contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering the contract for the construction project, hereinafter called the administering agency, a representative from the Office of Affirmative action, and such other representatives as may be designated by the administering agency.

The Contractor (or his/her agent, if any, designated by him/her as the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

### V. Reports and Records

The Contractor shall prepare projected workforce tables on a quarterly basis when required by the administering agency. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also, when updated, to the administering agency and the Liaison Committee when required.

The Contractor shall prepare weekly reports in a form approved by the administering agency, unless information required is required to be reported electronically by the administering agency, the number of hours worked in each trade by each employee, identified as woman, minority, or non-minority. Copies of these shall be provided at the end of each such week to the administering agency and the Liaison Committee.

Records of employment referral orders, prepared by the Contractor, shall be made available to the administering agency on request.

The Contractor will provide all information and reports required by the administering agency on instructions issued by the administering agency and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the administering agency to effect the employment of personnel. This provision shall apply only to information pertinent to the Commonwealth's supplementary non-discrimination, equal opportunity and access and opportunity contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the administering agency and shall set forth what efforts he has made to obtain the information.

#### VI. Access to Work Site

A designee of the administering agency and a designee of the Liaison Committee shall each have a right to access the work site.

#### VII. Solicitations for Subcontracts, and for the Procurement of Materials and Equipment

In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to non-discrimination and equal opportunity.

#### VIII. Sanctions

Whenever the administering agency believes the General or Prime Contractor or any subcontractor may not be operating in compliance with the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter 151B), the administering agency may refer the matter to the Massachusetts Commission Against Discrimination ("Commission") for investigation.

Following the referral of a matter by the administering agency to the Massachusetts Commission Against Discrimination, and while the matter is pending before the MCAD, the administering agency may withhold payments from contractors and subcontractors when it has documentation that the contractor or subcontractor has violated the Fair Employment Practices Law with respect to its activities on the Project, or if the administering agency determines that the contractor has materially failed to comply with its obligations and the requirements of this Section. The amount withheld shall not exceed a withhold of payment to the General or Prime Contractor of 1/100 or 1% of the contract award price or \$5,000, whichever sum is greater, or, if a subcontractor is in non-compliance, a withhold by the administering agency from the General Contractor, to be assessed by the General Contractor as a charge against the subcontractor, of 1/100 or 1% of the subcontractor price, or \$1,000 whichever sum is greater, for each violation of the applicable law or contract requirements. The total withheld from any one General or Prime Contractor or subcontractor on a Project shall not exceed \$20,000 overall. No withhold of payments or investigation by the Commission or its agent shall be initiated without the administering agency providing prior notice to the Contractor.

If, after investigation, the Massachusetts Commission Against Discrimination finds that a General or Prime Contractor or subcontractor, in commission of a state construction contract or state-assisted construction contract, violated the provisions of the Fair Employment Practices Law, the administering agency may convert the amount withheld as set forth above into a permanent sanction, as a permanent deduct from payments to the General or Prime Contractor or subcontractor, which sanction will be in addition to any such sanctions, fines or penalties imposed by the Massachusetts Commission Against Discrimination:

No sanction enumerated under this Section shall be imposed by the administering agency except after notice to the General or Prime Contractor or subcontractor and an adjudicatory proceeding, as that term is used, under Massachusetts General Laws Chapter 30A, has been conducted.

#### IX. Severability

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

X. Contractor's Certification

A bidder for a state construction contract or state assisted construction contract will not be eligible for award of the contract unless such bidder has submitted to the administering agency the following certification, which will be incorporated into the resulting contract:

CONTRACTOR'S CERTIFICATION

\_\_\_\_\_ certifies that they:  
(Contractor Name)

1. Will not discriminate in their employment practices;
2. Intend to use the following listed construction trades in the work under the contract

\_\_\_\_\_  
\_\_\_\_\_ ; and

3. Will make good faith efforts to comply with the minority employee and women employee workforce participation ratio goals and specific affirmative action steps contained herein; and
4. Are in compliance with all applicable federal and state laws, rules, and regulations governing fair labor and employment practices; and
5. Will provide the provisions of the "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" to each and every subcontractor employed on the Project and will incorporate the terms of this Section into all subcontracts and work orders entered into on the Project.
6. Agree to comply with all provisions contained herein.

\_\_\_\_\_  
(Signature of authorized representative of Contractor) Date

\_\_\_\_\_  
(Printed name of authorized representative of Contractor)

## XI. Subcontractor Requirements

Prior to the award of any subcontract for a state construction contract or a state assisted construction contract, regardless of tier, the Prime or General Contractor shall provide all prospective subcontractors with a complete copy of this Section entitled "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" and will incorporate the provisions of this Section by reference into any and all contracts or work orders for all subcontractors providing work on the Project. In order to ensure that the said subcontractor's certification becomes a part of all subcontracts under the prime contract, the Prime or General Contractor shall certify in writing to the administering agency that it has complied with the requirements as set forth in the preceding paragraph.

END OF SECTION

## ATTACHMENT D

### CHANGE ORDERS

#### Policy:

This section supplements Article 11, Changes to the Contract, in the General Conditions and Supplementary Conditions.

All executed change orders submitted to the Engineer for review and processing must be prepared in accordance with the attached change order format (Appendix A) with the appropriate number of copies, calculation sheet(s) (Appendix B) and all other supporting documentation necessary for evaluation. Failure to comply with these instructions will result in delays in processing the change order.

In order to avoid possible delays with approval of change orders, at the beginning of the project and as circumstances warrant, the Contractor shall submit a list of construction equipment, identifying major pieces of equipment to be utilized on the project. The list shall include the Contractor's designation, if any, the manufacturer, model, year of manufacture, serial number, size, and horsepower of equipment. The Contractor shall also provide for approval a proposed bluebook equipment rental rate development that separately lists for each piece of equipment the monthly rental rate, area adjustment factor, depreciation factor, estimated operating cost per hour and total hourly rate. In the event the Contractor fails or is unable to provide appropriate rate information the Engineer may develop equipment rental rates for use on change orders.

#### Payment of Change Orders:

Payment of all change orders shall be in accordance with the relevant provisions of Massachusetts General Laws, Chapter 30, Section 39G for non-building construction and Section 39K for building construction as amended from time to time.

Payment of change orders shall be made in accordance with one of the following three methods:

- A. Existing unit prices as set forth in the contract; or
  - B. Agreed upon lump sum or unit prices; or
  - C. Time and materials
- A. Payment for work for which there is a unit price in the contract:

Where the contract contains a unit price for work and the Engineer orders a change for work of the same kind as other work contained in the contract and is performed under similar physical conditions, the Contractor shall accept full and final payment at the contract unit price(s) for the acceptable quantities. Under certain circumstances, the unit



prices may be subject to revaluation and adjustment. See Article 13 in the Supplementary Conditions.

B. Payment for work or materials for which no price is contained in the contract:

If the Engineer directs, the Contractor shall submit promptly in writing to the Engineer an offer to do the required work on a lump sum or unit price basis, as specified by the Engineer. The stated price, either lump sum or unit price, shall be divided so as to show that it is the sum of:

1. The estimated cost of Labor, plus
2. Direct Labor Cost, plus
3. Material and Freight Costs, plus
4. Equipment Costs, plus
5. An amount not to exceed 20% of the sum of items 1 through 4 for overhead and profit, plus (if applicable),
6. In the case of work done by a subcontractor an amount not to exceed 7 ½%, for the general contractor of the sum of the cost (not including subcontractor's overhead and profit) of items 1 through 4 for his overhead and profit (less, if applicable),
7. Credits for work deleted from the contract, including actual costs of the deleted work plus the percentage of overhead, profit, bonds and insurance attributable to such credit amount.

C. Payment for work on a time and materials basis:

Unless an agreed lump sum and/or unit price is obtained as noted above and is so stated in the change price, the Contractor shall accept as full payment for which no agreement is contained in contract, an amount equal to:

1. The estimated cost of Labor, plus
2. The Direct Labor Costs, plus
3. Equipment Costs, plus
4. Material and Freight Costs, plus
5. An amount not to exceed 20% of the sum of items 1 through 4 for overhead and profit, plus, if applicable,
6. In the case of work done by a subcontractor an amount not to exceed 7 ½%, for the general contractor of the sum of the cost (not including subcontractor's overhead and profit) of items 1 through 4 for his overhead and profit (less, if applicable),
7. Credit for work deleted from the Contract, including actual costs of the deleted work plus the percentage of overhead, profit, bonds and insurance attributable to such credit amount.

Explanation of items 1 through 7 as outlined in "B" and "C" above:

1. Labor - Only those workers employed on the project who are doing the extra work, including the foreman in charge, are allowable. General foremen, superintendents, or other supervisory personnel are considered to be included in the overhead markup as provided in items 5 and/or 6. Hourly labor rates in excess of those as listed in the contract wage rates require documentation. As a minimum, an explanation and the appropriate copy of the certified payroll are required.
2. Direct Labor Costs - These costs are limited to those which are required in the contract document. Coverage in excess of the contract provisions, secured by the contractor/subcontractor(s) at his option, are ineligible. The following list of typical direct labor charges is provided for your assistance and is in no way intended to be complete or all encompassing:

Workman's Compensation

Federal/State: Social Security Tax and Unemployment Tax;

Health, Welfare and Pension Benefits; (this cost is included in the wage rates appearing in the Attachment A Massachusetts Wage Rates.

Liability insurance:	Bodily injury; excess umbrella; property damage; public liability
Blasters insurance:	If applied to any required direct labor costs
Builders risk insurance:	If applied to any required direct labor costs
Experience modification insurance:	If applied to any required direct labor costs
Surcharges:	If applied to any required direct labor costs

Following award and prior to execution of a construction contract, the Contractor and filed subbidders (where applicable) shall submit for review by the Owner, documentation to establish the markup percentage(s).

The documented direct labor markup for this contract may be adjusted on an annual basis as measured from the date the contract is executed. The contract agreement will provide for the establishment of the Direct Labor Cost percentage.

3. Material and Freight - Only those materials required as a result of the change order and reasonable freight charges for delivery of same are allowable.
4. Equipment - Only the equipment required as a result of the change order is allowable. Equipment rental rates shall be governed by the current EquipmentWatch, division of

Intertec Publishing [Formerly Nielson/Dataquest] Rental Rate Bluebook for Construction Equipment (the "Bluebook"). In determining the rental rate, the following shall apply:

- a. For equipment already on the project - the monthly prorated rental rate by the hourly use shall be applicable;
- b. For equipment not on the project the daily rate, the weekly rate, or monthly rate will prevail, whichever will prove to be most cost effective. Small tools and manual equipment are examples of costs not allowable under this item. These costs are considered to be included in the overhead markup as provided in items 5 and/or

(1 Month (Normal Use) = 176 hours)

5. & 6. Overhead and Profit - All other costs not previously mentioned are considered to be included in this item, be it for the general contractor or subcontractor(s).
7. Credits - Work deleted, material and equipment removed from the contract, stored and/or returned shall be credited to the cost of the change order, less documented costs.

This change order will be prepared in such a manner as to clearly separate Eligible and Ineligible Costs (as applicable to state-funded projects).

The Contractor shall furnish itemized statements of the cost of the work ordered and shall give the Engineer access to all accounts, bills and vouchers relating thereto; and unless the Contractor shall furnish such itemized statements, and access to all accounts, bills, and vouchers, he shall not be entitled to payment for any items of extra work for which such information is sought by the Engineer.

APPENDIX A

Change Order  
(Enter Project Name)  
(Enter Location)

Sheet \_\_\_ of \_\_\_

Date \_\_\_\_\_

Project No. \_\_\_\_\_ SRF No. (if applicable) \_\_\_\_\_

Contract No. \_\_\_\_\_

Change Order No. \_\_\_\_\_

Contract Amount (As Bid) \$ \_\_\_\_\_

Amount of Previous Change Orders \$ \_\_\_\_\_

Net Change in Contract Price (this Change Order) \$ \_\_\_\_\_

Total Adjusted Contract Price (including this Change Order) \$ \_\_\_\_\_

This Change Order extends the time to complete the work by \_\_\_\_\_ calendar days.

The extended completion date is \_\_\_\_\_  
\_\_\_\_\_.

This Change Order checked by: \_\_\_\_\_  
Resident Representative Date

This Change Order is requested by: \_\_\_\_\_

This Change Order is recommended by:

\_\_\_\_\_  
Consultant Engineer P.E. # Date

The undersigned agree to the terms of the Change Order.

\_\_\_\_\_  
Contractor Date

\_\_\_\_\_  
Owner Date

Certification of Appropriation under M.G.L. c.44, s.31C: Adequate funding in an amount sufficient to cover the total cost of this change order is available.

By: \_\_\_\_\_  
Certification Officer (Auditor, Accountant, Treasurer) Date

Do not write below this space: this space reserved for STATE AGENCY APPROVAL

Change Order (Cont.)  
(Enter Project Name)  
(Enter Location)

Sheet \_\_\_ of \_\_\_

Date \_\_\_\_\_

Project No. \_\_\_\_\_ SRF No. (if applicable) \_\_\_\_\_

Contract No. \_\_\_\_\_

Change Order No. \_\_\_\_\_

Owner's Name: \_\_\_\_\_

Owner's Address: \_\_\_\_\_

Contractor's Name: \_\_\_\_\_

Contractor's Address: \_\_\_\_\_

Item 1:

Description of Change: \_\_\_\_\_

Reason for Change: \_\_\_\_\_

Backup Information: \_\_\_\_\_

Cost: \$ \_\_\_\_\_

Item 2

Description of Change: \_\_\_\_\_

Reason for Change: \_\_\_\_\_

Backup Information: \_\_\_\_\_

Cost: \$ \_\_\_\_\_

Appendix B  
Example Calculation Sheet

1. Labor

Foreman	10 hours @	\$10.00/hour	\$100.00
Engineer	10 hours @	8.80/hour	85.00
Operator	10 hours @	9.50/hour	95.00
Laborers	24 hours @	7.00/hour	<u>168.00</u>
			<b>\$448.00</b>

2. Direct Labor Cost (use the agreed upon Direct Labor Cost)

\*(30)% of \$448.

\*(used for example purposes only) \$ 134.00

3. Materials & Freight

150 l.f. of 12" pipe @ \$2.00/l.f.		\$ 300.00
15 v.f. precast SMH		1,700.00
Freight (slip# ___ enclosed)		<u>25.00</u>
		<b>\$2,025.00</b>

4. Equipment

*EXAMPLE*

1 Backhoe	10 hours @	\$ 80.00/hour	\$ 800.00
1 Truck-crane	10 hours @	100.00/hour	<u>1000.00</u>
			<b>\$1800.00</b>

**TOTAL (items 1 through 4): \$4,407.00**

5. (20%) markup for Overhead, Profit

(20%) of \$4,407 \$ 881.00

6. (7½ %) markup on subcontractor's cost for general contractor (if subcontractor is involved)

(7½ %) of \$4,407 \$ 331.00

7. Credits (deductibles) -\$323.00

**TOTAL COST: \$5,296.00**

**Reminder:** Provide support documentation as necessary i.e. vouchers, correspondence, calculation, photographs, reports.

END OF SECTION

SECTION 00890

PERMITS

PART 1 – GENERAL

1.01 DESCRIPTION:

This Section provides specific information and defines specific requirements of the Contractor regarding the preparation and acquisition of permits required to perform the work of this project.

1.02 RELATED WORK:

- A. Section 01110, CONTROL OF WORK AND MATERIALS
- B. Section 01550, SIGNAGE (TRAFFIC CONTROL)
- C. Section 01562, DUST CONTROL
- D. Section 01570, ENVIRONMENTAL PROTECTION
- E. Section 02000, SPECIAL PROVISIONS
- F. Section 02130, TRANSPORTATION AND DISPOSAL OF EXCAVATED MATERIAL
- G. Section 02240, DEWATERING

1.03 GENERAL REQUIREMENTS:

- A. The Owner has obtained or will obtain and pay for the permits listed below, which are required for this project. The Contractor shall assist in obtaining certain permits, as

<u>Permits by Owner</u>	<u>Status</u>
Conservation Commission Order of Conditions (Ch. 131, s. 40)	(Attached)
Mass. DEP Chapter 91 Waterways License (310 CMR 9.00)	
<u>MassDEP Water Quality Certificate</u>	<u>(Attached)</u>

indicated. The Contractor shall obtain and pay for all other permits required, as defined under the Permits subsection of Section 00700, GENERAL CONDITIONS.

1.04 CONSERVATION COMMISSION ORDERS:

The Town of Millbury Conservation Commission has under the authority of Massachusetts General Laws Chapter 131, Section 40, issued an Order of Conditions on the work under this contract. This Order is to become a part of the Contract Documents and the Contractor shall perform all work in strict conformance with said Order. A copy of this Order is attached to this section.

PART 2 - PRODUCTS

Not Used.

PART 3 – EXECUTION

3.01 PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS:

- A. The Contractor shall perform the work in accordance with the Contract Documents, including the attached permits/order of conditions, and any applicable municipal requirements.
- B. Prior to commencing any construction activities, the Contractor shall demonstrate to the Owner and the Engineer, through on-site inspection and submitting copies of permits or approvals, that it is in full compliance with the terms and conditions of all permits specified herein. The Contractor shall maintain full compliance with all permits throughout the performance of the work, and upon request, grant access to permitting authorities to inspect the site for the purpose of verifying such compliance.

END OF SECTION



SECTION 00890

ATTACHMENT A

TOWN OF MILLBURY CONSERVATION COMMISSION ORDER OF  
CONDITIONS



# TOWN OF MILLBURY

## CONSERVATION COMMISSION

MUNICIPAL OFFICE BUILDING • 127 ELM STREET • MILLBURY, MA 01527-2632 • TEL. 508-865-5411 • FAX. 508-865-0857

### *Conservation Commission*

*Ronald Stead, Chairman  
Anthony Cameron  
Paul DiCicco  
Raymond Keddy  
Christopher Weagle*

May 20, 2021

Town of Millbury  
127 Elm Street  
Millbury, MA 01527

RE: Wheelock Ave Bridge , DEP File # 224-0822

Mr. Keith Caruso,

Enclosed you will find your Permit/Order of Conditions DEP File # 224-0822. Read it thoroughly giving special attention to General Conditions 1 – 20 and Special Conditions 21-39. Condition #9 requires that you record this document at the Worcester District Registry of Deeds.

You **must** provide evidence of the recording (the Deed Book and Page numbers) to this office before any work relative to this Order may begin. This information may be either: a) a photocopy of the document, including the Registry's stamp and recording information; or b) a written note from you including the Book/Page numbers.

This information is necessary in order to keep your Order valid. No work relative to this Order (and plans) may begin until evidence of recording is provided.

Once the project work is complete, you may file a Request for Certificate of Compliance to the Millbury Conservation Commission to remove the Order of Conditions from the deed.

Sincerely,

Conor McCormack, Assistant Planner  
Millbury Conservation Commission





**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:  
 224-0822  
 MassDEP File #

eDEP Transaction #  
 Millbury  
 City/Town

### A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):  
 Worcester  
 a. County  
 N/A  
 c. Book  
 b. Certificate Number (if registered land)  
 N/A  
 d. Page
7. Dates: 04/05/2021 05/19/2021  
 a. Date Notice of Intent Filed b. Date Public Hearing Closed c. Date of Issuance
8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):  
 Wheelock Avenue over Dorothy Pond Bridge Replacement  
 a. Plan Title  
 Weston & Sampson  
 b. Prepared By  
 03/26/2021  
 d. Final Revision Date  
 Laurence Keegan  
 c. Signed and Stamped by  
 1"=20'  
 e. Scale  
 f. Additional Plan or Document Title  
 g. Date

### B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of 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 (the 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.  Groundwater Supply h.  Storm Damage Prevention i.  Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

**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.



**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:  
 224-0822  
 MassDEP File # \_\_\_\_\_  
 eDEP Transaction # \_\_\_\_\_  
**Millbury**  
 City/Town

**B. Findings (cont.)**

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 the 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 Act's interests, 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 310 CMR 10.02(1)(a) \_\_\_\_\_ a. linear feet

**Inland Resource Area Impacts:** Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input type="checkbox"/> Bank	_____ a. linear feet	_____ b. linear feet	_____ c. linear feet	_____ d. linear feet
5. <input type="checkbox"/> Bordering Vegetated Wetland	_____ a. square feet	_____ b. square feet	_____ c. square feet	_____ d. square feet
6. <input type="checkbox"/> Land Under Waterbodies and Waterways	_____ a. square feet _____ e. c/y dredged	_____ b. square feet _____ f. c/y dredged	_____ c. square feet	_____ d. square feet
7. <input type="checkbox"/> Bordering Land Subject to Flooding	_____ a. square feet	_____ b. square feet	_____ c. square feet	_____ d. square feet
Cubic Feet Flood Storage	_____ e. cubic feet	_____ f. cubic feet	_____ g. cubic feet	_____ h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding	_____ a. square feet	_____ b. square feet		
Cubic Feet Flood Storage	_____ c. cubic feet	_____ d. cubic feet	_____ e. cubic feet	_____ f. cubic feet
9. <input type="checkbox"/> Riverfront Area	_____ a. total sq. feet	_____ b. total sq. feet		
Sq ft within 100 ft	_____ c. square feet	_____ d. square feet	_____ e. square feet	_____ f. square feet
Sq ft between 100-200 ft	_____ g. square feet	_____ h. square feet	_____ i. square feet	_____ j. square feet



**Massachusetts Department of Environmental Protection**  
**Bureau of Resource Protection - Wetlands**  
**WPA Form 5 – Order of Conditions**  
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Provided by MassDEP:  
 224-0822  
 MassDEP File # \_\_\_\_\_

eDEP Transaction # \_\_\_\_\_  
 Millbury  
 City/Town \_\_\_\_\_

**B. Findings (cont.)**

**Coastal Resource Area Impacts:** Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	_____	_____		
	a. square feet	b. square feet		
	_____	_____		
	c. c/y dredged	d. c/y dredged		
12. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input type="checkbox"/> Coastal Beaches	_____	_____	_____ cu yd	_____ cu yd
	a. square feet	b. square feet	c. nourishment	d. nourishment
14. <input type="checkbox"/> Coastal Dunes	_____	_____	_____ cu yd	_____ cu yd
	a. square feet	b. square feet	c. nourishment	d. nourishment
15. <input type="checkbox"/> Coastal Banks	_____	_____		
	a. linear feet	b. linear feet		
16. <input type="checkbox"/> Rocky Intertidal Shores	_____	_____		
	a. square feet	b. square feet		
17. <input type="checkbox"/> Salt Marshes	_____	_____	_____	_____
	a. square feet	b. square feet	c. square feet	d. square feet
18. <input type="checkbox"/> Land Under Salt Ponds	_____	_____		
	a. square feet	b. square feet		
	_____	_____		
	c. c/y dredged	d. c/y dredged		
19. <input type="checkbox"/> Land Containing Shellfish	_____	_____	_____	_____
	a. square feet	b. square feet	c. square feet	d. square feet
20. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	_____	_____		
	a. c/y dredged	b. c/y dredged		
21. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	_____	_____		
	a. square feet	b. square feet		
22. <input type="checkbox"/> Riverfront Area	_____	_____		
	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	_____	_____	_____	_____
	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	_____	_____	_____	_____
	g. square feet	h. square feet	i. square feet	j. square feet



**Massachusetts Department of Environmental Protection**  
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Provided by MassDEP:  
 224-0822  
 MassDEP File # \_\_\_\_\_  
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 Millbury  
 City/Town

**B. Findings (cont.)**

\*#23. 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 (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23.  Restoration/Enhancement \*:

a. square feet of BVW \_\_\_\_\_

b. square feet of salt marsh \_\_\_\_\_

24.  Stream Crossing(s):

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.
  - c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
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. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire *5/15/2021* unless extended in writing by the Department.
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.



**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:

224-0822

MassDEP File #

eDEP Transaction #

Millbury

City/Town

**C. General Conditions Under Massachusetts Wetlands Protection Act**

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.
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            224-0822 "
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 MassDEP.
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.





**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:

224-0822

MassDEP File #

eDEP Transaction #

Millbury

City/Town

**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

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.
19. The work associated with this Order (the "Project")
- (1)  is subject to the Massachusetts Stormwater Standards
- (2)  is NOT subject to the Massachusetts Stormwater Standards

**If the work is subject to the 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 Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period 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;



**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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**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

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 18(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 Pollution 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 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(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.



**Massachusetts Department of Environmental Protection**  
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 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

- 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
  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 (if you need more space for additional conditions, please attach a text document):

*see special conditions 21-39*

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.



# TOWN OF MILLBURY • CONSERVATION COMMISSION

MUNICIPAL OFFICE BUILDING • 127 ELM STREET • MILLBURY, MA 01527-2632 • TEL. 508- 865-5411

## *Conservation Commission*

*Ronald Stead, Chairman*

*Anthony Cameron*

*Paul DiCicco*

*Raymond Keddy*

*Christopher Weagle*

## **Special Conditions for DEP File #:224-0822 Order of Conditions for:**

Town of Millbury  
127 Elm Street, Millbury, MA

### General Conditions:

21. Cement trucks shall not be washed on the site. Any deposit of cement or concrete products into the wetland areas shall be removed by hand.
22. The Commission reserves the right and opportunity to modify this Order, or to require a new Notice of Intent to reflect concerns or issues raised, or project changes or mitigation measures proposed or required by other agencies and departments reviewing this project.
23. Additional Alteration Prohibited: There shall be no additional alterations of areas under Conservation Commission jurisdiction without the required review and permit(s). This condition shall survive the expiration of this Order, and shall be included as a continuing condition in perpetuity on the Certificate of Compliance.
24. A member of the Conservation Commission or its agent may enter and inspect the property and the activity that are the subjects of this Order at all reasonable times, with or without probable cause or prior notice, and until a Certificate of Compliance is issued, for the limited purpose of evaluating compliance with this Order (and Town Bylaw and Bylaw Regulations).
25. The term "Applicant" as used in this Order of Conditions shall refer to the owner, any successor in interest or successor in control of the property referenced in the Notice of Intent, supporting documents and this Order of Conditions. The Commission shall be notified in writing within 30 days of all transfers of title of any portion of property that take place prior to the issuance of the Certificate of Compliance.
26. This document shall be included by reference in all contracts, plans and specifications dealing with the activity that is the subject of this Order, and that are created or modified after the issuance date of this Order, along with a statement that this Order shall supersede any conflicting contractual arrangements, plans or specifications.

27. The applicant shall provide a copy of this Order to the person or persons supervising the activity that is the subject of this Order, and will be responsible for ensuring that all persons performing the permitted activity are fully aware of the terms and conditions of this Order.
28. If any change is made in the above-described plan(s) which may or will alter an area subject to protection under the Wetlands Protection Act, 310 CMR 10.00, the applicant shall inquire from this Commission or its agent, prior to implementing the change in the field, whether the change is significant enough to require the filing of a new Notice of Intent. Any errors in the plans or information submitted by the applicant shall be considered changes and the above procedures shall be followed.
29. All construction materials, earth stockpiles, landscaping materials, slurry pits, waste products, refuse, debris, stumps, slash, or excavate may only be stockpiled or collected in areas as shown and labeled on the approved plan(s), or if no such areas are shown must be placed or stored outside all resource areas and associated buffer zones under cover and surrounded by a double-staked row of hay bales to prevent contact with rain water.
30. No material of any kind may be buried, placed or dispersed in areas within the jurisdiction of the Commission by activities that are the subject of this Order, except as are expressly permitted by this Order or the plans approved herein.
31. There shall be no pumping of water from wetland resource areas.
32. All waste products, grubbed stumps, slash, construction materials, etc. shall be deposited at least 100 feet from wetland resource areas and 200 feet from rivers, unless specified in this Order.
33. No fuel, oil, or other pollutants shall be stored in any resource area or the buffer zone thereto, unless specified in this Order.
34. Any material placed in wetland resource areas by the applicant without express authorization under this Order shall be removed by the applicant upon demand by the Conservation Commission or its agent.
35. There shall be no underground storage of fuel or other hazardous substance in areas within the jurisdiction of the Conservation Commission.
36. Removal and storage of hazardous waste, if in an area subject to protection under Massachusetts Wetlands Protection Act and Town Bylaw:
  - a. Shall be conducted only when approved and directed by the Department of Environmental Protection, Environmental Protection Agency or other applicable state or federal agency under which remedial activities are directed and shall be conducted

in the manner specified in the Notice of Intent and appropriate agency directives.

- b. All hazardous materials, products and waste produced, stored or removed must be handled, treated and disposed of in accordance with local, state and federal law regulating such materials and must be located outside of the buffer zone to wetland resource areas, unless specifically authorized by the Order of Conditions and appropriate state and federal licensing and permitting agencies.
  - c. No hazardous waste shall be introduced or discharged into or toward wetland resource areas.
  - d. No hazardous waste shall be introduced or discharged into the sanitary or sewage systems in such a manner which will result in an impact to wetland resource areas unless approved by the Conservation Commission, Board of Health, Massachusetts Department of Environmental Protection and/or the United States Environmental Protection Agency.
  - e. Identification of all types of hazardous materials used, produced or stored shall be submitted to the Conservation Commission in writing.
37. No trash dumpsters will be allowed within 100 feet of areas subject to protection under the Massachusetts Wetlands Protection Act or the Town's Bylaw.
38. This Order shall pertain to the roadways, utilities within the roadway layout, and associated drainage facilities. Individual lot construction, including driveways, lot utilities, sewage and water, if under the Commission's jurisdiction, shall require individual Notices of Intent and/or Requests for Determination.
39. This Order authorizes only the activity described on the approved plan(s) and approved documents referenced in this Order. Any other or additional activity in areas within the jurisdiction of the Commission will require separate review and approval by the Commission or its agent.



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:  
224-0822  
MassDEP File #  
eDEP Transaction #  
Millbury  
City/Town

## D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable?  Yes  No
2. The \_\_\_\_\_ hereby finds (check one that applies):  
Conservation Commission
  - a.  that the proposed work 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 of Conditions is issued.
  - b.  that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:
 

1. Municipal Ordinance or Bylaw	2. Citation
---------------------------------	-------------
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 (if you need more space for additional conditions, attach a text document):



**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:  
 224-0822  
 MassDEP File #

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 Millbury  
 City/Town

## 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.





**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:  
 224-0822  
 MassDEP File # \_\_\_\_\_  
 eDEP Transaction # \_\_\_\_\_  
 Millbury  
 City/Town

### G. Recording Information

Prior to commencement of work, 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.

\_\_\_\_\_  
 Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

-----

To:

\_\_\_\_\_  
 Conservation Commission

Please be advised that the Order of Conditions for the Project at:

\_\_\_\_\_  
 Project Location

\_\_\_\_\_  
 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



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

DEP File Number:

**Request for Departmental Action Fee  
Transmittal Form**

Provided by DEP

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**A. Request Information**

1. Location of Project

a. Street Address

b. City/Town, Zip

c. Check number

d. Fee amount

2. Person or party making request (if appropriate, name the citizen group's representative):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

3. Applicant (as shown on Determination of Applicability (Form 2), Order of Resource Area Delineation (Form 4B), Order of Conditions (Form 5), Restoration Order of Conditions (Form 5A), or Notice of Non-Significance (Form 6)):

Name

Mailing Address

City/Town

State

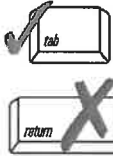
Zip Code

Phone Number

Fax Number (if applicable)

4. DEP File Number:

**Important:**  
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**B. Instructions**

1. When the Departmental action request is for (check one):

- Superseding Order of Conditions – Fee: \$120.00 (single family house projects) or \$245 (all other projects)
- Superseding Determination of Applicability – Fee: \$120
- Superseding Order of Resource Area Delineation – Fee: \$120



**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands

DEP File Number:

**Request for Departmental Action Fee  
Transmittal Form**

Provided by DEP

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**B. Instructions (cont.)**

Send this form and check or money order, payable to the *Commonwealth of Massachusetts*, to:

Department of Environmental Protection  
Box 4062  
Boston, MA 02211

2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.
3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see <https://www.mass.gov/service-details/massdep-regional-offices-by-community>).
4. 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.

SECTION 00890

ATTACHMENT B

MASSDEP 401 WATER QUALITY CERTIFICATION



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker  
Governor

Karyn E. Polito  
Lieutenant Governor

Bethany Card  
Secretary

Martin Suuberg  
Commissioner

December 12, 2022

Keith Caruso - Millbury DPW  
127 Elm Street  
Millbury, MA 01527

TRANSMITTAL # 22-WW08-0016-APP  
DEP File # 224-0822  
NAE- 2022-00743

RE: WW08 – 401 Minor Dredge Permit/ 401 Water Quality Certificate

AT: Project Locus – Millbury, Dorothy Pond  
Project Drainage Area - Blackstone Watershed

Dear Mr. Caruso:

The Department of Environmental Protection (“MassDEP”) has reviewed your application for a 401 Water Quality Certification for Minor Dredging (“WW08”), as referenced above and is basing its certification upon an evaluation of the information contained in the application which is relevant to water quality considerations. In accordance with the provisions of Section 401 of the Federal Clean Water Act (33 U.S.C. § 1251 *et seq.*), M.G.L. c. 21, §§ 26-53, and 314 CMR 9.00, MassDEP has determined there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

The waters of this portion of the Project Drainage Area are designated in the Massachusetts Surface Water Quality Standards as Class B. Such waters are intended “as habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions and for primary and secondary contact recreation.” Anti-degradation provisions of these Standards require that “existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”

**Project Description:** The project involves the in-situ replacement of the Wheelock Avenue Bridge on the existing abutment over a precast reinforced concrete box culvert in compliance with the Massachusetts Stream Crossing Standards. Guardrails,

sidewalks, and utility replacements are detailed in the project plans.<sup>1</sup> The project involves improvement dredging, by mechanical means from an upland location, of approximately 325 cubic yards of sediment. Work will involve temporary disturbance of 972 square feet of Land Under Water and residual permanent impacts to 262 square feet of Land Under Water. The sediment will be dewatered on-site and disposed off-site at an upland facility. Temporary impacts to 76 linear feet of existing degraded rip-rap bank will be replaced. Existing degraded bank of riprap will be improved to stabilize the slope and increase the hydraulic opening and water carrying capacity of the existing channel.

Best Management Practices (BMPs) to mitigate project impacts include the use of a bypass pipe in addition to and upstream and downstream coffer dams and silt curtains. These measures will allow for work “in the dry”. Other site mitigation includes use of straw bales, composite filter tubes, and temporary dewatering BMPs as perimeter sediment and erosion controls to contain sediment migration beyond the limits of work.<sup>2</sup> Other measures include the control of stormwater flow onto the site, storage and covering plans for stockpiles, a spill prevention and control plan, and daily monitoring of all erosion control measures.

Rare Species: The Project, as currently proposed, does not occur within Estimated Habitat of Rare Wildlife or Priority Habitat as indicated in the Massachusetts Natural Heritage Atlas (15th Edition) and does not require further review by the Division of Fish and Wildlife under the MA Endangered Species Act Regulations (321 CMR 10.18).<sup>3</sup>

Fisheries: Division of Fish and Wildlife does not recommend any time of year restrictions for in-water work associated with the bridge replacement on Dorothy Pond.<sup>4</sup>

Sediment Chemistry Results: The analytical results were compared to MassDEP’s *Interim Policy for Sampling, Analysis, Handling and Tracking Requirements for Dredged Sediment Reuse and Disposal (COMM-94-007)*. All the results were either non-detect or below the Reportable Concentration (“RC”) S-1 criteria of the Massachusetts Contingency Plan (“MCP”), except for one sample which exceed the threshold for arsenic. However, the one arsenic S-1 exceedance was below the contaminant levels for soil reuse at lined landfills. As such, the sediment may be transported off-site to an authorized in-state disposal facility subject to Material Shipping Record documentation.

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<sup>1</sup> See plans entitled: Town of Millbury, Massachusetts Millbury Highway Department – Wheelock Avenue Over Dorothy Pond (Bridge No. M-22-022) Bridge Replacement. 22 Sheets, various scales, signed and stamped by Lawrence F. Kegan, Jr., PE and dated January 26, 2022.

<sup>2</sup> See: Town of Millbury - Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan. Weston and Sampson. 5 pages.

<sup>3</sup> See: Correspondence from the Natural Heritage Endangered Species Program dated September 25, 2022.

<sup>4</sup> See: Correspondence from MassWildlife dated October 5, 2022.

Public Notice: Public notice of the project was published in the Millbury-Sutton Chronicle on October 05, 2022. No public comments were received during the 21-day public comment period, which ended on October 26, 2022.

Section 61 Findings: Pursuant to M.G.L. Chapter 30, Section 61 to 62H inclusive [the Massachusetts Environmental Policy Act (MEPA)], the project, as referenced in the Water Quality Certification Application, DEP Application #22-WW08-0016-APP, did not meet or exceed a related MEPA review threshold pursuant to 301 CMR 11.03. Therefore, MEPA review is not required.

**Therefore, based on information currently in the record, MassDEP grants a 401 WQC for this project subject to the following conditions to maintain or attain water quality, to minimize any damage to the environment that may result from the project, and to ensure compliance with appropriate provisions of state law. MassDEP certifies that there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.**

1. The contractor shall take all steps necessary to assure that the proposed activities will be conducted in a manner that will avoid violations of the anti-degradation provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, that protect all waters, including wetlands.
2. Prior to the start of work, or for any portion of the work thereafter, MassDEP shall be notified of any change(s) in the proposed project or plans that may affect waters or wetlands. MassDEP will determine whether the change(s) requires a revision to this Certification.
3. All work shall be performed in accordance with the following documents and plans:
  - Plans entitled: Town of Millbury, Massachusetts Millbury Highway Department – Wheelock Avenue Over Dorothy Pond (Bridge No. M-22-022) Bridge Replacement. 22 Sheets, various scales, signed and stamped by Lawrence F. Kegan, Jr., PE and dated January 26, 2022.
  - Weston & Sampson Memorandum dated April 20, 2022, Re: Sediment Analytical Results and attached Laboratory Analytical Reports.
4. MassDEP shall be notified one week prior to the start of in-water work so that MassDEP staff may inspect the work for compliance with the terms and conditions of this 401 WQC.

5. The term of the 401 WQC remains in effect for the same duration as the federal permit (NAE- 2022-00743) that requires it.
6. During the project period, there shall be no discharge or spillage of fuel, oil, or other pollutants, including sediments, onto any part of the site. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism. Pursuant to 314 CMR 9.05(4), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
7. No later than four weeks after issuance of this 401 WQC, the applicant shall submit a notification procedure outlining the reporting process to MassDEP for incidents relating to dredging activities that impact surrounding resource areas and habitats including, but not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on the surface of the water, a sediment spill, a turbidity plume beyond the deployed BMPs, and a barge or equipment accident/spill. If at any time during implementation of the project such an incident occurs, the applicant shall immediately notify MassDEP and all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures are deployed to the satisfaction of MassDEP. In accordance with 314 CMR 9.09(1), this condition is necessary to protect water quality because it ensures that the project proponent is using proper monitoring and construction practices that will maintain the integrity of the site hydrology and maintain the aquatic resource functions and values.
8. Future maintenance dredging is not authorized under this 401 WQC. As provided by 314 CMR 9.09(1), this condition is necessary to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
9. All stream channel work shall be conducted “in the dry”. Flow to the downstream channel through the bypass pipe shall be maintained throughout construction of the project. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
10. All equipment/machinery shall be stored above the High-Water Mark (“HWM”) and outside any wetland resource areas when not in use. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
11. If oil and/or hazardous materials are identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.00) must be



made to the Department. If necessary, a Licensed Site Professional (LSP) shall be retained to determine if notification is required and if need be, to render appropriate opinions. The LSP shall evaluate whether risk reduction measures are necessary if contamination is present and be responsible for appropriate sediment management activities. Pursuant to 314 CMR 9.07(1), this condition ensures that any hazardous materials detected on the project site are promptly and properly mitigated in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.

12. During dredging operations, measures should be made to avoid the potential spread of aquatic invasive species to other waterbodies. The dredged material shall be loaded directly into the sediment dewatering area. Appropriate invasive species decontamination protocols should be reviewed and applied, as required. All vehicles, equipment and tools that have direct contact with invasive species should be cleaned before leaving the project areas. Pursuant to 314 CMR 9.07(1), this condition is necessary to protect the public health, restore site hydrology, maintain the aquatic resource functions, and the protect the chemical, physical, and biological integrity of the water resources of the Commonwealth.
13. Best Management Practices (“BMPs”) including temporary cofferdam construction, use of straw hay bales, staked compost filter tubes, and silt curtains shall be deployed upstream and downstream of the dredge area to minimize turbidity. At a minimum, the silt curtain shall be bottom weighted to minimize the degree of lifting/flailing and shall be of suitable material/grade based on the velocity of the current at the site. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
14. Water quality nearby the construction areas such as turbidity (NTU) should be monitored during before, during, and after cofferdam construction to ensure that water quality standards are met. Turbidity monitoring data should be kept on site and available for MassDEP review upon request. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
15. Erosion control measures shall be inspected and cleared of sediment, as needed, following any precipitation event. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
16. Sediment and site dewatering locations and dewatered effluent discharge hoses shall be in an upland area beyond bordering vegetated wetlands and land under water. Dewatering structures shall be constructed and in place prior to any dredging activities. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that

construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.

17. Upon completion of construction, the water management measures (i.e., coffer dam removal) shall be conducted in a manner to gradually reintroduce natural channel stream flow. By-pass pumping shall be maintained for approximately 50% of the stream discharge until approximately 50% of the stream discharge is flowing through the work area. Once 50% stream flow is established and contiguous through the work area, by-pass pumping around the work area may cease. Pursuant to 314 CMR 9.07(1), this condition is necessary to protect the public health, restore site hydrology, maintain the aquatic resource functions, and the protect the chemical, physical, and biological integrity of the water resources of the Commonwealth.
18. MassDEP shall be notified in writing of the name and location of the upland licensed facility accepting the dredged material for disposal or reuse as daily cover material. If the licensed facility is located out of state, documentation shall be provided to MassDEP that the dredged material disposal/reuse has been approved and will be accepted by the receiving state in accordance with 314 CMR 9.07(13)(b). The dredged material shall not be transported to the facility without concurrence of MassDEP.
19. Best Management Practices (BMPs) shall be implemented during transportation of the dredged material to the licensed receiving facility. At a minimum, when transported upon public roadways, all dredged material shall have no free liquid as determined by the Paint Filter Test or other suitably analogous methodology acceptable to MassDEP, and a tarpaulin or other means shall be used to cover the dredged material during transport. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
20. A Material Shipping Record (“MSR”) shall be used to track the dredged material to the licensed upland facility. A fully executed copy of the MSR shall be provided to MassDEP within 30 days of final shipment to the reuse location or facility. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
21. Within 30 days of the completion of dredging, photographs of the affected areas depicting post-dredge conditions shall be taken and submitted to MassDEP. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices have been implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.

Town of Millbury - Dorothy Pond  
WW08 – 401 Water Quality Certificate

Transmittal # 22-WW08-0016-APP  
Blackstone Watershed

Failure to comply with this 401 WQC is grounds for enforcement, including civil and criminal penalties, under M.G.L. c. 21, § 42, 314 CMR 9.00, M.G.L. c. 21A, § 16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

This 401 WQC does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Permit Application or supplemental documents will require further notification to and, if an amendment is required, approval by MassDEP.

### NOTICE OF APPEAL RIGHTS

Certain persons shall have a right to request an adjudicatory hearing concerning 401 WQCs by MassDEP when an application is required:

- a. the applicant or property owner;
- b. any person aggrieved by the decision who has submitted written comments during the public comment period;
- c. any ten persons of the Commonwealth pursuant to M.G.L. c. 30A where a group member has submitted written comments during the public comment period; or
- d. any governmental body or private organization with a mandate to protect the environment, which has submitted written comments during the public comment period.

Any person aggrieved, any ten persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c. 30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to MassDEP, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within 21 days from the date of issuance of this Certificate.

Case Administrator  
Massachusetts Department of Environmental Protection  
100 Cambridge Street, Suite 900  
Boston, MA 02114

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands and Waterways Program at:

Town of Millbury - Dorothy Pond  
WW08 – 401 Water Quality Certificate

Transmittal # 22-WW08-0016-APP  
Blackstone Watershed

Massachusetts Department of Environmental Protection  
Wetlands Program  
100 Cambridge Street, Suite 900  
Boston, MA 02114

A Notice of Claim for Adjudicatory Hearing shall comply with MassDEP's Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 314 CMR 9.10(3):

- a. the Permit Transmittal Number;
- b. the complete name of the applicant and address of the project;
- c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
- d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found at 314 CMR 9.02;
- e. a clear and concise statement that an adjudicatory hearing is being requested;
- f. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the MassDEP's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written 401 WQC; and
- g. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Conservation and Recreation (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
Commonwealth Master Lockbox  
PO Box 4062  
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or

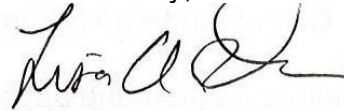
Town of Millbury - Dorothy Pond  
WW08 – 401 Water Quality Certificate

Transmittal # 22-WW08-0016-APP  
Blackstone Watershed

municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. MassDEP may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Any questions or communications related to this 401 WQC should be directed to Michael Stroman [Michael.stroman@mass.gov](mailto:Michael.stroman@mass.gov).

Sincerely,

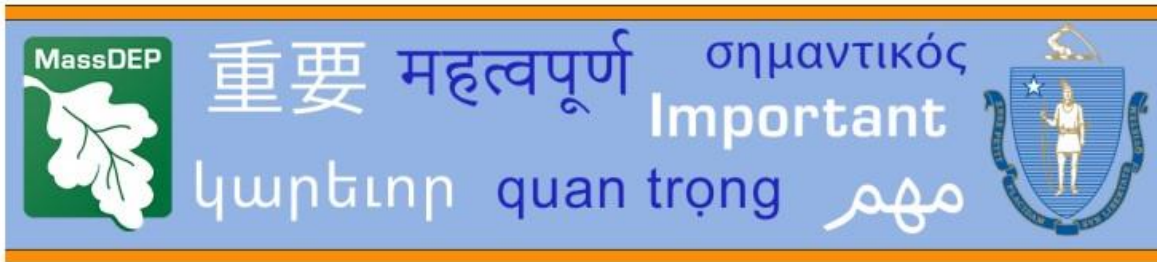


Lisa Rhodes  
Wetlands Program Chief

ECC:

Page Hailey, Weston & Sampson Engineers [page.hailey@wseinc.com](mailto:page.hailey@wseinc.com)  
Conor McCormack, Millbury Conservation Commission  
Judith Schmitz, MassDEP Central Regional Office [Judith.Schmitz@mass.gov](mailto:Judith.Schmitz@mass.gov)  
Paul Maniccia, U.S. Army Corps of Engineers [paul.m.maniccia@usace.army.mil](mailto:paul.m.maniccia@usace.army.mil)  
Edward Reiner, USEPA. [Reiner.edward@epa.gov](mailto:Reiner.edward@epa.gov)  
Todd Richards, DFW – Westborough [todd.richards@mass.gov](mailto:todd.richards@mass.gov)  
Cheeseman, Melany (FWE) [melany.cheeseman@mass.gov](mailto:melany.cheeseman@mass.gov)

Attachments: Communication for Non-English Speaking Parties document  
Plans of Record



### Communication for Non-English-Speaking Parties

#### English

This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone number listed below.

#### Español Spanish

Este documento es importante y debe ser traducido de inmediato. Si necesita este documento traducido, comuníquese con la Directora de Diversidad de MassDEP al número de teléfono que aparece más abajo.

#### Português Portuguese

Este é um documento importante e deve ser traduzido imediatamente. Se precisar de uma tradução deste documento, entre em contato com o Diretor de Diversidade da MassDEP nos números de telefone listados abaixo.

#### 繁體中文 Chinese Traditional

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼聯絡 MassDEP 多元化負責人。

#### 简体中文 Chinese Simplified

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與 MassDEP 的多元化主任聯繫。

#### Ayisyen Kreyòl Haitian Creole

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradwi l imedyatman. Si ou bezwen dokiman sa a tradwi, tanpri kontakte Direktè Divèsite MassDEP la nan nimewo telefòn endike anba.

#### Việt Vietnamese

Tài liệu này rất quan trọng và cần được dịch ngay lập tức. Nếu quý vị cần dịch tài liệu này, xin liên lạc với Giám đốc Đa dạng của MassDEP theo các số điện thoại ghi dưới đây.

#### ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះគឺសំខាន់ហើយត្រូវបានបកប្រែភ្លាមៗ។ ប្រសិនបើអ្នកត្រូវការឱ្យគេបកប្រែឯកសារនេះ:

សូមទាក់ទងមកនាយកដ្ឋានពិធីកម្មរបស់ MassDEP តាមលេខទូរស័ព្ទខាងក្រោម។

#### Kriolu Kabuverdianu Cape Verdean

*Kel dokumentu li é inportáti y debe ser traduzidu imidiatamenti. Se bu meste di kel dokumentu traduzidu, pur favor kontakta Diretor di Diversidádi di MassDEP na numeru abaxu indikadu.*

Contact Glynis L. Bugg, Acting Diversity Director/Civil Rights 857-262-0606

Massachusetts Department of Environmental Protection

One Winter Street, Boston MA 02108

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>

(Version revised 7.22.2022) 310 CMR 1.03(5)a



### Русский Russian

Это важный документ, и он должен быть безотлагательно переведен. Если вам нужен перевод данного документа, пожалуйста, свяжитесь с директором по вопросам многообразия (Diversity Director) компании MassDEP по указанному ниже телефону.

### العربية Arabic

هذه الوثيقة مهمة ويجب ترجمتها على الفور. إذا كنت بحاجة إلى هذه الوثيقة مترجمة، يرجى الاتصال بمدير التنوع PMassDE على أرقام الهواتف المدرجة أدناه.

### 한국어 Korean

이 문서는 중요하고 즉시 번역해야 합니다. 이 문서의 번역이 필요하시다면, 아래의 전화 번호로 MassDEP의 다양성 담당 이사에 문의하시기 바랍니다.

### հայերեն Armenian

Այս փաստաթուղթը կարևոր է և պետք է անմիջապես թարգմանվի: Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանել, դիմեք MassDEP-ի բազմազանության տնօրենին ստորև նշված հեռախոսահամարով:

### فارسی Farsi Persian

این سند مهم است و باید فوراً ترجمه شود. اگر به ترجمه این سند نیاز دارید، لطفاً با مدیر بخش تنوع نژادی MassDEP به شماره تلفن ذکر شده در زیر تماس بگیرید.

### Français French

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, veuillez communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

### Deutsch German

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Sofern Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an den Diversity Director MassDEP unter der unten aufgeführten Telefonnummer.

### Ελληνική Greek

Το παρόν έγγραφο είναι σημαντικό και θα πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του παρόντος εγγράφου, παρακαλούμε επικοινωνήστε με τον Διευθυντή Διαφορετικότητας του MassDEP στους αριθμούς τηλεφώνου που αναγράφονται παρακάτω.

### Italiano Italian

Comunicazione per parti che non parlano inglese. Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, potete contattare il Direttore di Diversità di MassDEP al numero di telefono elencato di seguito.

### Język Polski Polish

Dokument ten jest ważny i powinien zostać natychmiast przetłumaczony. Jeśli potrzebujesz przetłumaczonej wersji dokumentu, prosimy o kontakt z dyrektorem ds. różnorodności MassDEP pod jednym z numerów telefonu wymienionych poniżej.

### हिन्दी Hindi

यह दस्तावेज़ महत्वपूर्ण है और इसका तुरंत अनुवाद किया जाना चाहिए. यदि आपको इस दस्तावेज़ का अनुवाद करने की आवश्यकता है, तो कृपया नीचे सूचीबद्ध टेलीफोन नंबरों पर मासडेपस डाइवर्सिटी के निदेशक से संपर्क करें.

Contact Glynis L. Bugg, Acting Diversity Director/Civil Rights 857-262-0606

Massachusetts Department of Environmental Protection

One Winter Street, Boston MA 02108

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(Version revised 7.22.2022) 310 CMR 1.03(5)(a)

## SECTION 01014

### SCOPE AND SEQUENCE OF WORK

#### PART 1 – GENERAL

##### 1.01 WORK INCLUDED:

- A. Bridge Replacement: Bridge No. M-22-022 carries Wheelock Avenue over Dorothy Pond. The bridge is located approximately 1000' north from Millbury Avenue. The scope of work includes demolition and removal of the existing bridge superstructure and substructure, the design, construction and installation of a new precast concrete box culvert bridge and wingwalls, and roadway & stone masonry wall reconstruction, and safety improvements.

##### 1.02 RELATED WORK:

- A. SECTION 01110 – CONTROL OF WORK AND MATERIALS

#### PART 2 - PRODUCTS (NOT APPLICABLE)

#### PART 3 - EXECUTION

##### 3.01 GENERAL:

- A. The Contractor shall be responsible for scheduling its activities and the activities of any subcontractors involved, to meet the completion date, or milestones, established for the contract. Scheduling of the work shall be coordinated with the Owner and Engineer.
- B. The Construction Sequence Requirements shall be developed by the Contractor to form a complete schedule for the project, which shall be coordinated with the Owner and Engineer. The Contractor shall submit a detailed plan to the Engineer for review and acceptance prior to performing any work at the site. The plan shall describe the proposed sequence, methods, and timing of the work.

END OF SECTION



SECTION 01110

CONTROL OF WORK AND MATERIALS

PART 1 – GENERAL

Not Used.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 HAULING, HANDLING AND STORAGE OF MATERIALS:

- A. The Contractor shall, at its own expense, handle and haul all materials furnished by it and shall remove any of its surplus materials at the completion of the work.
- B. The Contractor shall provide suitable and adequate storage for equipment and materials furnished by it that are liable to injury and shall be responsible for any loss of or damage to any equipment or materials by theft, breakage, or otherwise.
- C. All excavated materials and equipment to be incorporated in the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be available to all parts of the Work and to all public utility installations in the vicinity of the work. Materials and equipment shall be kept neatly piled and compactly stored in

such location as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

- D. The Contractor shall be responsible for all damages to the work under construction during its progress and until final completion and acceptance even though partial payments have been made under the Contract.

### 3.02 EASEMENTS:

- A. The work is located in easements obtained by the Owner. The Contractor has no rights outside of the easements unless they are obtained from the property owner.
- B. Contractor shall schedule work so that it will cause minimum inconvenience and nuisance to abutting property owners, over the shortest possible time.
- C. Easements shall be kept clean; no rubbish or discarded construction materials shall be allowed to accumulate. Storage of excess construction materials, including soil, ledge, equipment, or machinery on easements will not be allowed.
- D. Restoration of fences, shrubs, trees and grass shall be completed promptly following completion of the work in an easement, to minimize disruption and inconvenience to property owners.
- E. Unless approved by the Engineer, the use of easements for ease of access to and egress from other areas of the project will not be permitted.

### 3.03 OPEN EXCAVATIONS:

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at its own expense, provide suitable and safe means for completely covering all open excavations and for accommodating travel when work is not in progress.
- B. Bridges, if any, provided for access to private property during construction shall be removed when no longer required.
- C. The length of open trench will be controlled by the particular surrounding conditions but shall always be confined to the limits prescribed by the Engineer.
- D. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, then special construction procedures shall be developed and implemented by the contractor

with prior approval of the owner, such as limiting the length of trench and prohibiting stocking excavated material in the street.

- E. All street excavations shall be completely closed at the end of each work day. Backfilling or use of steel plates of adequate strength to carry traffic shall be used.

### 3.04 MAINTENANCE OF TRAFFIC:

- A. Unless permission to close the street is received in writing from the proper authority, all excavated materials and equipment shall be placed so that vehicular and pedestrian traffic may be safely maintained at all times.
- B. Should the Chief of Police deem it necessary, uniformed officers will be assigned to direct traffic. The Contractor shall make all arrangements in obtaining uniformed officers required.
- C. The Contractor shall at its own expense, as directed by the Police Traffic Control/Safety Officer, provide and erect acceptable barricades, barrier fences, traffic signs, and all other traffic devices not specifically covered in a bid item, to protect the work from traffic, pedestrians, and animals. The Contractor shall provide sufficient temporary lighting such as lanterns/flashers (electric battery operated) or other approved illuminated traffic signs and devices to afford adequate protection to the traveling public, at no additional cost to the Owner. **See Section 01552 CONSTRUCTION ZONE SAFETY PLAN.**
- D. The Contractor shall furnish all construction signs that are deemed necessary by and in accordance with Part VI of the Manual on Uniform Traffic Control Devices as published by the U.S. Department of Transportation. In addition, the Contractor may be required to furnish up to 128 square feet of additional special construction warning signs. Size and exact wording of signs shall be determined by the Engineer during construction.
- E. The intent of policing is to ensure public safety by direction of traffic. Police officers are not to serve as watchmen to protect the Contractor's equipment and materials.
- F. Nothing contained herein shall be construed as relieving the Contractor of any of its responsibilities for protection of persons and property under the terms of the Contract.

### 3.05 CARE AND PROTECTION OF PROPERTY:

The Contractor shall be responsible for the preservation of all public and private property and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be promptly restored by the Contractor, at its expense, to

a condition similar or equal to that existing before the damage was done, to the satisfaction of the Engineer.

3.06 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES:

- A. All existing buildings, utilities, pipes, poles, wires fences, curbing, property line markers and other structures which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the contractor. Should such property be damaged, it shall be restored by the Contractor, at no additional cost to the Owner.
- B. The Contractor shall determine the location of all underground structures and utilities (including existing water services, drain lines, electrical lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by Contractor.
- C. When fences interfere with the Contractor's operations, it shall remove and (unless otherwise specified) promptly restore them in accordance with Section 01564 EXISTING FENCES.
- D. On paved surfaces the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels which are shaped so as to cut or otherwise damage such surfaces.
- E. All property damaged by the Contractor's operations shall be restored to a condition at least equal to that in which it was found immediately before work was begun. Suitable materials and methods shall be used for such restoration.
- F. Restoration of existing property and structures shall be carried out as promptly as practicable and shall not be left until the end of the construction period.

3.07 MAINTENANCE OF FLOW:

- A. The Contractor shall at its own cost, provide for the flow of sewers and drains interrupted during the progress of the work, and shall immediately cart away and dispose of all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Engineer well in advance of the interruption of any flow.
- B. All existing drainage facilities including, but not limited to; brooks, streams, canals, channels, ditches, culverts, catch basins and drainage piping shall be adequately safeguarded so as not to impede drainage or to cause siltation of downstream areas in any

manner whatsoever. If the Contractor damages or impairs any of the aforesaid drainage facilities, it shall repair the same within the same day.

- C. At the conclusion of the work, the Contractor shall remove all silt in drainage structures caused by its operations as described in Section 01740, CLEANING UP.

### 3.08 REJECTED MATERIALS AND DEFECTIVE WORK:

- A. Materials furnished by the Contractor and condemned by the Engineer as unsuitable or not in conformity with the specifications shall forthwith be removed from the work by the Contractor, and shall not be made use of elsewhere in the work.
- B. Any errors, defects or omissions in the execution of the work or in the materials furnished by the Contractor, even though they may have been passed or overlooked or have appeared after the completion of the work, discovered at any time before the final payment is made hereunder, shall be forthwith rectified and made good by and at the expense of the Contractor and in a manner satisfactory to the Engineer.
- C. The Contractor shall reimburse the Owner for any expense, losses or damages incurred in consequence of any defect, error, omission or act of the Contractor or its employees, as determined by the Engineer, occurring previous to the final payment.

### 3.09 SANITARY REGULATIONS:

Sanitary conveniences for the use of all persons employed on the work, properly screened from public observation, shall be provided in sufficient numbers in such manner and at such locations as may be approved. The contents shall be removed and disposed of in a satisfactory manner as the occasion requires. The Contractor shall rigorously prohibit the committing of nuisances within, on or about the work. Any employees found violating these provisions shall be discharged and not again employed on the work without the written consent of the Engineer. The sanitary conveniences specified above shall be the obligation and responsibility of the Contractor.

### 3.10 SAFETY AND HEALTH REGULATIONS:

This project is subject to the Safety and Health regulations of the U.S. Department of Labor set forth in 29 CFR, Part 1926, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety "Rules and Regulations for the Prevention of Accidents in Construction Operations (454 CMR 10.0 et. seq.)." The Contractor shall be familiar with the requirements of these regulations.

### 3.11 SITE INVESTIGATION:

The Contractor acknowledges that it has satisfied itself as to the conditions existing at the site of the work, the type of equipment required to perform this work, the quality and quantity of the materials furnished insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the drawings and

specifications made a part of this contract. Any failure of the Contractor to acquaint itself with available information will not relieve it from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusion or interpretation made by the Contractor on the basis of the information made available by the Owner.

END OF SECTION

## SECTION 01140

### SPECIAL PROVISIONS - GENERAL

#### PART 1 - GENERAL

The term Special Provisions shall apply to this Section 00140 in Division 00, and in Division 01, and to the Special Provisions-Technical in Division 02, throughout this bid document.

#### PART 2 - PRODUCTS

Not used

#### PART 3 - EXECUTION

##### 3.01 WATER FOR CONSTRUCTION PURPOSES:

- A. In locations where water is in sufficient supply, the Contractor may be allowed to use water without charge for jetting backfill and other construction purposes. The express approval of the Owner shall be obtained before water is used. Waste of water by the Contractor shall be sufficient cause for withdrawing the privilege of unrestricted use.
- B. If no water is available, the Contractor shall supply water at no additional cost to the Owner.

##### 3.02 PIPE LOCATION:

Pipe shall be located substantially as indicated on drawings. The Owner reserves the right, acting through the Engineer, to make such modifications as may be deemed desirable to avoid interference with existing structures or for other reasons.

##### 3.03 DIMENSIONS OF EXISTING STRUCTURES:

Where the dimensions and locations of existing structures are of critical importance in the installation or connections of new work, the Contractor shall verify such dimensions

and locations in the field before the fabrication of any material or equipment that is dependent on the correctness of such information.

3.04 OCCUPYING PRIVATE PROPERTY:

The Contractor shall not enter upon nor occupy with men, equipment or materials any property outside of the public highways or Owner's easements, except with the written consent of the property owner or property owner's agent.

3.05 EXISTING UTILITY LOCATIONS – CONTRACTOR'S RESPONSIBILITY:

- A. The location of existing underground services and utilities shown on the drawings is based on available records. It is not warranted that all existing utilities and services are shown, or that shown locations are correct. The Contractor shall be responsible for having the utility companies locate their respective utilities on the ground prior to excavating.
- B. To satisfy the requirements of **Massachusetts law, Chapter 82, Section 40**, the Contractor shall notify all utilities concerned by calling "DIG SAFE" at telephone number: 1-888-344-7233., at least 72 hours, exclusive of Saturdays, Sundays and holidays, prior to excavation in the proximity of telephone, gas, cable television and electric utilities,.
- C. The Contractor shall coordinate all work involving utilities and shall satisfy itself as to the existing conditions of the areas in which it is to perform his work. It shall conduct



and arrange its work so as not to impede or interfere with the work of other contractors working in the same or adjacent areas.

3.06 COORDINATION OF WORK:

The General Contractor shall be responsible for coordinating its own work as well as that of any subcontractors. It shall be responsible for notification of the Engineer when each phase of work is expected to begin and the approximate completion date.

3.07 TIME FOR COMPLETION OF CONTRACT:

The time for completion of this contract is stipulated in the Form of/for General Bid. The Bidder shall base its bid on completing the proposed work by the completion date stipulated in Section 00410, FORM OF GENERAL BID/FORM FOR GENERAL BID.

3.08 MAINTENANCE OF TRENCH SURFACE:

After backfilling and compacting the trench, the Contractor shall be responsible for keeping the ground surface dry and passable at all times until the surface has been restored to original conditions.

3.09 WETLANDS PROTECTION SIGN:

A sign not less than two square feet in size shall be displayed at the site. The sign shall bear the words "Massachusetts Department of Environmental Protection, Wetland Division, File Number \_\_\_\_."

3.10 PROJECT SIGN:

- A. **The project sign shall be as shown on the drawing immediately following this section of the specifications.** The sign shall be erected within ten (10) days after the

construction contract is awarded. The sign shall be fabricated, erected, and maintained by the Contractor.

- B. The Contractor shall provide adequate support for the sign as determined by the Engineer. All supports, trim, and back of sign shall be painted with at least two coats of exterior paint.
- C. The project sign shall be maintained by the Contractor in good condition at all times for the duration of construction. The Contractor shall remove the sign upon completion of construction.

### 3.11 COMPLIANCE WITH PERMITS:

- A. The Contractor shall perform all work in conformance with requirements of the Permits, which appear in Section 00890 – PERMITS.

### 3.12 CUTTING, FITTING AND PATCHING:

- A. The Contractor shall do all cutting, fitting, or patching of its work that may be required to make its several parts come together properly and fit it to receive or be received by work of other Contractors, as shown upon or reasonably implied by the drawings and the specifications for the completed structure, including all existing work.
- B. The Contractor shall not endanger any work by cutting, digging, or otherwise and shall not cut or alter the work of any other Contractor, save with the consent of the Engineer.
- C. All holes or openings required to be made in new or existing work, particularly at pipe, conduit, or other penetrations not covered by escutcheons or plates shall be neatly patched. All such holes shall be made completely watertight as approved by the Engineer.
- D. Size and locations of holes required in steel, concrete, or other structural or finish materials for piping, wiring, ducts, etc., which have not been located and detailed on the drawings shall be approved by the Engineer prior to layout and cutting thereof. All holes shall be suitably reinforced as required by the Engineer.
- E. Workmanship and materials of patching and repair work shall match the adjacent similar work and shall conform to the applicable sections of the specification. Patches and joints with existing work shall provide, as applicable in each case, visual, structural, and waterproofing continuity.

### 3.13 CONNECTIONS TO EXISTING WATER SYSTEMS:

- A. The Owner will, upon **72-hour** notice from the Contractor, assist the Contractor by locating and opening or closing any and all valves required for draining or admitting water to the various sections of the water main as applicable and as required to perform the proposed work. No damages shall be claimed by the Contractor for delays in

dewatering pipelines nor shall any damages be claimed because of water leaking through closed valves after dewatering is completed.

- B. Connections to the existing distribution system shall be made with the mains under pressure unless the lines can be temporarily taken out of service as approved by the Owner.
- C. The Contractor will be required to make test excavations to ascertain that the proposed position of the connections will be clear of joints, fittings, or other obstructions.
- D. If any failure occurs in connection to existing mains, service shall be restored in the shortest possible time, the Contractor working around the clock, if necessary. The Contractor shall cooperate with the Owner in notifying the consumers or supplying emergency water. If required by Owner, the Contractor shall make connections to water mains during night hours, on Sunday or at other times of off-peak demand for water.

#### 3.14 PROTECTION OF AQUIFER:

The Contractor's attention is directed to the fact that the construction area is located within the watershed of the existing water supply. The Contractor shall take extra precautions to ensure that no pollutants enter the groundwater table from the construction area. The Contractor shall not store fuels or other hazardous materials or potential contaminants on the construction site. In the event of a spill, the Contractor shall immediately notify the Engineer.

#### 3.15 CONTRACTOR'S REPRESENTATIVE:

The Contractor shall designate a representative who will be available to respond to emergency calls by the Owner at any time day and night and on weekends and holidays should such a situation arise.

#### 3.16 VISUAL RECORDING:

Before beginning construction, the Contractor shall make a color DVD recording along the entire work length. One complete recording, for the entire project length, shall be furnished to the Engineer prior to the start of the work. The visual recording shall be identified by street name, as applicable, and station.

#### 3.17 HOURS OF CONSTRUCTION ACTIVITY:

- A. The Contractor shall conduct all construction activity between 7:00 a.m. and 5:00 p.m., Monday through Friday. No construction work shall be allowed on Saturdays, Sundays or Holidays without written authorization from the Owner.
- B. The Owner will provide personnel for assistance in locating and operating valves at no cost to the Contractor during the Owner's normal working hours (**Monday through Friday 7:00 a.m. to 3:00 p.m.**). When this assistance is required by the Contractor

outside of the Owner's normal working hours the cost will be incurred by the Contractor at the prevailing overtime rate of pay for the personnel providing the assistance. The Owner will bill the Contractor directly.

3.18 CONSTRUCTION CREWS:

The Contractor shall not increase the number of construction crews assigned to the work without providing one-week advance notice to the Engineer.

3.19 MASSACHUSETTS DATA SECURITY REGULATIONS:

The Contractor is required to comply with data security regulations contained in 201 CMR 17.00 that have been established to safeguard personal information of Massachusetts residents contained in paper or electronic records. The Contractor shall not submit to the Engineer or Owner documents in paper or electronic form that contain personal information (person's name combined with one or more of the following – Social Security Number, driver's license number or state-issued identification card number, financial institution account number, or credit or debit card number). Any document submitted to the Engineer that violates this provision shall be returned to the Contractor and the Contractor shall remove personal information from the document prior to resubmitting it to the Engineer. The Contractor shall require each Subcontractor to also comply with the MA data security regulations insofar as they involve submittal of personal information to the Engineer and Owner.

END OF SECTION

## SECTION 01330

### SUBMITTALS

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED:

- A. The Contractor shall provide the Engineer with submittals as required by the contract documents.

##### 1.02 RELATED WORK:

- A. Divisions 1 – 2 of these specifications that require submittals.

#### PART 2 - PRODUCTS

NOT USED

#### PART 3 - EXECUTION

##### 3.01 GENERAL:

- A. As required by the General Conditions, Contractor shall submit a schedule of shop and working drawing submittals.
- B. The Contractor shall submit the shop and working drawing submittals either electronically or hard copy.

##### 3.02 ELECTRONIC SUBMITTALS:

- A. In accordance with the accepted schedule, the Contractor shall submit promptly to the Engineer by email (Mahoney.Carolyn@wseinc.com) or on Compact Disc (mail to Weston & Sampson Engineers, attention: CSD), one electronic copy in Portable Document Format (PDF) of shop or working drawings required as noted in the specifications, of equipment, structural details and materials fabricated especially for this Contract.
- B. Each electronic copy of the shop or working drawing shall be accompanied by the Engineer's standard shop drawing transmittal form, included as Exhibit 1 of this section (use only for electronic submittals), on which is a list of the drawings, descriptions and

numbers and the names of the Owner, Project, Contractor and building, equipment or structure.

- C. The Contractor shall receive a shop drawing memorandum with the Engineer's approval or comments via email.

### 3.03 HARD COPY SUBMITTALS:

- A. In accordance with the accepted schedule, the Contractor shall submit promptly to the Engineer, by mail (to Weston & Sampson Engineers, attention: CSD), six (6) copies each of shop or working drawings required as noted in the specifications, of equipment, structural details and materials fabricated especially for this Contract.
- B. Each shipment of drawings shall be accompanied by the Engineer's (if applicable) standard shop drawing transmittal form on which is a list of the drawings, descriptions and numbers and the names of the Owner, Project, Contractor and building, equipment or structure.

### 3.04 SHOP AND WORKING DRAWINGS:

- A. Shop and working drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish of shop coat, grease fittings, etc., depending on the subject of the drawings. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for this Contract.
- B. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. All shop and working drawings shall be prepared on standard size, 24-inch by 36-inch sheets, except those, which are made by changing existing standard shop or working drawings. All drawings shall be clearly marked with the names of the Owner, Project, Contractor and building, equipment or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by the Engineer's (if applicable) standard shop drawing transmittal form on which is a list of the drawings, descriptions and numbers and the names mentioned above.
- C. Only drawings that have been prepared, checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Contract Documents in all respects. Shop drawings shall be reviewed and marked with the date, checker's name and indication of the Contractor's approval, and only then shall be submitted to the Engineer. Shop drawings unsatisfactory to the Contractor shall be returned directly to their source for correction, without submittal to the Engineer. Shop drawings submitted to the Engineer without the Contractor's approval stamp and signature will

- be rejected. Any deviation from the Contract Documents indicated on the shop drawings must be identified on the drawings and in a separate submittal to the Engineer, as required in this section of the specifications and General Conditions.
- D. The Contractor shall be responsible for the prompt submittal and resubmittal, as necessary, of all shop and working drawings so that there will be no delay in the work due to the absence of such drawings.
  - E. The Engineer will review the shop and working drawings as to their general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections of comments made on the drawings during the review do not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner. The review of the shop drawings is general and shall not relieve the Contractor of the responsibility for details of design, dimensions, code compliance, etc., necessary for interfacing with other components, proper fitting and construction of the work required by the Contract and for achieving the specified performance. The Engineer will review submittals two times: once upon original submission and a second time if the Engineer requires a revision or corrections. The Contractor shall reimburse the Owner amounts charged to the Owner by the Engineer for performing any review of a submittal for the third time or greater.
  - F. With few exceptions, shop drawings will be reviewed and returned to the Contractor within 30 days of submittal.
  - G. No material or equipment shall be purchased or fabricated especially for this Contract nor shall the Contractor proceed with any portion of the work, the design and details of which are dependent upon the design and details of equipment or other features for which review is required, until the required shop and working drawings have been submitted and reviewed by the Engineer as to their general conformance and compliance with the project and its Contract Documents. All materials and work involved in the construction shall then be as represented by said drawings.
  - H. Two copies of the shop and working drawings and/or catalog cuts will be returned to the Contractor. The Contractor shall furnish additional copies of such drawings or catalog cuts when he needs more than two copies or when so requested.

### 3.05 SAMPLES:

- A. Samples specified in individual Sections include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual


effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the work.

- B. The number of samples submitted shall be as specified. Submittal and processing of samples shall follow the procedures outlined for shop and working drawings unless the specifications call for a field submittal or mock-up.
- C. Acceptance of samples will be acknowledged via a copy of the transmittal noting status. When samples are not acceptable, prompt resubmittal will be required.

END OF SECTION



**SECTION 01330 - EXHIBIT 1**

<b>Shop Drawing Transmittal</b>									
<b>Instruction for Preparing Transmittal</b> No action will be taken on any item unless accompanied by this form. TRANSMITTAL NOS. to be consecutive (1, 2, 3, etc.). Each resubmittal of same item shall use same number with suffix letter (A, B, etc.). SPEC. SECT. NO: Only one spec. section no. to each transmittal. DESCRIPTION: Complete identification of document or group of documents. SOURCE: Originator of document(s) being submitted.				DRAWING NO: Identification of document(s). CONTRACT DRAWING REFERENCE: Contract drawing number(s) showing details of document(s). SPECIAL INSTRUCTIONS: Special cases and emergencies, changes in distribution and special handling requests, etc. should be entered here. SIGNATURE OF CONTRACTOR: Signature of individual who reviews and approves material prior to submittal to engineer.					
<b>THIS SECTION TO BE COMPLETED BY CONTRACTOR</b>									
TRANSM. NO.		SPEC. SECT. NO.		DATE		CONTRACTORS JOB NO.		W&S JOB NO.	
PROJECT NAME & CONTRACT NO.				LOCATION					
Attention: CSD ( <a href="mailto:Mahoney.Carolyn@wseinc.com">Mahoney.Carolyn@wseinc.com</a> ) Weston & Sampson Engineers, Inc. 55 Walkers Brook Drive Reading, MA 01867				F R O M					
						<b>BY W&amp;S</b>			
ITEM NO.	DESCRIPTION			SOURCE	DRAWING NO. CATALOG NO. BROCHURE, ETC	NO. OF COPIES	CONTRACT DRAWING REF.	ACTION CODE	REVIEWED BY
1									
2									
3									
4									
THIS CERTIFIES THAT ALL ITEMS SUBMITTED HEREWITH HAVE BEEN CHECKED BY THE CONTRACTOR, ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, EXCEPT AS NOTED, AND ARE APPROVED BY THE CONTRACTOR FOR THIS PROJECT.						SIGNATURE & TITLE			
<b>THIS SECTION TO BE COMPLETED BY W&amp;S</b>									
ACTION CODE: 1. FURNISH AS SUBMITTED 2. FURNISH AS NOTED 3. REVISE AND RESUBMIT 4. REJECTED- SEE REMARKS 5. ACKNOWLEDGEMENT 6. SUBMITTAL NOT REQUIRED, RETURNED WITHOUT REVIEW						a. INSTALLATION SHALL PROCEED ONLY WHEN ACTION CODE IS 1 OR 2 b. ACTION CODED 3 SHALL BE RESUBMITTED WITHIN TIME LIMIT SET IN CONTRACT c. REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY OF COMPLIANCE WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS		Weston & Sampson	

## SECTION 01380

### HEALTH AND SAFETY PLAN

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED:

- A. Prior to the start of work on the site, Contractor shall prepare and submit a site-specific health and safety plan that includes consideration of all known and potential hazards at the site. Work may not proceed at the project site until the Contractor's health and safety plan has been received and reviewed by the Engineer.

##### 1.02 REFERENCES:

- A. OSHA 29 CFR 1910.120

#### PART 2 – PRODUCTS

##### 2.01 HEALTH AND SAFETY PLAN:

- A. The health and safety plan shall include, but not necessarily be limited to the following:

1. Identification of Contractor's Site Safety Officer.
2. Identification of Hazards and Risks Associated with Project.
3. Contractor's Standard Operating Procedures, Including Personnel Training and Field Orientation.
4. Respiratory Protection Training Requirements.
5. Levels of Protection and Selection of Equipment Procedures.
6. Type of Medical Surveillance Program.
7. Personal Hygiene Requirements and Guidelines.
8. Zone Delineation of the Project Site.
9. Site Security and Entry Control Procedures.
10. Field Monitoring of Site Contaminants.
11. Contingency and Emergency Procedures.

12. Listing of Emergency Contacts.

PART 3 - EXECUTION

3.01 PERSONAL PROTECTIVE EQUIPMENT:

- A. The personal protective equipment required to provide the appropriate level of dermal and respiratory protection shall be determined based on the results of continuous air monitoring performed by the Contractor and the standards set forth in the Contractor's health and safety plan. The Engineer may conduct duplicate air monitoring for quality control purposes. Modified Level D protection shall be the minimum requirement for all on-site personnel.

END OF SECTION

Document 4

## SECTION 01550

### SIGNAGE (TRAFFIC CONTROL)

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED:

This Section covers furnishing and installing traffic control signs and other devices.

##### 1.02 SYSTEM DESCRIPTION:

The Contractor shall furnish and install all construction signs deemed necessary by and in accordance with the latest edition of Part VI of the Manual on Uniform Traffic Control Devices (MUTCD) as published by the U.S. Department of Transportation.

#### PART 2 - PRODUCTS

##### 2.01 TRAFFIC WARNING AND REGULATING DEVICES:

Contractor shall provide warning signs, barricades and other devices in accordance with the specifications provided in the MUTCD. Size of signs, lettering, colors, method of support and other factors prescribed in the MUTCD shall be adhered to.

#### PART 3 - EXECUTION

##### 3.01 INSTALLATION:

- A. Contractor shall erect barricades, barrier fences, traffic signs, and other traffic control devices as required by the MUTCD, or as required by the Engineer, to protect the work area from traffic, pedestrians, and animals.
- B. Contractor shall relocate barricades, signs and other devices as necessary as the work progresses.
- C. Unless extended protection is required for specific areas, when the work has been completed, all temporary warning and regulatory devices used by the Contractor shall be removed so that traffic can move unimpeded through the area.

END OF SECTION

## SECTION 01552

### CONSTRUCTION ZONE SAFETY PLAN

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED:

- A. This Section covers the provisions for complying with Commonwealth of Massachusetts requirements for construction zone safety plans on public works projects, and the requirements of the Town of Millbury Police and Public Works Departments.

##### 1.02 DESCRIPTION:

- A. The Contractor shall implement traffic safety and control measures through the construction zone through road closures and detours and mitigate impacts on traffic outside of the construction zone in accordance with these contract documents, and in coordination with and prior approval of the Town of Millbury Public Works and Police Departments.

##### 1.03 RELATED WORK:

- A. SECTION 01110, CONTROL OF WORK AND MATERIALS (MAINTENANCE OF TRAFFIC)
- B. SECTION 01550, SIGNAGE (TRAFFIC CONTROL)
- C. SECTION 01553, UNIFORMED OFFICERS FOR TEMPORARY TRAFFIC CONTROL

##### 1.04 REFERENCES:

701 CMR 7.00 Use of Road Flaggers and Police Details on Public Works Projects

Massachusetts Department of Transportation Standard Specifications for Highways and Bridges – latest edition

#### PART 2 - PRODUCTS

- 2.01 Traffic control devices utilized by the Contractor shall meet the requirements of these contract documents and the latest Massachusetts Department of Transportation (MassDOT) Standard Specifications and Manual On Uniform Traffic Control Devices (MUTCD).

#### PART 3 - EXECUTION

### 3.01 OPERATION:

- A. Contractor shall be responsible for providing all temporary traffic control devices including barricades, barrier fences, signs, drums, cones, impact attenuators and other traffic control devices in accordance with typical traffic management plans and details shown on the drawings or as required by the Engineer.
- B. The Contractor shall prepare temporary traffic management plans and details that deviates significantly from the typical plans shown on the drawings and submit to the Engineer for review and approval prior to start of the work.
- C. Contractor shall relocate barricades, signs and other devices as necessary as the work progresses as required by the Owner's Traffic Control Officer or the Engineer.
- D. Police details and/or road flaggers shall be utilized on this project in coordination with and prior approval of the Town of Millbury Public Works and Police Departments.
- E. If police details and/or road flaggers fail to show up for work at the construction zone at the usual time for start of work, or otherwise leave the jobsite before work is completed for the day, the provisions of the Alternative Plan will be followed by the Contractor.

### 3.02 ALTERNATIVE PLAN:

- A. In accordance with 701 CMR 7.06(6), whenever required police details/road flaggers do not arrive on time or fail to show up for work, the Alternative Plan will be implemented by the Contractor.
- B. The Alternative Plan for this project is as follows:
  - 1. Contact Town of Millbury local police department and municipality to inform them the scheduled police detail has failed to show up at the project site and that road flaggers are being utilized.
  - 2. If construction zone is within a high-speed area (> 40mph) the Contractor cannot use road flaggers and must stop work until police details arrive. If construction zone is within a low-speed area (< 40mph) the Contractor can use road flaggers who have been trained and certified in temporary roadway flagging.
  - 3. Redeploy crew to work in areas not requiring temporary traffic control (if available).

END OF SECTION

## SECTION 01553

### UNIFORMED OFFICERS FOR TEMPORARY TRAFFIC CONTROL

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED:

- A. This Section covers the provisions for furnishing Uniformed Officers for Traffic Control and Maintenance of Traffic as described in Section 01110 CONTROL OF WORK AND MATERIALS.

##### 1.02 DESCRIPTION:

- A. The Contractor shall coordinate with the local jurisdiction's Traffic Control Officer to determine the number of Officers deemed necessary to provide for public safety and to maintain a smooth flow of traffic through the construction area(s) affected.

##### 1.03 RELATED WORK:

- A. SECTION 01110, CONTROL OF WORK AND MATERIALS (MAINTENANCE OF TRAFFIC)
- B. SECTION 01550, SIGNAGE (TRAFFIC CONTROL)
- C. SECTION 01552, CONSTRUCTION ZONE SAFETY PLAN

#### PART 2 - PRODUCTS

##### 2.01 UNIFORMED OFFICERS:

- A. Contractor shall provide the Traffic Control Officer with a minimum of 24 hours notice indicating the time of day, street location and confirm number of officers required for traffic control.
- B. Contractor shall give the Traffic Control Officer a minimum of 2 hours prior cancellation notice should Contractor determine that due to weather or conditions beyond his control he would not need the scheduled officers.
- C. Contractor shall pay for officer(s) at the prevailing rate established by the local police department should officers not be needed and the Contractor fails to cancel the officers as noted in 2.01.B above.

- D. Where the Owner is paying directly for Traffic Officers and the Contractor cancels scheduled officers, the Contractor shall be responsible for payment of the wages for cancellations if not cancelled in accordance with 2.01.B and 2.01.C above.

### PART 3 - EXECUTION

#### 3.01 OPERATION:

- A. Contractor shall provide barricades, barrier fences, traffic signs, and other traffic control devices as required by the Owners Traffic Control Officer, or as required by the Engineer, to protect the work area from traffic, pedestrians, and animals.
- B. Contractor shall relocate barricades, signs and other devices as necessary as the work progresses as required by the Owners Traffic Control Officer or the Engineer.

END OF SECTION



SECTION 01562

DUST CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION:

This section of the specification covers the control of dust.

PART 2 - PRODUCTS

2.01 WATER:

- A. Water shall not be brackish and shall be free from oil, acid, and injurious alkali or vegetable matter.

PART 3 - EXECUTION

3.01 APPLICATION:

- A. Water may be sprinkler applied with equipment including a tank with gauge-equipped pressure pump and a nozzle-equipped spray bar.
- B. Water shall be dispersed through the nozzle under a minimum pressure of 20 pounds per square inch, gauge pressure.

END OF SECTION

## SECTION 01570

### ENVIRONMENTAL PROTECTION

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION:

- A. The work covered by this section of the specifications consists of furnishing all labor, materials, tools and equipment and performing all work required for the prevention of environmental pollution during and because of construction operations under this contract.
- B. The requirements set forth in this section of the specifications apply to construction adjacent to wetlands and water resource areas, unless otherwise specifically stated.
- C. All work under this Contract shall be in accordance with the Conservation Commissions' Orders of Conditions as well as any conditional requirements applied, all of which are attached to Section 00890 – PERMITS.
- D. Prior to commencement of work, the Contractor shall meet with representatives of the Owner to develop mutual understandings relative to compliance of the environmental protection program.

##### 1.02 RELATED WORK:

- A. Section 00890 – PERMITS
- B. Section 01330 – SUBMITTALS
- C. Section 01562 – DUST CONTROL
- D. MassDOT *2024 Standard Specifications for Highways and Bridges*, and the Special Provisions in this bid document.

##### 1.03 SUBMITTALS:

- A. The Contractor shall submit for approval details and literature fully describing environmental protection materials and methods to be employed in carrying out the work of this Contract.

#### PART 2 - PRODUCTS

##### 2.01 NOT USED

## 2.02 CATCH BASIN PROTECTION:

- A. The Contractor shall conform to the MassDOT *2024 Standard Specifications for Highways and Bridges*.

## 2.03 COMPOST FILTER TUBES:

- A. See Special Provisions in this bid document.

## 2.04 TURBIDITY CURTAIN:

- A. See Special Provisions in this bid document.

## PART 3- EXECUTION

### 3.01 NOTIFICATION AND STOPPAGE OF WORK:

- A. The Engineer will notify the Contractor in writing of any non-compliance with the provisions of the Order of Conditions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Owner may order stoppage of all or part of the work through the Engineer until satisfactory corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop work orders shall be made unless it was later determined that the Contractor was in compliance.

### 3.02 AREA OF CONSTRUCTION ACTIVITY:

- A. Insofar as possible, the Contractor shall confine his construction activities to those areas defined by the plans and specifications. All land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work under this contract.

### 3.03 PROTECTION OF WATER RESOURCES:

- A. The Contractor shall not pollute the Dorothy Pond and its channel, streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acids or other harmful materials. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers and streams.
- B. Special measures shall be taken to ensure against spillage of any pollutants into public waters.

#### 3.04 CONSTRUCTION IN AREAS DESIGNATED AS BUFFER ZONE ON THE DRAWINGS:

- A. Insofar as possible, the Contractor shall make every effort to minimize disturbance within 100-feet of wetland resource areas.
- B. The Contractor shall perform their work in such a way that these areas are left in the condition existing prior to construction.

#### 3.05 PROTECTING AND MINIMIZING EXPOSED AREAS:

- A. The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, temporary vegetation, mulching or other protective measures shall be provided as specified.
- B. The Contractor shall take account of the conditions of the soil where temporary cover crop will be used to ensure that materials used for temporary vegetation are adaptive to the sediment control. Materials to be used for temporary vegetation shall be approved by the Engineer.

#### 3.06 LOCATION OF STORAGE AREAS:

- A. The location of the Contractor's storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Engineer. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Engineer.
- B. See Special Provisions in this bid document. No excavated materials or materials shall be deposited within a minimum distance of one hundred (100) feet of any watercourse or any drainage facility. Adequate measures for erosion and sediment control around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.
- C. There shall be no storage of equipment or materials in areas designated as wetlands.
- D. The Engineer may designate a particular area or areas where the Contractor may store materials used in his operations.

#### 3.07 CLEARING AND GRUBBING:

- A. See *MassDOT 2024 Standard Specifications for Highways and Bridges*. The Contractor shall clear and grub only on the Owner's land, and only the area required for construction operations, as approved by the Engineer.

#### 3.08 DISCHARGE OF DEWATERING OPERATIONS:

- A. Any water that is pumped and discharged from the trench and/or excavation as part of the Contractor's water handling shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.
- B. Under no circumstances shall the Contractor discharge water to the areas designated as wetlands.
- C. See Special Provisions in this bid document. The pumped water shall be filtered through filter fabric, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. Accumulated sediment shall be cleared from the channel periodically.

### 3.09 TURBIDITY MONITORING

- A. The Contractor shall conform to the MassDOT *2024 Standard Specifications for Highways and Bridges* and the Special Provisions in this document, and in accordance with the MassDEP approved Turbidity Monitoring Plan and Condition #10 of the 401 Water Quality Certification (refer to Attachment B of Section 00890 – Permits).
- B. An unacceptable increase in turbidity level is defined as two times the background levels. If unacceptable turbidity levels are noted or a sheen is observed downstream of the oil absorbent booms, the Contractor shall stop work, identify the reason for increased turbidity levels or sheen, and implement corrective measures.

### 3.10 DUST CONTROL:

- A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, to minimize creation and dispersion of dust, as specified under Section 01562 – DUST CONTROL.
- B. Calcium Chloride shall not be used for dust control within a drainage basin or in the vicinity of any source of potable water.

### 3.11 CATCH BASIN PROTECTION:

- A. Catch basin protection shall be used for every catch basin, shown on the plans or as required by the Engineer, to trap sediment and prevent it from clogging drainage systems and entering wetlands in conformance with the MassDOT *2024 Standard Specifications for Highways and Bridges*. All deposited sediment shall be removed periodically and at times prior to predicted precipitation to allow free drainage flow. Prior to working in areas where catch basins are to be protected, each catch basin sump shall be cleaned of all debris and protected. The Contractor shall properly dispose of all debris at no additional cost to the Owner.

- B. All catch basin protection shall be removed by the Contractor after construction is complete.

3.12 COMPOST FILTER TUBES:

- A. The compost filter tubes shall conform to the MassDOT *2024 Standard Specifications for Highways and Bridges* and the Special Provisions in this document .

3.13 TURBIDITY CURTAIN:

- A. The turbidity curtain shall conform to the MassDOT *2024 Standard Specifications for Highways and Bridges* and the Special Provisions in this document.
- B. The Contractor shall monitor and replace spent petroleum-absorbent booms periodically or under the direction of the Engineer or Owner at no additional cost to the Owner.

END OF SECTION

## SECTION 01740

### CLEANING UP

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION:

The Contractor shall employ at all times during the progress of its work adequate cleanup measures and safety precautions to prevent injuries to persons or damage to property. The Contractor shall immediately, upon request by the Owner or Engineer provide adequate material, equipment and labor to cleanup and make safe any and all areas deemed necessary by the Owner or Engineer.

##### 1.02 RELATED WORK:

- A. Section 00700 GENERAL CONDITIONS
- B. Section 00890 PERMITS
- C. Section 01110 CONTROL OF WORK AND MATERIALS
- D. Section 01140 SPECIAL PROVISIONS
- E. Section 01570 ENVIRONMENTAL PROTECTION

#### PART 2 - PRODUCTS

Not applicable

#### PART 3 - EXECUTION

##### 3.01 DAILY CLEANUP:

- A. The Contractor shall clean up, at least daily, all refuse, rubbish, scrap and surplus material, debris and unneeded construction equipment resulting from the construction operations and

sweep the area. The site of the work and the adjacent areas affected thereby shall present at all times a neat, orderly and workmanlike appearance.

- B. Upon written notification by the Engineer, the Contractor shall within 24 hours clean up those areas, which in the Engineer's opinion are in violation of this section and the above referenced sections of the specifications.
- C. If in the opinion of the Engineer, the referenced areas are not satisfactorily cleaned up, all other work on the project shall stop until the cleanup is satisfactory.
- D. All cleaning activities shall be performed in accordance with the permit requirements provided in Section 00890, PERMITS.

### 3.02 MATERIAL OR DEBRIS IN DRAINAGE FACILITIES:

- A. Where material or debris has washed or flowed into or has been placed in existing watercourses, ditches, gutters, drains, pipes, structures, such material or debris shall be immediately removed entirely and satisfactorily disposed of during progress of the work, and the ditches, channels, drains, pipes, structures, and work shall, upon completion of the work, be left in a clean and neat condition.

### 3.03 REMOVAL OF TEMPORARY BUILDINGS, STRUCTURES AND EQUIPMENT:

- A. On or before completion of the work, the Contractor shall, unless otherwise specifically required or permitted in writing, tear down and remove all temporary buildings and structures it built; shall remove all temporary works, tools and machinery or other construction equipment it furnished; shall remove all rubbish from any grounds which it has occupied; shall remove erosion controls used for trapping sediment; and shall leave the roads and all parts of the property and adjacent property affected by its operations in a neat and satisfactory condition.

### 3.04 RESTORATION OF DAMAGED PROPERTY:

- A. At no cost to the Owner, the Contractor shall restore or replace, when and as required, any property damaged by its work, equipment or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk and landscaping work. Materials, equipment, and methods for such restoration shall be as approved by the Engineer.

### 3.05 FINAL CLEANUP:

- A. Before acceptance by the Owner, the Contractor shall perform a final cleanup to bring the construction site to its original or specified condition. This cleanup shall include removing



and legally disposing of all trash and debris off and away from the premises. Before acceptance, the Engineer shall approve the condition of the site.

END OF SECTION

SECTION 01770

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 WORK INCLUDED:

- A. This Section covers administrative and procedural requirements for closing out the project, including, but not limited to:
  - 1. Project as-built documents
  - 2. Final Cleaning
  - 3. Substantial Completion
  - 4. Closeout Procedures
  - 5. Final Completion
  - 6. Correction/Warranty Period
- B. Closeout checklist to be completed by the Engineer.

1.02 RELATED WORK:

- A. General Requirements in their entirety.
- B. Section 01740, CLEANING UP
- C. Division 2

1.03 AS-BUILT DOCUMENTS:

- A. Contractor shall maintain on site, separate from the documents used for construction, one set of the documents listed below, and as construction progresses, shall legibly record on these documents all changes made during construction.
  - 1. Contract Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other Modifications to the Contract.

5. Reviewed shop drawings, product data, and samples.
  6. Written interpretations and clarifications.
  7. Field Orders.
  8. Field test reports properly verified.
- B. The completed set of as-built documents shall be submitted to the Owner or Engineer with the final Application for Payment.

1.04 FINAL CLEANING:

- A. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
1. Clean the site, including landscape development areas of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to smooth, even textured surfaces.
  2. Remove waste and surplus materials, rubbish, fencing equipment, temporary utilities and construction facilities from the site, unless otherwise required by the Engineer.
  3. Comply with requirements of Section 01740 CLEANING UP.

1.05 SUBSTANTIAL COMPLETION:

- A. Substantial Completion is officially defined in the General and Supplementary Conditions. The date of substantial completion will be certified by the Engineer. This

date will not be certified until the following requirements have been satisfied by the Contractor:

1. All Contract requirements are coordinated into a fully operational system.
2. All field tests have been satisfactorily completed and reports forwarded to the Engineer.

1.06 CLOSEOUT PROCEDURES:

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and is complete in accordance with Contract Documents and ready for Engineer's and Owner's inspection.
- B. Accompany Engineer and Owner on inspection to verify conformance with the Contract Documents. Prepare a punch list of work items that have been determined by inspection to not conform to Contract Documents. Punch list items shall include work items that are missing, incomplete, damaged, incorrect items, or improperly installed or constructed. The Contractor shall correct the punch list deficiencies by re-work, modifications, or replacement, as appropriate, until the items conform to the Contract Documents. The initial punch list shall be produced by the Contractor, with copies to the Engineer and Owner. When the Contractor has reduced the number of deficient items to a reasonable level, the Engineer will develop a definitive punch list for the use of the Contractor.
- C. Provide submittals to Engineer that are required by governing or other authorities.
- D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due. The Contractor shall submit the following documents with or prior to Final Application for Payment: Set of as-built documents, Contract Completion and Acceptance Certificate, Consent of Surety to Final Payment, Release and Waiver of Liens and Claims (SECTION 01770 ATT. A), Affidavit of Payment of Debts

and Claims, and remaining releases, waivers, warranties/guarantees, and all other data required by the Contract Documents.

1.07 FINAL COMPLETION:

- A. Prior to final completion, the following tasks shall be completed:
  - 1. All items in the punch list shall be completed.
  - 2. All Contract closeout documentation shall be submitted to and accepted by the Engineer.

1.08 CORRECTION/WARRANTY PERIOD:

- A. During the correction period, the Contractor shall correct all deficiencies identified by the Engineer or Owner, as appropriate.
- B. Corrective work will be identified by the Engineer or Owner, as appropriate. The Contractor will be notified of the item(s) requiring corrective work.
- C. The Contractor shall begin work on all corrective work within ten days of being notified of the deficiency by the Engineer and shall then work continuously until the deficiency is corrected. Upon completion of the corrective work, the Contractor shall submit a letter report to the Engineer describing the deficiency and the corrective action that was taken.
- D. The Contractor shall coordinate all corrective work with the Engineer and/or the Owner.

1.09 COMPLETION CHECKLIST:

- A. The Project Completion Checklist, which follows, and shall be completed as the project nears completion. When the project has been fully completed, Final Payment can be approved.

**PROJECT COMPLETION CHECKLIST**

Owner \_\_\_\_\_ Job No.

Project

As part of the project closeout, all items listed below must be checked off as being complete or otherwise accounted for. The person verifying completion of the item shall list the completion date and his/her initials.

<b>Project Closeout Checklist</b>		
	Date Completion Verified	Verified by
<b>AS-BUILT DOCUMENTS HANDED OVER</b>		
1. Contract Drawings		
2. Specifications		
3. Addenda		
4. Change Orders/Contract Modifications		
5. Reviewed Shop Drawings, Product Data and Samples		
6. Written Interpretations/Clarifications		
7. Field Orders		
8. Field Test Reports		
<b>EQUIPMENT CHECKOUT AND CERTIFICATIONS</b>		
1. Construction Complete per Drawings/Specifications		
2. Equipment Installed and Adjusted		
3. All Shop Drawings have Final Approval		
4. All Shop Tests Complete and Results Submitted		

<b>Project Closeout Checklist</b>		
	Date Completion Verified	Verified By
<b>FINAL CLEANING</b>		
1. All Construction Facilities Removed		
2. All Construction Debris Removed		
3. All Areas Swept/Cleared		
<b>SUBSTANTIAL COMPLETION</b>		
1. All Items Coordinated Into a Fully Operational System		
2. All Field Tests Completed and Reports Submitted		
<b>CLOSEOUT PROCEDURES</b>		
1. Written Certification Submitted that Work is Ready for Owner & Engineer Inspector		
2. Inspection by Owner, Engineer, Contractor completed		
3. Punch List of Nonconforming Items Prepared		
4. Documents Required by Governing or Other Authorities Submitted (List Them)		
5. Final Application for Payment Received		
6. Contract Completion and Acceptance Certificate Submittal		
7. Consent of Surety to Final Payment Submittal		
8. Release and Waiver of Liens and Claims Submitted		
9. Affidavit of Payment of Debts and Claims Submitted		
10. Warranties/Guarantees Submitted		
11. Other Required Releases and Waivers Submitted (List Them)		
12. Permits Submitted (List Them)		
13. Weekly Payrolls Submitted as Required by Law		
<b>FINAL COMPLETION</b>		
1. All Items in Punch List Completed		
2. All Other Required Documentation Submitted (List It)		

<b>Project Closeout Checklist</b>						
	Date Completion Verified	Verified By				
<b>CORRECTION/WARRANTY PERIOD</b>						
1. Correction Period Start Date: _____  End Date: _____						
2. Specific Warranties Provided						
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; border-bottom: 1px solid black;"><u>Item</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>Warranty Duration</u></th> </tr> </thead> <tbody> <tr> <td style="height: 150px;"></td> <td></td> </tr> </tbody> </table>	<u>Item</u>	<u>Warranty Duration</u>				
<u>Item</u>	<u>Warranty Duration</u>					

Full name of persons signing their initials on this checklist:

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END OF SECTION



**DIVISION 02**

**SPECIAL PROVISIONS - TECHNICAL**

**MILLBURY, MA**

Wheelock Avenue over Dorothy Pond  
Bridge Replacement  
Bridge No. M-22-022

**SCOPE OF WORK**

All work under this Contract shall be done in conformance with the *2024 Standard Specifications for Highways and Bridges*, the *2017 Construction Standard Details*, the *Traffic Management Plans and Detail Drawings*, *MassDOT Work Zone Safety Temporary Traffic Control*, the *1990 Standard Drawings for Signs and Supports*; the *2015 Overhead Signal Structure and Foundation Standard Drawings*, the *2023 Manual on Uniform Traffic Control Devices (MUTCD)* with Massachusetts Amendments; the *1968 Standard Drawings for Traffic Signals and Highway Lighting*; *The American Standard for Nursery Stock*; the Plans and these Special Provisions.

Bridge No. M-22-022 carries Wheelock Avenue over Dorothy Pond. The bridge is located approximately 1000' north from Millbury Avenue. The scope of work includes demolition and removal of the existing bridge superstructure and substructure, the design, construction and installation of a new precast concrete box culvert bridge and wingwalls, and roadway & stone masonry wall reconstruction, and safety improvements.

## **NOTICE TO OWNERS OF UTILITIES**

The bridge and highway plans indicate the location of the existing known utilities in the vicinity of the work. As the accuracy and completeness of the plans are not guaranteed in any manner, it is the Contractor's responsibility to make his own investigation in order to assure that no damage to existing structures, drainage lines, traffic signal conduits, etc., will occur.

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

A list of public and private utilities can be found on the MassDOT website at: <https://www.mass.gov/info-details/utility-contacts-by-district-and-municipality>  
Select District 3 on the webpage,  
Select the City/Town, and then locate the utility.

**NOTICE TO OWNERS OF UTILITIES** (Continued)

The utility contact list is for guidance only and is not guaranteed to be complete or up to date. Town officials are shown at website <https://www.mass.gov/lists/massachusetts-cities-and-towns> and select the required City/Town website.

State Police are shown at website <https://www.mass.gov/orgs/massachusetts-state-police/locations>. Select the area of jurisdiction to find the local station.

The Contractor shall be responsible for informing the following officials in each area that he is assigned to work in:

Superintendent, Department of Public Works or Town Engineer.  
Superintendent, Water Department, Superintendent, Sewer Departments.  
Police Department, Fire Department, Electric Company, Railroads.

**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  
Contact: Sandra Annis, 413-582-7424

**EVERSOURCE EMERGENCY TELEPHONE NUMBERS**

**GAS:**

Outage/ Emergency: 800-592-2000  
New Service: 866-678-2744  
Customer Support: 800-592-2000  
Contact: Jeffrey Evans-Mongeon, 508-305-6970

**ELECTRIC:**

Outage/ Emergency: 800-592-2000 or 844-726-7562  
New Service: 1-888-633-3797 (1-888-need pwr)  
Customer Support: 1-800-340-9822

**NOTICE TO OWNERS OF UTILITIES** (Continued)

**TOWN OF MILLBURY TELEPHONE NUMBERS**

**PUBLIC WORKS:**

Mark Hollis, PE, Director: 508-865-9143

**POLICE DEPARTMENT:**

Non-Emergency: 508-865-3521

Brian Lewos, Chief of Police

**FIRE DEPARTMENT:**

Non-Emergency: 508-865-5328

Steven Kosiba, Fire Chief

**DISPOSAL OF SURPLUS MATERIALS**

The Contractor will generate surplus soils and sediment during the excavation for the Site work including but not limited to excavated and dredged material from the bridge replacement work. The excavated materials are not re-usable on-Site and shall be assumed to be transported for proper off-site recycling or disposal. Surplus soil and sediment will be managed and disposed as Unregulated Soil and/or Regulated Soils as defined as Items 181.11 through 181.13 and paid on a per ton basis. For the purposes of this section, the term “sediment” is interchangeable with “soil”. These categories will be based on analytical data collected by the Contractor with the observation and approval of the Engineer. The Contractor shall segregate excavated materials for differing off-site transportation and disposal categories as required by the Engineer.

All other materials not required or needed for use on the project, and not required to be removed and stacked, shall become the property of the Contractor and shall be removed from the site during the construction period and legally disposed of. No separate payment will be made for this work, but all costs in connection therewith shall be included in the prices bid for various Contract items.

**ITEM 115.1**

**DEMOLITION OF  
BRIDGE NO. M-22-022 (6TH)**

**LUMP SUM**

Work under this item will conform to the relevant provisions of Section 112 of the Standard Specifications, the Plans and the following:

The work under this Item includes furnishing all labor and materials necessary for the removal and satisfactory disposal of the existing bridge structure as shown in the Plans.

**General**

The Contractor shall submit their proposed method and design (demolition plan) including procedures, sequencing, crane capacity and location, equipment, tools, devices, methodology for protection of adjacent structures, etc. to the Engineer for review and approval. The demolition plan and any necessary calculations and drawings shall be stamped by a Professional Engineer registered in the Commonwealth of Massachusetts. Work shall not commence until the Engineer has given written approval of the demolition plan.

The temporary detour shall be operational prior to commencing bridge demolition.

The Contractor shall obtain all necessary permits and make all required submittals under this Item prior to beginning any demolition work.

The Contractor shall be responsible for adequately protecting any existing utilities during his/her operations. If any utilities are damaged due to the Contractor's negligence, repairs shall be made at contractor's expense.

The Contractor shall be responsible for preventing any debris or items of any kind from falling into the channel and pond below, nor into the resource areas within the vicinity of the channel and pond. Any material that accidentally falls into the river or vicinity shall be removed immediately.

Unless otherwise noted, all materials removed under Item 115.1 shall become the property of the Contractor and shall be removed and disposed of off site in a legal manner.

The contractor shall make their own investigation of the existing Bridge No. M-22-022, including the size, shape and connections of the materials that make up the structure and the structure's stability under demolition and construction loadings. No increases will be made to the bid price due to the nature of the materials involved in the demolition.

The Contractor shall be responsible for all temporary earth support required to protect and to maintain adjacent roadways, waterways, sidewalks, and structures in a safe condition during construction.

**BASIS OF PAYMENT**

Demolition of bridge No. M-22-022 will be paid for at the Contract Lump Sum price, which shall include all labor, materials, equipment, and incidental costs required to complete the work.

**ITEM 151.6**

**NATURAL STREAMBED MATERIAL**

**CUBIC YARD**

Work under this Item shall conform to the relevant provisions of Section 983 of the Standard Specifications and the following:

Description

The purpose of this item is to provide for the installation of natural streambed material over the bottom of the proposed box culvert as shown on the plans.

Material

The natural streambed material is to be placed on the bottom of the box culvert, as depicted on the plans. The intent of this item is to ensure a natural streambed and bank over the proposed box culvert, to provide fisheries and wildlife habitat enhancement as part of the replacement of Bridge M-22-022.

The streambed material shall be comprised of two primary components.

1. Stone 4 inches and under shall meet the following gradation:

<b>Sieve Opening</b>	<b>Percent by Mass Passing Through</b>
4"	95
2"	55 – 65
¾"	30 – 45
#4	0 – 5

2. Stone 6 inches to 2.5 foot in diameter:

<b>Stone Size</b>	<b>Percent Passing</b>
2.0'	80
1.5'	25
0.5'	0

The streambed stone for both components shall be native cobbles and boulders similar in shape and size of streambed/bank stone adjacent to the work area. Partially angular rock is preferred over round and shall be able to lock together to prevent movement during high flows. Crushed Stone will not be accepted for any of the four components. Any stone excavated from the existing streambed can be stockpiled and reused for streambed restoration, provided the excavated stone is characteristic of the existing stream material upstream and downstream of the work area, or meets the above criteria. The elevations and conditions of the existing streambed shall be maintained to the maximum extent practicable.

## Construction Methods

Components one and two shall be pre-blended outside the project area at a volume ratio of 30% and 70% respectively. The pre-blending shall be done in a way that will prevent the mass from being contaminated by work-place soils. The pre-blended mass shall be placed over areas of the proposed box culvert as shown on the plans.

The Contractor shall submit to the Engineer for approval prior to the start of operations, their placement plan and method of placement.

## BASIS OF PAYMENT

Compensation for Natural Streambed Material will be paid for at the contract unit price PER CUBIC YARD under Item 151.6, Natural Streambed Material. This shall include full compensation for all labor, tools, equipment, materials, and incidentals for the satisfactory completion of the work.

### **ITEM 153.1**

### **CONTROLLED DENSITY FILL – NON-EXCAVATABLE**

### **CUBIC YARD**

Work under this Item shall conform to the relevant provisions of Section 150 of the Standard Specifications and the following:

#### Description

Controlled Density Fill (CDF) shall be used under the control of the Engineer as shown on the plans and/or as directed by the Engineer.

#### Materials

Controlled Density Fill material shall conform to Section M4.08.0. The slump test shall be the “pancake” diameter type. Controlled Density Fill and shall be Type 1 – Very Flowable (non-excavatable) and consist of:

1. Portland Cement - ASTM C150
2. Fly Ash - Type F
3. Water - shall be potable
4. Air-Entraining Admixture
5. No admixtures that tend to increase strength with time may be used without approval by Engineer.
6. Aggregate - ASTM C33 for the excavatable mixes, the well-graded concrete sand will make up the remaining volume of the mix to achieve the full cubic yard.

### Submittals and Testing

The acceptance of the mix and the supplier will be based on the range and length of experience of the supplier and the mix backup data. The primary properties are the setting times, flowability and yield. The supplier shall submit to the Contractor and then to the Engineer, documentation of his experience in his mixes and in their personnel's ability to deliver them.

Prior to the commencement of work, the Contractor shall submit to Engineer the following for approval:

1. A cold-weather procedure for reaching design strength in allowable time.
2. An anti-floating procedure including buoyancy calculations to prevent uplift in the casing pipes.

The Contractor shall perform test batches prior to construction to demonstrate set up time in cold weather prior to installation.

### BASIS OF PAYMENT

Compensation for Controlled Density Fill – Non Excavatable will be paid for at the contract unit price PER CUBIC YARD under Item 153.1, Controlled Density Fill – Non Excavatable. This shall include full compensation for all labor, materials, tools, equipment, staging, access, removals, storage, the cost of all field measurements and survey required, and incidental costs required to complete the work.

### ITEM 156.5                      CRUSHED STONE FOR FILTER BLANKET                      CY

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

The work for this item shall include placing crushed stone at weep holes of the wingwalls and for use as a bedding/foundation element for Riprap proposed slopes at the locations as shown on the Plans. The crushed stone shall conform to Section M2.01.1 of the Standard Specifications.

The crushed stone shall be placed as shown in the details on the Plans and in conformance with the Standard Specifications.

### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Work under this item will be measured and paid at the contract unit price per CY, which price shall be considered full compensation for all bracing, labor, tools, equipment, materials, loading, transportation, disposal fees necessary or incidental, approvals, permits, and incidental work necessary for the completion of the work as specified above, as shown on the Contract Plans and/or directed by the Engineer.



**ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM**

The work under this item shall consist of ensuring the health and safety of the Contractor's employees and subcontracting personnel, the Engineer, their representatives, the environment, and public welfare from any on-site chemical contamination present in air, soil, water and sediment.

The Contractor shall prepare and implement a site-specific Environmental Health and Safety Plan (EHASP) which has been approved and stamped by a Certified Industrial Hygienist (CIH) and includes the preparer's name and work experience. The EHASP shall include appropriate components required by OSHA Standard 29 CFR 1910.120(b) and the Massachusetts Contingency plan (MCP) 310 CMR 40.0018 and must comply with all applicable state and federal laws, regulations, standards and guidelines, and provide a degree of protection and training appropriate for implementation on the project. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The EHASP shall be developed and implemented independently from the standard construction HASP required to work on all MassDOT construction projects.

Health and safety procedures provided by the Contractor shall comply with all the appropriate regulations that address employee working conditions, including but not limited to standards established by OSHA and National Institute for Occupational Safety and Health (NIOSH). Equipment used for the purpose of health and safety shall be approved by and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the most up-to-date version of the EHASP shall be maintained on-site at all times by the Contractor. The on-site copy shall contain the signature of the Engineer and each on-site employee of the MassDOT, Contractor, and Subcontractors involved with on-site activities. The employee's signature on the EHASP shall be deemed prima facie evidence that the employee has read and understands the plan. Updated copies of signature sheets shall be submitted to the Engineer.

**ITEM 180.01** (Continued)

The EHASP shall specify a Contractor Site Safety and Health Officer responsible for implementation of the EHASP and to oversee all construction activities, including handling, storage, sampling and transport, which require contact with or exposure to potentially hazardous materials.

The level of protection, required to ensure the health and safety of on-site personnel will be stipulated in the EHASP. The Site Safety and Health Officer shall implement the EHASP based on changing site and weather conditions, type of operation or activity, chemical compounds identified on-site, concentration of the chemicals, air monitoring data, physical state of the hazardous materials, potential duration of exposure to hazardous materials, dexterity required to perform work, decontamination procedures, necessary personnel and type of equipment to be utilized.

During implementation of the EHASP, a daily log shall be kept by the Site Safety and Health Officer and a copy shall be provided weekly to the Engineer. This log shall be used to record a description of the weather conditions, levels of personal protection being employed, screening data and any other information relevant to on-site environmental safety conditions. The Site Safety and Health Officer shall sign and date the daily log.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Preparation and implementation of the Environmental Health and Safety Program, including the monitoring, protection and storage of all contaminated materials, as well as subsequent modifications to the EHASP, will be measured and paid for at the Lump Sum Bid Price.

Payment of 50% of the Environmental Health and Safety Program contract price will be made upon the initial acceptance of the EHASP by the Engineer. Payment of the remaining 50% of the Environmental Health and Safety Program contract price will be made upon completion of the work. The bid price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of all contaminated materials.

**ITEM 180.03****LICENSED SITE PROFESSIONAL SERVICES****HOUR**

Within limited areas of the project site, soils, sediments and/or groundwater may be contaminated. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include sampling, analysis and characterization of potentially contaminated media, preparation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the Massachusetts Contingency Plan (MCP). LSP hours related to the characterization and disposal of contaminated soil and/or sediment are incidental to the disposal items. An estimate of LSP services to be provided shall be submitted to the Engineer for approval before any LSP activity begins.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the DEP shall be submitted for all work assignments listed for the LSP and environmental technicians.

The LSP shall evaluate soil and/or sediment with discoloration, odor, and presence of petroleum liquid or sheening on the groundwater surface, or any abnormal gas or materials in the ground which are known or suspected to be oil or hazardous materials. Excavated soil and sediment which is suspected of petroleum contamination shall be field screened using the jar headspace procedures according to established DEP Guidance. All field screening equipment must be pre-approved by the Engineer. The LSP shall ensure proper on site calibration of all field screening instrumentation.

**ITEM 180.03** (Continued)

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect soil and/or sediment. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services item. The LSP shall adequately characterize subsurface conditions prior to backfill in areas where contaminated material has been excavated. The Engineer shall approve the locations of the testing sites prior to the sampling.

Contaminated soil, sediment and/or groundwater shall be handled in accordance with all applicable state and federal statutes, regulations and policies. The LSP shall adequately characterize contaminated media for comparison to the requirements of the MCP. The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations. The LSP shall maintain written records in a clear and concise format which tracks the excavation, stockpiling, analysis and reuse/disposal of all suspect contaminated soils, sediments and groundwater. These records shall be up-to-date and available to the Engineer on a bi-weekly basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results and proposed course of action. The laboratory report together with Chain of Custody forms for all analytical results shall be submitted to the Engineer within 14 days after completion of such analyses.

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, penalties and enforcement requirements imposed by applicable regulatory agencies for failure to meet regulatory and contract timeframes. No compensation will be provided for such fines, penalties and enforcement actions.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations.

If the Contractor causes a release of OHM, the Contractor shall be responsible for assessing and remediating the release in accordance with all pertinent State and Federal regulations, including securing the services of a LSP, at his own expense.

The LSP shall coordinate all activities involving both MassDOT and the DEP through the Engineer. Any notification of release shall be approved by the Department before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

**ITEM 180.03** (Continued)

**Laboratory Testing in Support of LSP Services**

Laboratory testing provides for analytical testing in support of LSP services related to maintaining MCP compliance, such as delineating the extent and type of contamination present. Sampling and testing for disposal purposes are not included.

In order to maintain compliance with the MCP or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. The samples shall be delivered to a DEP-certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs) and volatile petroleum hydrocarbons (VPHs). Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

LSP Services for work under this item will be measured per person, per hour of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours. LSP hours related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The contractor will be reimbursed upon satisfactory written evidence of payment. The contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider. Laboratory testing related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identified on the construction plans, and a copy of the field diary for the dates submitted.

Laboratory Testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

<b><u>ITEM 181.11</u></b>	<b><u>DISPOSAL OF UNREGULATED SOIL</u></b>	<b><u>TON</u></b>
<b><u>ITEM 181.12</u></b>	<b><u>DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY</u></b>	<b><u>TON</u></b>
<b><u>ITEM 181.13</u></b>	<b><u>DISPOSAL OF REGULATED SOIL – OUT-OF-STATE FACILITY</u></b>	<b><u>TON</u></b>

The work under these Items shall include the transportation and disposal of contaminated material excavated or excavated and stockpiled. It shall also include the cost of any additional laboratory analyses required by a particular disposal facility beyond the standard disposal test set.

Excavation of existing subsurface materials may include the excavation of contaminated soils. The Contractor shall be responsible for the proper coordination of characterization, transport and disposal, recycling or reuse of contaminated soils. Disposal, recycling, or reuse will be referred to as “disposal” for the purposes of this specification. However, regardless of the use of the term herein, there will be no compensation under these items for reuse within the project limits. The Contractor will be responsible for coordinating the activities necessary for characterization, transport, and disposal of contaminated soils. Such coordination will include the Engineer and his/her designee overseeing management of contaminated materials. Contaminated soils must be disposed of in a manner appropriate for the soil classification as described below and in accordance with the applicable laws of local, state, and federal authorities. The Contractor shall be responsible for identifying disposal facility(ies) licensed to accept the class of contaminated soils to be managed and assure that the facility can accept the anticipated volume of soil contemplated by the project. The Contractor shall be responsible for hiring a Licensed Site Professional (LSP) and all ancillary professional services including laboratories as needed for this work. The Contractor will be responsible for obtaining all permits, approvals, manifests, waste profiles, Bills of Lading, etc. subject to the approval of the Engineer prior to the removal of the contaminated soil from the site. The Contractor and LSP shall prepare and submit to the Engineer for approval all documents required under the Massachusetts Contingency Plan (MCP) and related laws and environmental regulations to conduct characterization, transport, and disposal of contaminated materials.

### **Classes of Contaminated Soils**

The Contractor and its LSP shall determine if soil excavated or soil to be excavated is unregulated soil or contaminated soil as defined in this section. Such materials shall be given a designation for purposes of reuse or disposal based on the criteria of the MCP. Soils and sediments which are not suitable for reuse will be given a designation for purposes of off-site disposal based on the characterization data and disposal facility license requirements. The Classes of Contaminated Soils are defined as follows:

**Items 181.11 through 181.13** (Continued)

UNREGULATED SOIL consists of soil, fill and dredged material with measured levels of oil and hazardous material (OHM) contamination at concentrations below the applicable Reportable Concentrations (RCs) presented in the MCP. Unregulated soil consists of material which may be reused (or otherwise disposed) as fill within the Commonwealth of Massachusetts subject to the non-degradation criteria of the MCP (310 CMR 40.0032(3)), in a restricted manner, such that they are sent to a location with equal or higher concentrations of similar contaminants. Disposal areas include licensed disposal facilities, approved industrial settings in areas which will be capped or covered with pavement or loamed and seeded, and for purposes of this project should be reused as fill within the project site construction corridor whenever possible. The material cannot be placed in residential and/or environmentally sensitive (e.g., wetlands) areas. Under no circumstances shall contaminated soils be placed in an uncontaminated or less contaminated area (including the area above the groundwater table if this area shows no sign of contamination).

The Contractor shall submit to MassDOT the proposed disposal location for unregulated soils for approval. If such a disposal location is not a licensed disposal facility, the Contractor shall submit to the Engineer analytical data to characterize the disposal area sufficiently to verify that the unregulated material generated within the MassDOT construction project limits is equal to or less than the contaminant levels at the disposal site and meets the non-degradation requirements of the MCP. In addition, the Contractor shall provide written confirmation from the owner of the proposed disposal location that they have been provided with the analytical data for both the materials to be disposed as well as the disposal site characterization and that s/he agrees to accept this material. A Material Shipping Record or Bill of Lading, as appropriate, shall be used to track the off-site disposal of unregulated soil and a copy, signed by the disposal facility or property owner, shall be provided to the Engineer in order to document legal disposal of the unregulated material.

The cost of on-site disposal of unregulated soil within the project area will be considered incidental to the item of work to which it pertains.

**Items 181.11 through 181.13** (Continued)

REGULATED SOIL consists of materials containing measurable levels of OHM that are equal to or exceed the applicable Reportable Concentrations for the site as defined by the MCP, 310 CMR 40.0000. Regulated soil which meets the MCP reuse criteria of the applicable soil/groundwater category for this project area may be reused on site provided that it meets the appropriate geotechnical criteria established by the Engineer. Regulated Soil may be reused (as daily or intermediate cover or pre-cap contouring material) or disposed (as buried waste) at lined landfills within the Commonwealth of Massachusetts or at an unlined landfill that is approved by the Massachusetts Department of Environmental Protection (DEP) for accepting such material, in accordance with DEP Policy #COMM-97-001, or at a similar out-of-state facility. It should be noted that soils which exceed the levels and criteria for disposal at in-state landfills, as outlined in COMM-97-001, may be shipped to an in-state landfill, but require approval from the DEP Division of Solid Waste Management and receiving facility. An additional management alternative for this material is recycling into asphalt. Regulated Soils may also be recycled at a DEP approved recycling facility possessing a Class A recycling permit subject to acceptance by the facility and compliance with DEP Policy #BWSC-94-400. Regulated Soil removed from the site for disposal or treatment must be removed via an LSP approved Bill of Lading, Manifest or applicable material tracking form. This type of facility shall be approved/permitted by the State in which it operates to accept the class of contaminated soil in accordance with all applicable local, state and federal regulations.

**MONITORING/SAMPLING/TESTING REQUIREMENTS**

The Contractor shall be responsible for monitoring, sampling and testing during and following excavation of contaminated soils to determine the specific class of contaminated material. Monitoring, sampling and testing frequency and techniques should be performed in accordance with Item 180.03 – LSP Services. Additional sampling and analysis may be necessary to meet the requirements of the disposal facility license. The cost of such additional sampling and analysis shall be included in the bid cost for the applicable disposal items. The Contractor shall obtain sufficient information to demonstrate that the contaminated soil meets the disposal criteria set by the receiving facility that will accept the material.



### **Items 181.11 through 181.13** (Continued)

No excavated material will be permanently placed on-site or removed for off-site disposal until the results of chemical analyses have been received and the materials have been properly classified. The Contractor shall submit to the Engineer results of field and laboratory chemical analyses tests within seven days after their completion, accompanied by the classification of the material determined by the Contractor, and the intended disposition of the material. The Contractor shall submit to the Engineer for review all plans and documents relevant to LSP services, including but not limited to, all documents that must be submitted to the DEP.

### **Waste Tracking**

Copies of the fully executed Weight Slips/Bills of Lading/ Manifests/Material Shipping Records or other material tracking form received by the Contractor from each disposal facility and for each load disposed of at that facility, shall be submitted to Engineer and the Contractor's LSP within three days of receipt by the Contractor. The Contractor is responsible for preparing and submitting such documents for review and signature by the LSP or other appropriate person with signatory authority, three days in advance of transporting soil off-site. The Contractor shall furnish a form attached to each manifest or other material tracking form for all material removed off-site, certifying that the material was delivered to the site approved for the class of material. If the proposed disposition of the material is for reuse within the project construction corridor, the Contractor shall cooperate with MassDOT to obtain a suitable representative sample(s) of the material to establish its structural characteristics in order to meet the applicable structural requirements as fill for the project.

All material transported off-site shall be loaded by the Contractor into properly licensed and permitted vehicles and transported directly to the selected disposal or recycling facility and be accompanied by the applicable shipping paper. At a minimum, truck bodies must be structurally sound with sealed tail gates, and trucks shall be lined and loads covered with a liner, which shall be placed to form a continuous waterproof tarpaulin to protect the load from wind and rain.

### **Decontamination of Equipment**

Tools and equipment which are to be taken from and reused off site shall be decontaminated in accordance with applicable local, state and federal regulations. This requirement shall include, but not be limited to, all tools, heavy machinery and excavating and hauling equipment used during excavation, stockpiling and handling of contaminated material. Decontamination of equipment is considered incidental to the applicable excavation item.

**Items 181.11 through 181.13** (Continued)

**REGULATORY REQUIREMENTS**

The Contractor shall be responsible for adhering to regulations, specifications and recognized standard practices related to contaminated material handling during excavation and disposal activities. MassDOT shall not be responsible at any time for the Contractor's violation of pertinent State or Federal regulations or endangerment of laborers and others. The Contractor shall comply with all rules, regulations, laws, permits and ordinances of all authorities having jurisdiction including, but not limited to, Massachusetts DEP, the U.S. Environmental Protection Agency (EPA), Federal Department of Transportation (DOT), Massachusetts Water Resources Authority (MWRA), the Commonwealth of Massachusetts and other applicable local, state and federal agencies governing the disposal of contaminated soils.

All labor, materials, equipment and services necessary to make the work comply with such regulations shall be provided by the Contractor without additional cost to MassDOT. Whenever there is a conflict or overlap within the regulations, the most stringent provisions shall apply. The Contractor shall reimburse MassDOT for all costs it incurs, including penalties and/or for fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

**SUBMITTALS**

I. Summary of Sampling Results, Classification of Material and Proposed Disposal Option.

The following information, presented in tabular format, must be submitted to the Engineer for review and approval prior to any reuse on-site or disposal off-site. This requirement is ongoing throughout the project duration. At least two weeks prior to the start of any excavation activity, the Contractor shall submit a tracking template to be used to present the information as stipulated below. Excavation will not begin until the format is acceptable to MassDOT.

Characterization Reports will be submitted for all soil, sediment, debris and groundwater characterized through the sampling and analysis program. Each report will include a site plan which identifies the sampling locations represented in the Report. The Construction Plan sheets may be used as a baseplan to record this information.

The Sampling Results will be presented in tabular format. Each sample will be identified by appropriate identification matching the sample identification shown on the Chain of Custody Record. The sample must also be identified by location (e.g. grid number or stockpile number). For each sample, the following information must be listed: the classification (unregulated, regulated, etc.), proposed disposal option for the stockpile or unit of material represented, and, all analytical results.

Each Characterization Report will include the laboratory analytical report and Chain of Custody Record for the samples included in the Report.

## **Items 181.11 through 181.13** (Continued)

### II. Stockpiling, Transport, and Disposal

At least two weeks prior to the start of any excavation activity, the Contractor shall submit, in writing, the following for review and shall not begin excavation activity until the entire submittal is acceptable to MassDOT.

#### Excavation and Stockpiling Protocol:

Provide a written description of the management protocols for performing excavation and stockpiling and/or direct loading for transport, referencing the locations and methods of excavating and stockpiling excavated material.

#### **Disposal and Recycling Facilities:**

1. Provide the name, address, applicable licenses and approved waste profile for disposal and/or recycling location(s) where contaminated soil will be disposed. Present information substantiating the suitability of proposed sites to receive classifications of materials intended to be disposed there, including the ability of the facility to accept anticipated volumes of material.
2. Provide a summary of the history of compliance actions for each disposal/recycling facility proposed to be used by the Contractor. The compliance history shall include a comprehensive list of any state or federal citations, notices of non-compliance, consent decrees or violations relative to the management of waste (including remediation waste) at the facility. Material should not be sent to facilities which are actively considered by the DEP, USEPA or other responsible agency to be in violation of federal, state or local hazardous waste or hazardous material regulations. MassDOT reserves the right to reject any facility on the basis of poor compliance history.

#### Transportation:

The name, address, applicable license and insurance certificates of the licensed hauler(s) and equipment and handling methods to be used in excavation, segregation, transport, disposal or recycling.

### III Material Tracking and Analytical Documentation for Reuse/Disposal

The following documents are required for all excavation, reuse and disposal operations and shall be in the format described. At least two weeks prior to the start of any excavation or demolition activity, the Contractor shall submit the tracking templates required to present the information as stipulated below. Excavation or demolition will not begin until the format is acceptable to MassDOT.

All soils, sediments and demolition debris must be tracked from the point of excavation to stockpiling to onsite treatment/processing operations to off-site disposal or onsite reuse as applicable.

## **Items 181.11 through 181.13** (Continued)

### **Demolition Debris:**

Demolition debris must be tracked if the debris is stockpiled at a location other than the point of origin or if treatment or material processing is conducted. Identification of locations will be based on the station-offset of the location. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations/comments, quantity, and stockpile ID/processing operation location. For each unit of material tracked, the table will also track reuse of the material on-site, providing reuse date, location of reuse as defined by start and end station, width of reuse location by offset, the fill elevation range, quantity, and finish grade for said location. For demolition debris which is not reused on site, the table will also track disposal of the material as defined by disposal date, quantity and disposal facility. The table must provide a reference to any analytical data generated for the material.

### **Soil/Sediment:**

Soil excavation will be identified based on the station-offset of the excavation location limits. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations, quantity, and stockpile number/location. For each unit of material tracked, the table will also track reuse of the material on-site and disposal of the material off-site using the same categories identified for demolition debris above.

## **METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Disposal of contaminated soil shall be measured for payment by the Ton of actual and verified weight of contaminated materials removed and disposed of. The quantities will be determined only by weight slips issued by and signed by the disposal facility. The most cost-effective, legal disposal method shall be used. The work of the LSP for disposal under all of these items shall be incidental to the work with no additional compensation.

ITEM 181.11 Measurement for Disposal of Unregulated Soil shall be under the Contract Unit Price by the weight, in tons, of contaminated materials removed from the site and transported to and disposed of at an approved location or licensed facility, and includes any and all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.12 Measurement for Disposal of Regulated Soil – In-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved in-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

**Items 181.11 through 181.13** (Continued)

ITEM 181.13 Measurement for Disposal of Regulated Soil - Out-of-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved out-of-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

The Contractor shall refer to Attachment A for sediment characterization sampling performed in 2022. This data is provided for reference only and does not replace surplus material disposal characterization to be performed by the Contractor during construction.

**ITEM 203.2**

**STORMWATER TREATMENT UNIT**

**EA**

The work under this item shall conform to the relevant provisions of Section 200 of the Standard Specifications and the following:

Scope of Work: The Contractor shall furnish all labor, equipment, materials, and incidentals necessary to install the stormwater treatment unit (SWTU) and appurtenances specified in the drawings and these specifications.

Quality Assurances

All components shall be subject to inspection by the engineer at the place of manufacture and/or installation. All components are subject to be rejected or identified for repair if the quality of materials and manufacturing do not comply with the requirements of this specification. Components which have been identified as defective may be subject for repair, where final acceptance of the component is contingent on the discretion of the Engineer.

The manufacturer shall guarantee the SWTU components against all manufacturer originated defects in materials or workmanship for a period of twelve (12) months from the date the components are delivered to the owner for installation. The manufacturer shall, upon its determination, repair, correct, or replace any manufacturer originated defects advised in writing to the manufacturer within the referenced warranty period. The use of SWTU components shall be limited to the application for which it was specifically designed.

The SWTU manufacturer shall submit to the Engineer of Record a “Manufacturer’s Performance Certification” certifying that each SWTU is capable of achieving the specified removal efficiencies listed in these specifications. The certification shall be supported by independent third-party research.

Submittals

The Contractor shall prepare and submit shop drawings in accordance with Section 01330, SUBMITTALS of the contract documents. The shop drawings shall detail horizontal and vertical dimensioning, reinforcement and joint type and locations.

Materials and Design

Housing units of stormwater treatment unit shall be constructed of pre-cast concrete, as follows:

1. Precast concrete components shall conform to applicable sections of ASTM C478, ASTM C857, and ASTM C 858 and shall be designed to withstand lateral earth and AASHTO H-20 traffic loads.
2. Concrete shall achieve a minimum 28-day compressive strength of 4,000 psi.
3. Cement shall be Type III Portland Cement conforming to ASTM C150.
4. Aggregates shall conform to ASTM C33.
5. Reinforcing steel shall be deformed billet-steel bars, welded steel wire or deformed welded steel wire conforming to ASTM A 615, A185, or A497.
5. Joints shall be sealed with preformed joint sealing compound conforming to ASTM C990.

6. Shipping of components shall not be initiated until a minimum compressive strength of 4,000 psi is attained or five (5) calendar days after fabrication has expired, whichever occurs first.

Internal Components and appurtenances shall conform to the following:

1. Screen and support structure shall be manufactured of Type 316 and 316L stainless steel conforming to ASTM F1267-01.
2. Hardware shall be manufactured of Type 316 stainless steel conforming to ASTM A320.
3. Fiberglass components shall conform to the applicable sections of ASTM D-4097
4. Manhole castings shall be designed to withstand AASHTO H-20 loading and manufactured of cast-iron conforming to ASTM A48 Class 30.

### Performance

The SWTU shall remove oil and sediment from stormwater during frequent wet weather events and retain these pollutants within the device for later removal.

The SWTU device shall be engineered, designed and sized to treat a minimum of 90 percent of the annual runoff volume using a widely accepted continuous simulation runoff model which uses rainfall data records which includes antecedent conditions as well as rainfall periods. Rainfall records should be comprised of 15-years of rainfall data or a longer continuous period if available for a given location, but in all cases at least a minimum of 5-years continuous rainfall.

The SWTU device shall be capable of removing 80% of the total suspended solids (TSS) load, without scouring previously captured pollutants.

The SWTU device shall have New Jersey Corporation for Advanced Technology (NJCAT) verification that the device is acceptable for on-line installation based on full-scale third-party scour testing.

The SWTU shall be designed with a sump chamber for the storage of captured sediments and other negatively buoyant pollutants in between maintenance cycles. The minimum storage capacity provided by the sump chamber shall be 0.9 CY. The boundaries of the sump chamber shall be limited to that which do not degrade the SWTU's treatment efficiency as captured pollutants accumulate. The sump chamber shall be separate from the treatment processing portion(s) of the SWTU to minimize the probability of fine particle re-suspension. To not restrict the Owner's ability to maintain the SWTU, the minimum dimension providing access from the ground surface to the sump chamber shall be 20 inches in diameter.

Petroleum hydrocarbon storage capacity in the SWTU shall be a minimum 35 gallons. The SWTU device internal hydrocarbon storage area shall include a minimum of 12 inches of double wall containment for the full circumference of the device to provide safe oil and other hydrocarbon material storage and ground water protection.

The SWTD shall convey the flow from the peak storm event of the drainage network, in accordance with required hydraulic upstream conditions as defined by the Engineer. If a substituted SWTD is

proposed, supporting documentation shall be submitted that demonstrates equal or better upstream hydraulic conditions compared to that specified herein.

### Manufacturer

The manufacturer of the SWTU shall be one that is regularly engaged in the engineering design and production of systems deployed for the treatment of stormwater runoff for at least five (5) years and which have a history of successful production, acceptable to the Engineer.

The SWTU(s) shall be a CDS device manufactured by Contech Engineered Solutions LLC, model CDS2015-4, or approved equal.

### Handling and Storage

The Contractor shall exercise care in the storage and handling of the SWTU components prior to, and during, installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the Contractor.

### Installation

Each SWTU shall be constructed according to the sizes shown on the drawings and as specified herein. Install at elevations and locations shown on the drawings or as otherwise required by the Engineer.

Place the SWTU on a granular subbase of minimum thickness of six inches after compaction, or of greater thickness and compaction, if specified elsewhere. The granular subbase shall be checked for level prior to setting the unit.

The SWTU shall be installed in accordance with the manufacturer's recommendations and related sections of the Contract Documents. The manufacturer shall provide the Contractor installation instructions and offer on-site guidance during the important stages of the installation, as identified by the manufacturer, at no additional expense. A minimum of 72 hours notice shall be provided to the manufacturer prior to their performance of the services included under this subsection.

The Contractor shall fill all voids associated with lifting provisions provided by the manufacturer. These voids shall be filled with non-shrinking grout providing a finished surface consistent with adjacent surfaces. The contractor shall trim all protruding lifting provisions flush with the adjacent concrete surface in a manner, which leaves no sharp points or edges.

The Contractor shall remove all loose material and pooling water from the SWTU prior to the transfer of operational responsibility to the Owner.

### BASIS OF PAYMENT

Compensation for Stormwater Treatment Unit will be paid for at the contract unit price PER EACH under Item 203.2, Stormwater Treatment Unit. This shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work.



**ITEM 222.3**

**FRAME AND GRATE  
MUNICIPAL STANDARD**

**EA**

The work under this item shall conform to the relevant provisions of Section 200 of the Standard Specifications and the following:

Frame and Grate Municipal Standard shall be frames with 2-inch square openings and 23-7/8-inch square grates, shall be 8 inches in height and 453 pounds at minimum. They shall be Neenah Foundry Co. No. 3405; Quality Water Products No. 45; EJ, Product Number OMA 552000074; or approved equal.

**BASIS OF PAYMENT**

Compensation for Frame and Grate Municipal Standard will be paid for at the contract unit price PER EACH under Item 222.1, Frame and Grate Municipal Standard. This shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work.

**ITEM 470.2**

**HOT MIX ASPHALT BERM, TYPE A, MODIFIED**

**TON**

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

The work shall include the installation of HMA Berm Type A, modified, as indicated on the project plans and details. The details for the berm require that the width of the berm is modified to 12 inches and the reveal shall be 1 inch.

Hot Mix Asphalt Berm, Type A, Modified shall be measured and paid for by the unit TON including all necessary materials, equipment and labor to install the berm as indicated on the contract drawings.

**ITEM 657.**

**TEMPORARY FENCE**

**FOOT**

The work under this item shall conform to the relevant provisions of Section 644 of the Standard Specifications and the following:

The work shall include installation of chain link fence at both sides of the bridge reconstruction site to prevent access by the public during construction where shown on the plans, and as directed by the Engineer.

The chain link fence shall be at least 6 feet in height and erected to ensure controlled access to authorized personnel only. The fence shall be positioned around the closed area of the road so as not to encourage the public from using the fence to climb onto the bridge reconstruction area, neither it shall block any access to the abutting properties. The fence shall be fixed with signs that make it clear that access to the work area is not allowed. The fence shall be supported independently and not fixed to any existing facility.

Temporary Fence will be measured for payment by the foot of fence erected, which price shall include all labor, materials, equipment, and incidental costs required to establish a safe perimeter around the existing culvert.

**ITEM 697.1.**

**SILT SACK**

**EA**

The work under this item shall consists of furnishing all labor, materials, tools and equipment and performing all work required for installation of silt sack inlet protection in the locations noted on the plans.

To trap sediment and to prevent sediment from clogging drainage systems, catch basin protection in the form of a silt sack (Siltsack as manufactured by ACF Environmental, Inc. or approved equal) shall be provided as approved by the Engineer.

**BASIS OF PAYMENT**

Compensation for work to be done under this Item shall be paid for at the contract unit price PER EACH under Item 697.1., Silt Sack. This shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work.

**ITEM 697.2**

**FLOATING SILT FENCE**

**FT**

The work under this item shall conform to the relevant provisions of Subsection 670 of the Standard Specifications and the following:

The work under this item shall consist of furnishing and erecting floating silt fence (turbidity curtain) to act as a silt barrier for work within the river. The floating silt fence shall be installed at locations shown on the plans prior to commencing any work in or near the water.

The floating silt fence shall be placed in the river in reasonable conformity with the locations shown on the contract drawings and as directed by the Engineer. The floating silt fence shall be in place and approved by the Engineer prior to any bridge contract work.

The Contractor shall maintain the floating silt fence in satisfactory working order until removed, including any necessary replacements of damaged or deteriorated sections, at no additional compensation. The floating silt fence shall be maintained until all work within and adjacent to the river has been completed. Sediment deposited into the area enclosed by the floating silt fence shall be removed and lawfully disposed prior to relocating or removal of the floating silt fence barrier(s).

Installation procedures may be varied to comply with manufacturers recommended procedures with the approval of the Engineer and the DEP representative. If required, the Contractor shall submit alternate installation and/or staging procedures for approval.

**MATERIALS**

Floating Silt Fence barrier shall consist of a nylon reinforced PVC fabric siltation curtain with solid plastic foam flotation members enclosed in a top pocket, tension link in flotation section and a ballast chain enclosed in bottom pocket and meet the following property specifications:

1. Length: 50 feet per section.
2. Draft: 3 feet to 10 feet. Contractor shall field verify draft requirements.
3. Flotation Element: Minimum 6-inch diameter closed cell solid plastic foam logs with 17 lbs. per ft. buoyancy.
4. Flotation Fabric: Shall be impermeable 22 oz. nylon reinforced PVC having 450 psi tensile strength.
5. Tension Cables: ¼-inch cable enclosed in top portion of the flotation section. It shall secure to each end of connector of the curtain sections. Cable system shall be tamperproof.
6. Ballast: 5/16-inch or heavier, galvanized steel chain enclosed in bottom pocket of the entire length of floating silt fence.
7. Connectors: Aluminum or galvanized steel universal connectors on each end of flotation section. Below the connectors, the skirts shall be joined by 5/8-inch polypropylene rope ties between the grommets on the two skirts. The ballast chains can be shackled.
8. Steel posts shall be a minimum of 10 feet in length and 4 inches diameter galvanized fence post or other manufacturer approved supporting device approved by the Engineer.

### CONSTRUCTION

The fence shall be in place and approved before any contract work that interfaces with the river begins.

The contractor shall maintain fences in satisfactory working order until removed, including any necessary replacement of damaged or deteriorated sections, at no additional compensation.

Heavy sediment deposits in the area enclosed by the floating silt fence will be removed before the removal of the barrier.

### METHOD OF MEASUREMENT

Item 697.2 will be for payment by the foot for a complete installation, removing and resetting as necessary, and final removal as described above and/or as directed by the Engineer.

### BASIS OF PAYMENT

Item 697.2 shall be paid for at the contract unit bid price per foot, which shall include all equipment, material, labor, and tools necessary for a complete installation, removing and resetting, and final removal

as described above and/or as directed by the Engineer. Removal and disposal of built-up silt or debris deposited or accumulated into the enclosed area or at the bottom of the floating silt fence shall also be included in the unit bid price of this item.

**ITEM 698.4.**                      **GEOTEXTILE FABRIC FOR PERMANENT**                      **SY**  
**EROSION CONTROL**

The work under this item shall conform to the relevant provisions of Section 828 of the Standard Specifications and the following:

This item includes furnishing of all labor, materials, and equipment necessary to install specified geotextile fabrics in locations shown on the drawings and as required by the Engineer.

**PRODUCTS**

The geotextile fabric shall be composed of continuous-filament fibers bonded together to form a sheet. The fabric shall be an average of 20 mils thick and possess the characteristics of Tencate Mirafi 180N.

**BASIS OF PAYMENT**

Compensation for work to be done under this Item shall be paid for at the contract unit price PER SY under Item 698.4, Geotextile Fabric for Permanent Erosion Control. This shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work.

**ITEM 734.**                                      **SIGN REMOVED AND RESET**                                      **EA**

The work under this item shall conform to the relevant provisions of Section 828 of the Standard Specifications and the following:

This item includes removing, temporary stacking and resetting of all non-standard signs as shown on the plans and as required by the Engineer.

**BASIS OF PAYMENT**

Compensation for work to be done under this Item shall be paid for at the contract unit price PER EACH under Item 734., Sign Removed and Reset. This shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work.

**ITEM 767.121**                                      **SEDIMENT CONTROL BARRIER**                                      **FT**

The purpose of this item is to provide a linear, compost-filled tube for filtering suspended sediments from stormwater flow. This item shall conform to the requirements of Sections 751, and 767 of the Standard Specifications and the following.

## MATERIALS

### Filter Tubes:

Material for the filter tubes 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. Particle size analysis: 98% shall pass through a 3-inch sieve; 30-50% shall pass 3/8 inches sieve.

Tubes for compost filters shall be a minimum of 12 inches, a maximum of 18-inch in diameter. Tube material shall be a knitted mesh with 1/8" - 3/8" openings and made of biodegradable (cotton or jute) materials. Photodegradable fabric may be used; however, photodegradable fabric must be removed and disposed of by the contractor, at his expense, at the end of the contract. Additional tubes shall be used at the direction of the Engineer.

As shown in the detail, the 1 foot wide by 2-inch deep wedge of compost spread along the top of the filter tube shall be incidental to this item.

Stakes for anchors, if required, shall be nominal 2 x 2 stakes.

## 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. 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 Engineer. Contractor shall remove sediment deposits as necessary to maintain the filters in working condition. The functional integrity of filter tubes shall be maintained in sound condition at all times. Filter tubes that are decomposing, cut, or otherwise compromised shall be repaired or replaced as directed by the Engineer and be incidental to this item.

Filter tube fabric and stakes 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 Engineer. All biodegradable tube fabric shall be cut and laid flat in place to decompose on-site at the direction of the Engineer. Tube fabric that is not decomposing satisfactorily shall be removed and disposed off-site by the Contractor. At the direction of the Engineer, the Contractor may rake out and seed compost so that it is no greater than 2 inches (50 mm) in depth on soil substrate.

## BASIS OF PAYMENT

Measurement for this item shall be by the FOOT of Sediment Control Barrier installed, approved, and maintained in place. Payment shall be the bid price and shall be compensation for all labor equipment and materials necessary to complete the work specified above, including, but not limited to, stakes and tube fabric, compost mulch wedge along top of tubes, removal and disposal of fabric and stakes, raking and seeding of compost.

**ITEM 953.1**                      **TEMPORARY SUPPORT OF EXCAVATION**                      **LUMP SUM**

The work under this Item shall conform to the relevant provisions of Subsections 140 and 950 of the Standard Specifications and the following:

The Contractor shall design, furnish, install, maintain and remove Temporary Support of Excavation, as required at both approaches of the existing bridge based upon the actual site conditions, for the demolition of the existing structure and the construction of proposed Bridge No. M-22-022 (CPC), during all construction elements including but not limited to concrete wingwalls, masonry walls, and utilities, as necessary to complete the work as shown on the Plans and to the satisfaction of the Engineer. The Temporary Support of Excavation system designed by the Contractor, may be detailed and designed to remain in place instead of removal at no additional cost to the Engineer.

The Temporary Support of Excavation, shall be designed for, but is not limited to:

- All necessary Temporary Support of Excavation to support excavations, demolitions, and construction work as necessary for the proposed bridge shown on the plans. Temporary Support of Excavation lines shown on the plans are conceptual and schematic. The actual locations and extents of support of excavation shall be determined by the contractor's design of their system.
- The contractor's design of the Temporary Support of Excavation system shall account for existing groundwater and shall include the contractor's design and measures for dewatering as necessary to complete the work in the dry.
- The Temporary Support of Excavation system shall be removed in its entirety unless the contractor's design details it to remain in place, as submitted to the Engineer for prior review and approval.

The Temporary Support of Excavation is anticipated to be behind the existing abutments and wingwalls, far enough back for the installation and backfill of the proposed box culvert and wingwalls while maintaining contractor's access as necessary for contractor's operations and equipment.

The Temporary Support of Excavation shall be configured such that they will serve their intended purpose during all elements and stages of construction without the need for reinstallation or major modifications.

All material used for the temporary excavation support systems shall be sound and free from strength impairing defects.

The Contractor is responsible for determining all geotechnical criteria associated with the Temporary Support of Excavation including, but not limited to, lateral earth pressures. Additional lateral earth pressures due to surcharges caused by equipment operation and/or material storage near the top of the excavation shall be considered and incorporated into the designs.

The Contractor shall consider subsurface conditions such as, but not limited to, ground water elevations, surface elevation, and existing foundations. The Contractor shall accurately locate all utility lines and structures to ensure that their proposed temporary excavation support system will not damage nor interfere with any existing/proposed underground/overhead utilities and structures. The contractor shall prepare the Temporary Support of Excavation to address potential obstructions if encountered during the installation of their system.

### SUBMITTALS

The Contractor shall submit to the Engineer for review and approval, their design of the temporary support of excavation system with drawings and calculations. The contractor's design shall be sufficiently detailed, so that the Contractor's method of dealing with operations are clearly stated. No installation of the system nor excavation and construction work shall be allowed before the Engineer's written approval of the contractor's submittal.

The contractor's design of the Temporary Support of Excavation system shall be prepared, designed, dated and stamped by a Professional Engineer licensed in the Commonwealth of Massachusetts.

Payment for the Contractor's design and submittal including contractor's engineering services shall be considered incidental to this item and no further compensation will be allowed.

### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Measurement and payment under Item 953.1 shall be a lump sum, which price shall include all labor, materials, tools, equipment, submission preparation and submittal, and all incidental costs required to complete the work, of which a payment of 75% of the lump sum bid price of this item will be made upon complete installation to the satisfaction and approval of the Engineer. The remaining 25% of the lump sum bid price of this Item will be paid following proper complete removal of all the temporary support of excavation components from the site, as determined by the Engineer.

The Temporary Support of Excavation Systems shall be entirely removed from the job site after their function has been accomplished. Note the following:

All permanent and temporary support of excavation that protrudes into the soil that supports the bridge structure shall be left in place. Supporting soil shall be defined as all soil directly below the footing contained within a series of planes that originate at the perimeter of the bottom of the footing and project down and away from the footing at an angle of 45° from the horizontal.

Whether support of excavation is indicated on the Construction Drawings or not, the Contractor shall be informed by the Special Provisions that any part of the support system that protrudes into the

supporting soil below the bridge structure, as defined by Paragraph 3.2.5.8 of the MassDOT Bridge Design Manual, shall be cut off and left in place and no additional payment will be made for this part.

**ITEM 983.1**

**RIPRAP**

**TON**

The work to be done under this item shall conform to the relevant provisions of Section 983 of the Standard Specifications.

**ITEM 991.1 CONTROL OF WATER - STRUCTURE NO. M-22-022 (CPC) LUMP SUM**

The work under this item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

The Contractor shall design, furnish, install, maintain and remove a Control of Water System at the upstream and downstream locations of the pond's channel based upon the actual site conditions and as necessary to complete the work in the dry for the proposed roadway and bridge work shown on the Plans, in accordance with the Special Provisions and environmental permits and to the satisfaction of the Engineer.

The contractor's design of control of water including dewatering activities, water discharges, and other measures and operations necessary for sufficient water control shall be in compliance with the approved environmental permits included in these bid documents. No direct discharge shall be allowed into the pond and channel during the dewatering operations. The Contractor shall be responsible for restoration of the site following completion of the dewatering operations.

The Control of Water shall be designed by the Contractor to support operations and construction activities in the dry. The extent and location of Control of Water shall be determined by the contractor's design and shall account to protect existing utilities and structures slated to remain. Dewatering shall be conducted to ensure that all concrete is placed and cured in the dry as needed. For demolition purposes, dewatering shall be conducted on an as needed basis as determined by the Contractor and shall be outlined in the contractor's design.

It is the responsibility of the Contractor to determine the need and extent of dewatering required based on their proposed construction methods and to submit said design, methods, and materials he/she proposes to use, for the Engineer's prior review and approval.

Control of Water lines shown on the plans, including suggested diversion pipe, are conceptual and schematic. The actual locations and extents of control of water shall be determined by the contractor's design of their system. Water control, including suggested diversion pipe if any, shall be designed by the contractor based on the temporary water control design data and notes shown on the Plans.

The contractor's design of control of water system shall account for the Dorothy Pond and dam operations, including written coordination and agreement with the dam owner on pond water elevation during all construction and work activities.



The control of water system shall be removed in its entirety, and shall be detailed in the contractor's design submitted to the Engineer for prior review and approval.

All necessary permitting, documents and fees required for all dewatering work shall be the responsibility of the contractor and shall be included as incidental in the cost of this item.

**Construction Methods:**

The contractor shall design the control of water system, including Plans and calculations as applicable. The contractor's design of control of water system, including plans and calculations, shall be prepared and stamped by a Professional Engineer licensed in the Commonwealth of Massachusetts and shall be submitted for the review and approval of the Engineer prior to the start of construction.

The Contractor shall use such equipment and shall perform their operations in such a manner that boiling or other disturbances of the soil in the foundation area will be prevented and that turbidity is not released into the channel, pond, and wetland. The area being excavated shall be kept dry by such means that water will be prevented from entering from the adjacent soils and adversely affecting the stability of the foundation material or supporting soils.

All dewatering and related earthwork shall be conducted in such a manner as to prevent siltation or contamination of the waterway.

The pumping discharge shall not be allowed to enter directly into the waterway. The water from the work areas shall be pumped to a settling tank. The tank shall be constructed to allow the pumped water to pass through the tank with sediments settling out before out-letting to an area enclosed by hay bales. Placement of the basin will be at a location determined by the contractor and the location shall be submitted for approval. Storage volume shall be determined by the following formula: Cubic feet of storage required = Pump discharge rate x 16. The tank can be constructed of concrete, fiberglass or any other material that will meet the following:

1. Approximately 70 percent sedimentation trapping efficiency shall be achieved with a typical tank to ensure that the tanks are adequately sized to prevent overtopping from dewatering and to provide the required filtering.
2. The outlet from the settling 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 settling tanks shall be maintained as follows:

1. Inspect at least twice daily during dewatering operations.
2. Repair any damage immediately.
3. Clean tank outlet daily. Remove any debris immediately.
4. Remove sediments when deposits reach 8 inches below the outlet invert.
5. Dispose sediments outside of wetland areas at a location approved by the Engineer.

The Contractor shall inspect compost filter tubes or other systems that surround the outlet daily and shall immediately replace any that are damaged.

Pumping shall be conducted in a manner, which will not adversely affect the freshly placed concrete within the excavation.

The Contractor shall provide and maintain ample pumps, pipes and other devices to promptly and continually remove and dispose of water from the excavation areas. The size and configuration of pumps and pipes shall be selected by the Contractor. Continuous power supply (including back-up) shall be provided for operation of water control pump(s).

The Contractor shall provide the means of removing all sediment from water pumped from the excavation areas; this shall include the use of sedimentation basins, check dams, sedimentation fences or tanks.

The Contractor shall provide a dewatering filter basin that conforms to the permitting requirements and is sized to have a minimum retention time of 24 hours.

#### BASIS OF PAYMENT

There will be no measurement under this item. Payment of 75% of the lump sum bid price of this item will be made for the contractor's approved design system and for the complete installation of the system in accordance with the approved contractor's design and shop drawings and the environmental permit. The remaining 25% of the lump sum bid price of this Item will be paid following proper complete removal of all temporary water control measures from the site, to the satisfaction of the Engineer.

**ITEM 995.01      BRIDGE STRUCTURE, BRIDGE NO. M-22-022 (CPC)      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, and labor needed to construct the following:

- Precast Concrete Box Culvert
- Precast Concrete Guardrail Transitions
- Precast Concrete Curtain Walls
- Precast Concrete Wingwalls and Copings
- Cast-in Place Reinforced Concrete Sidewalk
- Cast-in Place Reinforced Concrete Safety curb
- Cast in Place Concrete Approach Slab
- S3-TL4 bridge railing
- Waterproofing Membrane
- Damp-Proofing

The following items shall be considered as incidental to in the unit price of concrete, as stated by the Contractor and as approved by the Engineer in the respective "Basis for Partial Payments": Development of Assembly Plan, neoprene seals, backer rods, preformed and premolded filler, joint sealer, grout ports, keyway grout, lifting hardware, caulking, closed cell foam, weep holes with crushed stone, all piping and drains, waterproofing protective course.

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**

**DESCRIPTION**

The work under this Heading consists of fabricating, transporting and installing and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans for the following

- Precast Concrete Box Culvert
- Precast Concrete Guardrail Transitions
- Precast Concrete Wingwalls and Copings
- Precast Curtain Walls

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

### 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. Contractor and Fabricator Quality Control activities and the Engineers Acceptance activities shall remain independent from one another. The Engineers Acceptance activities shall not replace Fabricator Quality Control activities.

### 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.

### 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.

### 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:

- (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. The QC Manager shall be on site while the batch plant is producing and placing concrete for MassDOT projects.
- (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.

### 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.

### 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

### 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.

#### 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:

- Prior to placement of concrete to verify that  $T_i \geq 50^\circ\text{F}$ .
- Immediately after placement to verify that  $T_i \geq 50^\circ\text{F}$  is maintained.
- 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  $40^\circ\text{F}$  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  $2^\circ\text{F}$ . 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.

#### 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.

**Table 1: Quality Control Sampling and Testing**

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size <sup>(c)</sup>	Sublot Size <sup>(d)</sup>	Frequency	Point of Sampling
Slump (in.) <sup>(a)</sup>	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 <sub>c</sub> at Stripping				
		7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days				
	AASHTO T 23	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f <sub>c</sub> at 28 days				
	56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f <sub>c</sub> at 56 days <sup>(b)</sup>					

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<sub>c</sub>).
- (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.

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<sub>c</sub>. A Certificate of Compliance shall accompany each shipment and shall be presented to the Engineer or designee upon delivery to the site.

## 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 MassDOT upon the request of the Department.

- (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)

## Acceptance

MassDOT will perform an Acceptance inspection once precast elements arrive on site. Acceptance inspection and test results not meeting specifications will result in Non-conformance Reports (NCR) being issued by the Engineer to the Fabricator or Contractor for corrective action. Final Acceptance for the fabricated Precast Concrete Bridge Elements shall be determined by the Engineer.

## MATERIALS

### 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

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 Engineer 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.

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 Engineer for review and approval. Fabrication shall not occur without prior MassDOT mix design approval.

Grout

Grout used for shear keys, vertical adjustment assembly voids, and hand holes shall be in accordance with M4.04.0.

Reinforcement

All reinforcing steel shall be coated Grade 60 unless otherwise noted on the plans. Mechanical reinforcing bar splicers shall be epoxy coated.

### 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

### 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. 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.

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 (7<sup>th</sup> 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.

### Fabrication.

All Precast Concrete Bridge Elements shall be fabricated in accordance with the latest edition of PCI MNL-116 as modified herein.

### 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. The Placement, Finishing and Curing Plan shall include the following:

- Method of Mixing
- Method of Placement
- Method of Consolidation
- Method of Finishing
- Method of Initial Curing
- Method of Intermediate Curing
- Method of Final Curing
- Moisture Retention Materials and Equipment (water spray equipment, saturated covers, sheet materials, liquid membrane-forming compounds, accelerated curing equipment, etc.)
- Cylinder Curing Methods, Location, and Environmental Control (temperature, humidity, etc.)
- Temperature Monitoring, Recording, and Reporting

### Dunnage Plan Shop Drawings

At least 30 days prior to the start of fabrication, the Contractor shall submit proposed Dunnage Plan Shop Drawings to the Engineer for review and approval. This shall be an independent submittal, separate from the fabrication shop drawings. The Dunnage Plan shall include the following:

- (a) Proposed layout of the Precast Concrete Bridge Elements for storage in yard and during shipping
- (b) Support and blocking point locations
- (c) Support and blocking materials

### Box Culvert Design

The Contractor shall submit design computations for the 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 latest edition of MassDOT LRFD Bridge Design Manual, and the Plans using English units, for HL-93 live loading and for vehicular collision loading onto the mounted railings in accordance with the latest edition of MassDOT LRFD Bridge Design Manual. 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 the section, Drawings, above.

The box culvert dimensions provided on the plans are shown to establish the size of the proposed opening. The width and thickness of each box 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 box culvert 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.

#### Wingwall Design

The Contractor shall submit design computations for the wingwalls to the Engineer for review and approval. The computations shall be prepared in accordance with the latest AASHTO LRFD Bridge Design Specifications, the latest MassDOT LRFD Bridge Design Manual, and the Plans using English units, for vehicular collision loading onto the mounted railings in accordance with the latest edition of MassDOT LRFD Bridge Design Manual. 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 the section, Drawings, above.

#### 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 box culvert with a smooth interior surface free of appreciable irregularities, and in compliance with the permissible variations.

#### Marking

The following information shall be clearly marked on the interior of each box culvert by indentation, waterproof paint, or other approved means:

- (a) Box culvert span and rise
- (b) Date of manufacture and lot number
- (c) Name and trademark of the manufacturer

#### 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.

### 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.

### 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.

### Mixing of Concrete

The concrete shall be proportioned and mixed in conformance with the Fabricator's MassDOT approved mix design and M4.02.10 Mixing and Delivery. Fabrication shall not occur without prior MassDOT mix design approval. The Fabricator is responsible for confirming the batch ticket quantities are within the tolerances of the Fabricator's MassDOT approved mix design.

### 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.

### 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.

#### 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 similar to 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.

#### 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.

#### 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 similar to that of 60 grit sandpaper.

#### 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.

#### 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.

### 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.

### 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).

### 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).

### 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 2: Final Curing Method Cycle for Water Spray*).

**Table 2: 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

### 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 3: 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.

**Table 3: Final Curing Method Cycle for Saturated Covers**

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f <sub>c</sub>

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.

**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 4: Final Curing Method Cycle for Curing Sheet Materials*).

**Table 4: Final Curing Method Cycle for Sheet Materials**

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f <sub>c</sub>

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.

**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.

**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.

**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.

**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 5: Final Curing Method Cycle for Liquid Membrane-Forming Compounds*).

**Table 5: Final Curing Method Cycle for Liquid Membrane-Forming Compounds**

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Seven (7) days	≥ 80% f <sub>c</sub>

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 ft<sup>2</sup>/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.

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.

#### 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.

#### 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

#### 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.

#### 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 6: Constant Maximum Temperature Period*).

**Table 6: Constant Maximum Temperature Period**

Sustained Concrete Temperature	Constant Maximum Temperature Period	Compressive Strength
120°F ≤ °F ≤ 158°F	6 hrs ≤ Time ≤ 48 hrs	≥ 80% f <sub>c</sub>

**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.

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<sub>c</sub>) 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.

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<sub>c</sub> is attained
- (b) Precast Concrete Bridge Elements maintain a minimum concrete temperature of 40°F until 100% f<sub>c</sub> 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 Owner. 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.

### 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.

### **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

### **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.

### **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

Upon the Engineer's 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.

#### **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,  $f'_c$

#### 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 Corrective Actions submitted on the Non-Conformance Reports (NCR), shall be verified to have been completed by the Quality Control Manager.
- (f) All NCRs shall be signed off by the Quality Control Manager.

#### Delivery

Upon Delivery, 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 cost to the Owner.

## CONSTRUCTION METHODS – FIELD CONSTRUCTION

### 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.

### 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:

### 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.

For footings, approach slabs and highway guardrail transitions, once these Precast Concrete Bridge Elements have been set to the correct horizontal and vertical alignment, the void between them and the supporting soil shall be filled with Controlled Density Fill – Non-Excavatable to the limits as shown on the plans. Add additional grout ports in the footings to facilitate the bedding process if required.

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.

#### 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 on full size 24"x36" sheets. This document will be treated as a Construction Procedure and will be reviewed by both the Designer and the District Construction Office. 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) Vertical Adjustment Assemblies to be used as a means of setting precast concrete footings to the correct elevations.
- (h) 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.
- (i) Methods for curing grout.
- (j) Proposed methods for installing non-shrink grout and the sequence and equipment for the grouting operation.
- (k) 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.

#### 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.

#### 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.

### 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.

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.

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/approved shop drawings 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.

### Backfill

Backfilling operations shall not begin until the following checks have been made:

- (a) The box culvert to footing key joints are grouted as shown on the plans;
- (b) The joints between exterior box culvert 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 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 box culvert 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.

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.

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.

**METAL BRIDGE RAILING (3 RAIL), STEEL (TYPE S3-TL4)**

The bridge railing is the Type S3-TL4 rail. It shall be furnished and installed for use in this project and shall conform to the relevant provisions of Section 975 and the following.

Color of the bridge rail shall be approved by the Town and Local Historical Commission prior to fabrication.

**SCHEDULE OF BASIS FOR PARTIAL PAYMENT**

At the time of bid, the Contractor shall submit on their proposal form a schedule of unit priced for the major component Sub-Items that make up Item 995.01 as well as his/her total bridge structure Lump Sum cost for Bridge Structure No. M-22-022 (CPC). The bridge structure Lump Sum breakdown quantities provided in the proposal form are estimated and not guaranteed. The total of all partial payments to the Contractor shall equal the Lump Sum contract price regardless of the accuracy of quantities furnished by the Engineer for the individual bridge components. The cost of labor and materials for any Item not listed but required to complete the work shall be considered incidental to Item 995.01 and no further compensation will be allowed.

The schedule on the proposal form applies only to Bridge Structure No. M-22-022 (CPC). Payment for similar materials and construction at locations other than at this bridge structure shall not be included under this Item. Sub-Item numbering is presented for information only in coordination with MassDOT Standard Nomenclature.

Sub-Item	Description	Quantity	Units	Unit Price	Total
901.	4000 PSI, 1.5 INCH, 565 CEMENT CONCRETE	35	CY		
901.BOX	PRECAST CONCRETE BOX CULVERT	1	LS		
901.CW	PRECAST CONCRETE CURTAIN WALLS	1	LS		
901.WW	PRECAST CONCRETE WINGWALLS	1	LS		
904.3	5000 PSI, ¾ INCH, 685 HP CEMENT CONCRETE	6	CY		
904.GT	PRECAST CONCRETE GUARDRAIL TRASITIONS	1	LS		
910.	STEEL REINFORCEMENT FOR STRUCTURES	4700	LB		
910.1	STEEL REINFORCEMENT FOR STRUCTURES-EPOXY COATED	1200	LB		
965.	MEMBRANE WATERPROOFING FOR BRIDGE DECKS	1100	SF		
970.	DAMP-PROOFING	2700	SF		
975.1	METAL BRIDGE RAILING (3 RAIL), STEEL (TYPE S3-TL4)	45	FT		

The above schedule on the proposal form applies only to Bridge Structure No. M-22-022 (CPC). Payment for similar materials and construction at locations other than at this bridge structure shall not be included under this Item. Sub-Item numbering is presented for information only in coordination with MassDOT Standard Nomenclature.

**ITEM 999.3**

**POLICE DETAIL**

**ALLOWANCE**

The Contractor shall use uniformed police details for traffic control as directed by the Chief of Police or the Engineer. The Contractor shall schedule all details directly through the Police Department. A minimum of two hours' notice is required for any detail cancellation. The Contractor shall notify the Town of Millbury Commissioner of Public Works, with a minimum of two hours' notice, if they cannot contact the Police Department with a cancellation. The Town of Millbury shall not reimburse the Contractor for any charges incurred as a result of the Contractor's failure to provide sufficient notice.

**PAYMENT:**

The Contractor shall be responsible for paying the detail officers for the time worked. Based on the number of hours worked by the detail officer, the Town will reimburse, from the Uniformed Traffic/Safety Patrolmen line item, the Contractor for those costs upon submission by the Contractor of evidence that the Detail Officers were paid. There shall be no mark-up allowed for Contractor overhead, profit, or other costs. The Contractor shall only be reimbursed the actual invoiced cost for the Detail Officer.

END OF DOCUMENT

\*\*\*\*\*

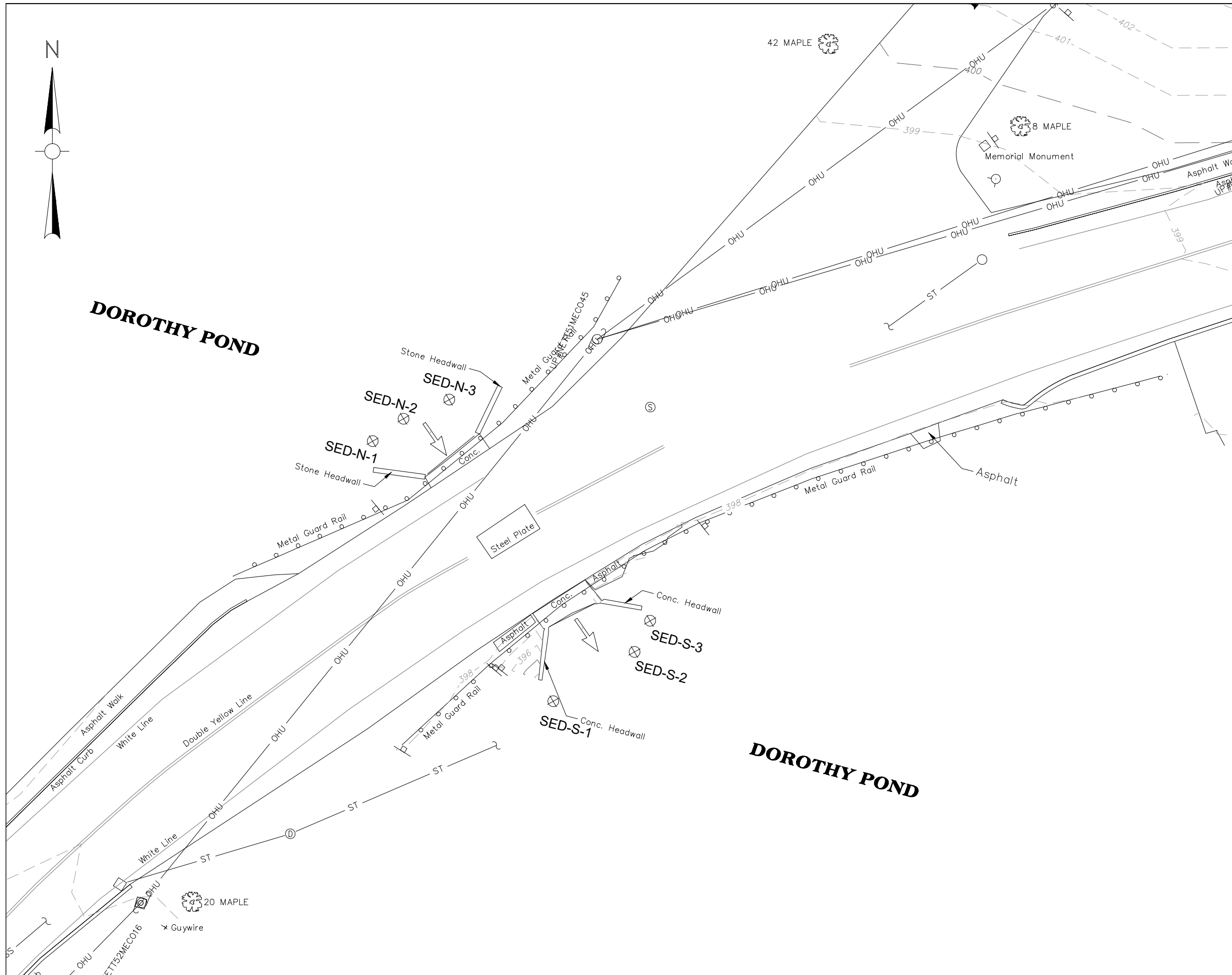
**ATTACHMENT A**

**TO**

**SPECIAL PROVISIONS**

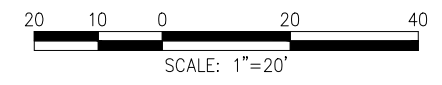
**MILLBURY, MA**

Wheelock Avenue over Dorothy Pond  
Bridge No. M-22-022



- NOTES:**
1. THIS FIGURE IS BASED ON AN EXISTING CONDITIONS SURVEY PLAN PREPARED BY WESTON & SAMPSON ENGINEERS, INC. DATED JULY 2018.
  2. ELEVATIONS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  3. UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND BASED ON UTILITY EVIDENCE VISIBLE AT GROUND SURFACE AND RECORD DRAWINGS.
  4. LOCATIONS ARE PROVIDED FOR GRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE.

- LEGEND:**
- ⊗ SED-1 SEDIMENT SAMPLE LOCATION
  - ➔ DIRECTION OF FLOW



**FIGURE 1  
SITE PLAN**

WHELOCK AVENUE BRIDGE  
REPLACEMENT  
MILLBURY, MA

DESIGNED BY: PB | CHECKED BY: NWA | APRIL 2022



**Table 1**  
**Sediment Analytical Results**  
**Wheelock Avenue**  
**Millbury, MA**

Parameter	Units	RCS-1	Comm 97 Contaminant Levels for Soil Reuse		SAMPLE ID	
			Lined Landfill	Unlined Landfill	SED-NORTH	SED-SOUTH
					4/01/2022	4/01/2022
<b>MCP 14 Metals + Copper</b>						
ANTIMONY	mg/kg	20	-	-	< 2.6	< 2.0
ARSENIC	mg/kg	20	40	40	<b>22</b>	<b>9.7</b>
BARIUM	mg/kg	1000	-	-	<b>52</b>	<b>32</b>
BERYLLIUM	mg/kg	90	-	-	<b>0.59</b>	<b>0.23</b>
CADMIUM	mg/kg	70	80	30	<b>0.86</b>	< 0.40
CHROMIUM	mg/kg	100	1000	1000	<b>25</b>	<b>13</b>
COPPER	mg/kg	200	-	-	<b>32</b>	<b>13</b>
LEAD	mg/kg	200	2000	1000	<b>72</b>	<b>77</b>
MERCURY	mg/kg	20	10	10	<b>0.10</b>	< 0.030
NICKEL	mg/kg	600	-	-	<b>20</b>	<b>12</b>
SELENIUM	mg/kg	400	-	-	< 5.3	< 4.0
SILVER	mg/kg	100	-	-	< 0.53	< 0.40
THALLIUM	mg/kg	8	-	-	<b>2.7</b>	< 2.0
VANADIUM	mg/kg	400	-	-	<b>23</b>	<b>14</b>
ZINC	mg/kg	1000	-	-	<b>130</b>	<b>50</b>
<b>Polychlorinated Biphenyls (PCBs) by 8082A</b>						
TOTAL PCBs	mg/kg	1	2	2	ND	ND
<b>Polychlorinated Biphenyls Congeners by 8270M</b>						
C12-BZ#8	ug/kg	-	-	-	< 0.056	< 0.21
C13-BZ#18	ug/kg	-	-	-	< 0.056	< 0.21
C13-BZ#28	ug/kg	-	-	-	< 0.056	< 0.21
C14-BZ#52	ug/kg	-	-	-	<b>0.34</b>	< 0.41
C14-BZ#44	ug/kg	-	-	-	<b>0.24</b>	< 0.41
C14-BZ#66	ug/kg	-	-	-	<b>0.22</b>	< 0.41
C15-BZ#90/#101	ug/kg	-	-	-	<b>0.83</b>	< 0.82
C15-BZ#118	ug/kg	-	-	-	<b>0.44</b>	<b>0.53</b>
C16-BZ#153	ug/kg	-	-	-	<b>3.1</b>	<b>1.6</b>
C15-BZ#105	ug/kg	-	-	-	<b>0.13</b>	< 0.41
C16-BZ#139	ug/kg	-	-	-	<b>1.6</b>	<b>0.94</b>
C17-BZ#187	ug/kg	-	-	-	<b>2.4</b>	<b>1</b>
C16-BZ#128/#162	ug/kg	-	-	-	< 0.22	< 0.82
C17-BZ#180	ug/kg	-	-	-	<b>5.4</b>	<b>2.5</b>
C17-BZ#170	ug/kg	-	-	-	<b>1.5</b>	<b>0.73</b>
C18-BZ#195	ug/kg	-	-	-	<b>0.46</b>	< 0.62
C19-BZ#206	ug/kg	-	-	-	<b>0.95</b>	< 0.62
C110-BZ#209	ug/kg	-	-	-	<b>1.3</b>	< 0.62
Total NOAA 18 Congeners	ug/kg	-	-	-	<b>18.91</b>	<b>7.3</b>
<b>Extractable Petroleum Hydrocarbons (EPH)</b>						
C9-C18 ALIPHATICS	mg/kg	1000	-	-	< 17	< 12
C19-C36 ALIPHATICS	mg/kg	3000	-	-	<b>100</b>	<b>61</b>
C11-C22 AROMATICS	mg/kg	1000	-	-	<b>64</b>	<b>30</b>
ACENAPHTHENE	mg/kg	4	-	-	<b>0.22</b>	< 0.12
ACENAPHTHYLENE	mg/kg	1	-	-	< 0.17	< 0.12
ANTHRACENE	mg/kg	1000	-	-	< 0.17	< 0.12
BENZO(A)ANTHRACENE	mg/kg	7	-	-	<b>0.81</b>	<b>0.47</b>
BENZO(A)PYRENE	mg/kg	2	-	-	<b>1.4</b>	<b>0.46</b>
BENZO(B)FLUORANTHENE	mg/kg	7	-	-	<b>0.83</b>	<b>0.27</b>
BENZO(G,H,I)PERYLENE	mg/kg	1000	-	-	<b>0.76</b>	<b>0.20</b>
BENZO(K)FLUORANTHENE	mg/kg	70	-	-	<b>0.33</b>	< 0.12
CHRYSENE	mg/kg	70	-	-	<b>0.92</b>	<b>0.33</b>
DIBENZO(A,H)ANTHRACENE	mg/kg	0.7	-	-	< 0.17	< 0.12
FLUORANTHENE	mg/kg	1000	-	-	<b>1.2</b>	<b>0.29</b>
FLUORENE	mg/kg	1000	-	-	< 0.17	< 0.12
INDENO(1,2,3-CD)PYRENE	mg/kg	7	-	-	<b>0.45</b>	<b>0.13</b>
2-METHYLNAPHTHALENE	mg/kg	0.7	-	-	< 0.17	< 0.12
NAPHTHALENE	mg/kg	4	-	-	< 0.17	< 0.12
PHENANTHRENE	mg/kg	10	-	-	<b>0.53</b>	< 0.12
PYRENE	mg/kg	1000	-	-	<b>1.3</b>	<b>0.33</b>
<b>Total Petroleum Hydrocarbons (TPH)</b>						
TPH	mg/kg	1000	5000	2500	<b>470</b>	<b>390</b>
<b>Volatile Organic Hydrocarbons (VOCs)</b>						
CHLORODIBROMOMETHANE	mg/kg	0.005	-	-	< 0.0033	< 0.036
1,1-DICHLOROPROPENE	mg/kg	-	-	-	< 0.0066	< 0.15
OIS-1,3-DICHLOROPROPENE	mg/kg	-	-	-	< 0.0033	< 0.036
TRANS-1,3-DICHLOROPROPENE	mg/kg	-	-	-	< 0.0033	< 0.036
1,4-DIOXANE	mg/kg	0.2	-	-	< 0.33	< 3.6
METHYLENE CHLORIDE	mg/kg	0.1	-	-	< 0.066	< 0.36
4-METHYL-2-PENTANONE (MIBK)	mg/kg	0.4	-	-	< 0.066	< 0.73
1,1,2,2-TETRACHLOROETHANE	mg/kg	0.005	-	-	< 0.0033	< 0.036
TOTAL VOCs	mg/kg	-	10	4	ND	ND
<b>Semi-volatile Organic Hydrocarbons (SVOCs)</b>						
BIPHENYL	mg/kg	4	-	-	< 1.1	< 0.83
BENZO(A)ANTHRACENE	mg/kg	7	-	-	<b>0.44</b>	< 0.21
BENZO(A)PYRENE	mg/kg	2	-	-	<b>0.51</b>	< 0.21
BENZO(B)FLUORANTHENE	mg/kg	7	-	-	<b>0.63</b>	< 0.21
BENZO(G,H,I)PERYLENE	mg/kg	1000	-	-	<b>0.32</b>	< 0.21
4-CHLOROANILINE	mg/kg	1	-	-	< 1.1	< 0.81
CHRYSENE	mg/kg	70	-	-	<b>0.58</b>	< 0.21
FLUORANTHENE	mg/kg	1000	-	-	<b>0.96</b>	< 0.21
INDENO(1,2,3-CD)PYRENE	mg/kg	7	-	-	<b>0.34</b>	< 0.21
PHENANTHRENE	mg/kg	10	-	-	<b>0.46</b>	< 0.21
PYRENE	mg/kg	1000	-	-	<b>1.3</b>	<b>0.22</b>
TOTAL SVOCs	mg/kg	-	100	100	<b>5.54</b>	<b>0.22</b>
<b>Reactivity</b>						
REACTIVE CYANIDE	mg/kg	-	-	-	< 3.9	< 3.9
<b>SW-846 9030A</b>						
REACTIVE SULFIDE	mg/kg	-	-	-	< 19	< 20
<b>SW-846 9045C</b>						
PH	pH Units	-	-	-	<b>6.8</b>	<b>7.1</b>
<b>SM 2540G</b>						
% Solids	% Wt	-	-	-	<b>59.4</b>	<b>81.1</b>
<b>SM21-22 2510B Modified</b>						
SPECIFIC CONDUCTANCE	umhos/cm	-	8000	4000	<b>6.2</b>	<b>8.9</b>
<b>SW-846 1030</b>						
IGNITABILITY	present/absent	-	-	-	Absent	Absent

**NOTES:**

**BOLD** Parameters are equal to or exceed the laboratory reporting limit.  
**BOLD** Laboratory reporting limits are equal to or exceed the MCP Reportable Concentrations (RCs).  
**BOLD** Parameters are equal to or exceed the MCP Reportable Concentrations (RCs).

ND = Not detected above the lab reporting limits shown.  
 - = No Standard available.  
**ABBREVIATIONS:**  
 % Wt = percent weight  
 umhos/cm = micromhos per centimeter  
 mg/kg = milligram per kilogram  
 NT = Not tested



# MEMORANDUM

**TO:** Mel Higgins, PWS

**FROM:** Nick Ames, PE (MA)

**DATE:** April 20, 2022

**SUBJECT:** Sediment Analytical Results  
Wheelock Avenue  
Millbury, Massachusetts

---

Weston & Sampson Engineers, Inc. (Weston & Sampson) has prepared this memorandum to summarize sediment sampling, analytical results and disposal requirements for the bridge replacement over Broad Meadow Brook at Wheelock Avenue in Millbury, Massachusetts (the “site” or “project”). We understand that the bridge replacement over Broad Meadow Brook at Wheelock Avenue will include abutment construction and channel improvements (the Project) that will generate up to 325 cubic yards (CY) surplus sediment requiring off-site transport and disposal.

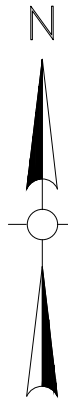
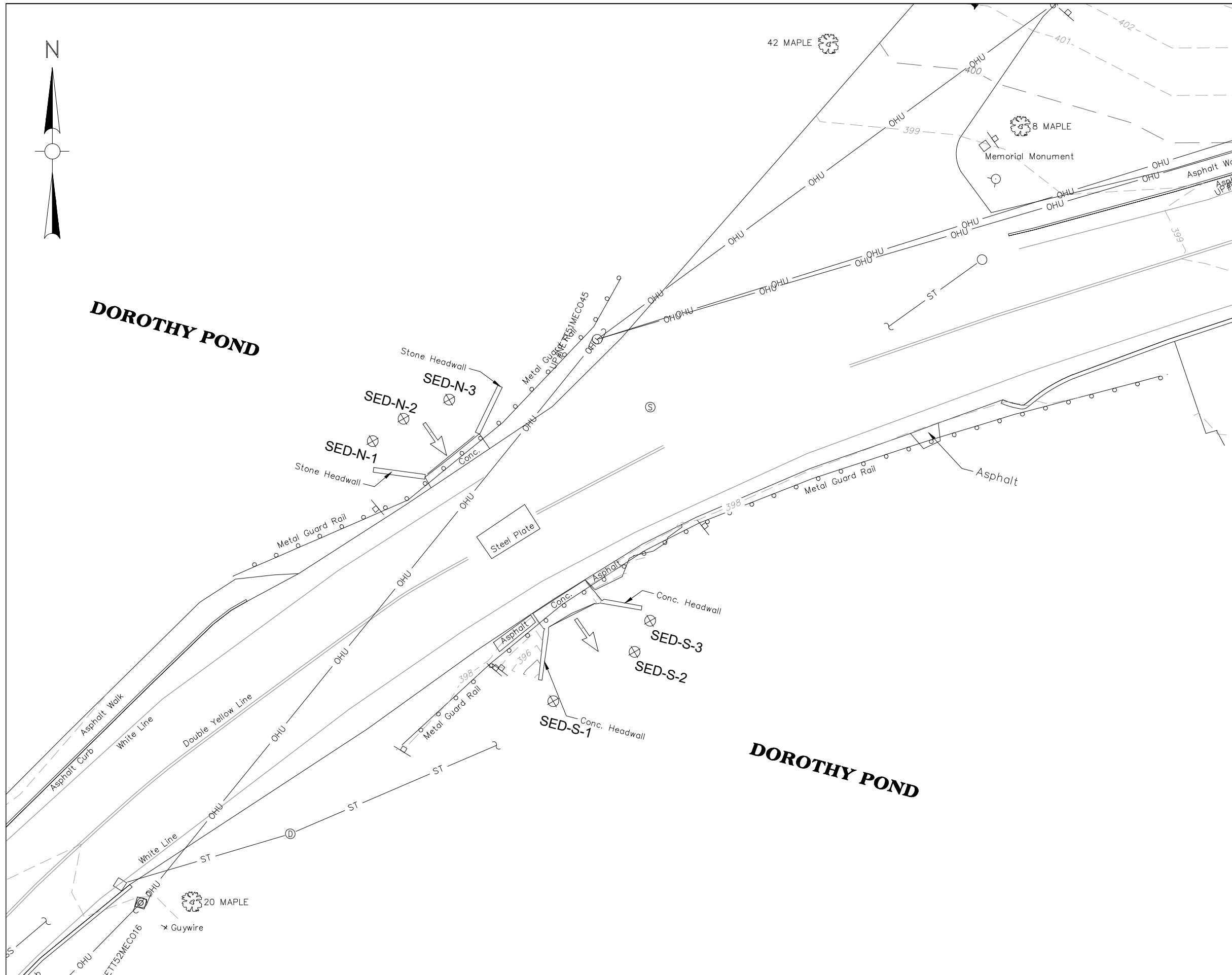
On April 1, 2022, Weston & Sampson collected six (6) discrete sediment samples, three from the north and three from the south side of the bridge, which were combined into two (2) composite samples for laboratory analysis identified as “SED-NORTH” and “SED-SOUTH”. Discrete grab samples were collected and submitted for volatile organic compound (VOC) analysis. These discrete samples were selected based on the highest total volatile organic compound (TVOC) reading as determined by headspace screening with a photoionization detector (PID). It is standard practice in characterization sampling to avoid VOC loss during compositing by collecting a grab sample with limited disturbance. The sediment samples were generated from sediment at depths of up to six feet below the brook bottom.

The composite samples were analyzed at Pace Analytical Services, LLC, a state-certified laboratory, for Massachusetts Department of Environmental Protection (MassDEP) Comm-97-001 disposal characterization parameters and 401 Water Quality Certification parameters as required in 310 CMR 9.00. Sampling results are summarized in Table 1 and laboratory analytical reports are included as Attachment 1. The samples were also submitted to GeoTesting Express, a geotechnical testing laboratory, for grain size analysis. Grain size analysis results are included as Attachment 2.

The sediment was identified as generally brown and black sand with gravel and no visual or olfactory evidence of contaminant was observed. PID readings were less than 1.3 parts per million by volume (ppmv). Please refer to the attached Figure 1 for a graphical depiction of the approximate sample locations.

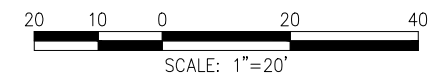
Low concentrations of metals, TPH, and SVOC analytes were detected in both sediment samples. Several PCB congeners were detected in both samples well below reportable concentrations. VOCs and PCBs by Soxhlet extraction were not detected above laboratory reporting limits. No analyte concentration was detected above the in-state Comm-97-001 limits. Analysis of hazardous waste characteristics indicate the site sediment is non-hazardous. Total arsenic results in sample SED-NORTH exceed the Massachusetts Contingency Plan (MCP) Reportable Concentration (RCS-1). However, MCP Reportable Concentrations are listed for soil and groundwater only, not sediments; therefore, notification to MassDEP is not required. Arsenic results are above background concentrations and do not allow for the sediment re-use.

Representative analytical results of the sediment proposed for removal as part of this project meet Comm-97-001 limits, therefore in-state disposal is deemed appropriate. Appropriate shipping documentation such as a Material Shipping Record (MSR), Bill of Lading (BOL) or manifest should be utilized. Weston & Sampson recommends that the surplus sediment generated during this project be transported off-site to an in-state disposal facility.



- NOTES:**
1. THIS FIGURE IS BASED ON AN EXISTING CONDITIONS SURVEY PLAN PREPARED BY WESTON & SAMPSON ENGINEERS, INC. DATED JULY 2018.
  2. ELEVATIONS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  3. UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND BASED ON UTILITY EVIDENCE VISIBLE AT GROUND SURFACE AND RECORD DRAWINGS.
  4. LOCATIONS ARE PROVIDED FOR GRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE.

- LEGEND:**
- ⊗ SED-1 SEDIMENT SAMPLE LOCATION
  - ➔ DIRECTION OF FLOW



**FIGURE 1  
SITE PLAN**

WHELOCK AVENUE BRIDGE  
REPLACEMENT  
MILLBURY, MA

DESIGNED BY: PB	CHECKED BY: NWA	APRIL 2022
-----------------	-----------------	------------

**Weston & Sampson**

**Table 1**  
**Sediment Analytical Results**  
**Wheelock Avenue**  
**Millbury, MA**

Parameter	Units	RCS-1	Comm 97 Contaminant Levels for Soil Reuse		SAMPLE ID	
			Lined Landfill	Unlined Landfill	SED-NORTH	SED-SOUTH
					4/01/2022	4/01/2022
<b>MCP 14 Metals + Copper</b>						
ANTIMONY	mg/kg	20	-	-	< 2.6	< 2.0
ARSENIC	mg/kg	20	40	40	<b>22</b>	<b>9.7</b>
BARIUM	mg/kg	1000	-	-	<b>52</b>	<b>32</b>
BERYLLIUM	mg/kg	90	-	-	<b>0.59</b>	<b>0.23</b>
CADMIUM	mg/kg	70	80	30	<b>0.86</b>	< 0.40
CHROMIUM	mg/kg	100	1000	1000	<b>25</b>	<b>13</b>
COPPER	mg/kg	200	-	-	<b>32</b>	<b>13</b>
LEAD	mg/kg	200	2000	1000	<b>72</b>	<b>77</b>
MERCURY	mg/kg	20	10	10	<b>0.10</b>	< 0.030
NICKEL	mg/kg	600	-	-	<b>20</b>	<b>12</b>
SELENIUM	mg/kg	400	-	-	< 5.3	< 4.0
SILVER	mg/kg	100	-	-	< 0.53	< 0.40
THALLIUM	mg/kg	8	-	-	<b>2.7</b>	< 2.0
VANADIUM	mg/kg	400	-	-	<b>23</b>	<b>14</b>
ZINC	mg/kg	1000	-	-	<b>130</b>	<b>50</b>
<b>Polychlorinated Biphenyls (PCBs) by 8082A</b>						
TOTAL PCBs	mg/kg	1	2	2	ND	ND
<b>Polychlorinated Biphenyls Congeners by 8270M</b>						
C12-BZ#8	ug/kg	-	-	-	< 0.056	< 0.21
C13-BZ#18	ug/kg	-	-	-	< 0.056	< 0.21
C13-BZ#28	ug/kg	-	-	-	< 0.056	< 0.21
C14-BZ#52	ug/kg	-	-	-	<b>0.34</b>	< 0.41
C14-BZ#44	ug/kg	-	-	-	<b>0.24</b>	< 0.41
C14-BZ#66	ug/kg	-	-	-	<b>0.22</b>	< 0.41
C15-BZ#90/#101	ug/kg	-	-	-	<b>0.83</b>	< 0.82
C15-BZ#118	ug/kg	-	-	-	<b>0.44</b>	<b>0.53</b>
C16-BZ#153	ug/kg	-	-	-	<b>3.1</b>	<b>1.6</b>
C15-BZ#105	ug/kg	-	-	-	<b>0.13</b>	< 0.41
C16-BZ#139	ug/kg	-	-	-	<b>1.6</b>	<b>0.94</b>
C17-BZ#187	ug/kg	-	-	-	<b>2.4</b>	<b>1</b>
C16-BZ#128/#162	ug/kg	-	-	-	< 0.22	< 0.82
C17-BZ#180	ug/kg	-	-	-	<b>5.4</b>	<b>2.5</b>
C17-BZ#170	ug/kg	-	-	-	<b>1.5</b>	<b>0.73</b>
C18-BZ#195	ug/kg	-	-	-	<b>0.46</b>	< 0.62
C19-BZ#206	ug/kg	-	-	-	<b>0.95</b>	< 0.62
C110-BZ#209	ug/kg	-	-	-	<b>1.3</b>	< 0.62
Total NOAA 18 Congeners	ug/kg	-	-	-	<b>18.91</b>	<b>7.3</b>
<b>Extractable Petroleum Hydrocarbons (EPH)</b>						
C9-C18 ALIPHATICS	mg/kg	1000	-	-	< 17	< 12
C19-C36 ALIPHATICS	mg/kg	3000	-	-	<b>100</b>	<b>61</b>
C11-C22 AROMATICS	mg/kg	1000	-	-	<b>64</b>	<b>30</b>
ACENAPHTHENE	mg/kg	4	-	-	<b>0.22</b>	< 0.12
ACENAPHTHYLENE	mg/kg	1	-	-	< 0.17	< 0.12
ANTHRACENE	mg/kg	1000	-	-	< 0.17	< 0.12
BENZO(A)ANTHRACENE	mg/kg	7	-	-	<b>0.81</b>	<b>0.47</b>
BENZO(A)PYRENE	mg/kg	2	-	-	<b>1.4</b>	<b>0.46</b>
BENZO(B)FLUORANTHENE	mg/kg	7	-	-	<b>0.83</b>	<b>0.27</b>
BENZO(G,H,I)PERYLENE	mg/kg	1000	-	-	<b>0.76</b>	<b>0.20</b>
BENZO(K)FLUORANTHENE	mg/kg	70	-	-	<b>0.33</b>	< 0.12
CHRYSENE	mg/kg	4	-	-	<b>0.92</b>	<b>0.33</b>
DIBENZO(A,H)ANTHRACENE	mg/kg	0.7	-	-	< 0.17	< 0.12
FLUORANTHENE	mg/kg	1000	-	-	<b>1.2</b>	<b>0.29</b>
FLUORENE	mg/kg	1000	-	-	< 0.17	< 0.12
INDENO(1,2,3-CD)PYRENE	mg/kg	7	-	-	<b>0.45</b>	<b>0.13</b>
2-METHYLNAPHTHALENE	mg/kg	0.7	-	-	< 0.17	< 0.12
NAPHTHALENE	mg/kg	4	-	-	< 0.17	< 0.12
PHENANTHRENE	mg/kg	10	-	-	<b>0.53</b>	< 0.12
PYRENE	mg/kg	1000	-	-	<b>1.3</b>	<b>0.33</b>
<b>Total Petroleum Hydrocarbons (TPH)</b>						
TPH	mg/kg	1000	5000	2500	<b>470</b>	<b>390</b>
<b>Volatile Organic Hydrocarbons (VOCs)</b>						
CHLORODIBROMOMETHANE	mg/kg	0.005	-	-	< 0.0033	< 0.036
1,1-DICHLOROPROPENE	mg/kg	-	-	-	< 0.0066	< 0.15
OIS-1,3-DICHLOROPROPENE	mg/kg	-	-	-	< 0.0033	< 0.036
TRANS-1,3-DICHLOROPROPENE	mg/kg	-	-	-	< 0.0033	< 0.036
1,4-DIOXANE	mg/kg	0.2	-	-	< 0.33	< 3.6
METHYLENE CHLORIDE	mg/kg	0.1	-	-	< 0.066	< 0.36
4-METHYL-2-PENTANONE (MIBK)	mg/kg	0.4	-	-	< 0.066	< 0.73
1,1,2,2-TETRACHLOROETHANE	mg/kg	0.005	-	-	< 0.0033	< 0.036
TOTAL VOCs	mg/kg	-	10	4	ND	ND
<b>Semi-volatile Organic Hydrocarbons (SVOCs)</b>						
BIPHENYL	mg/kg	4	-	-	< 1.1	< 0.83
BENZO(A)ANTHRACENE	mg/kg	7	-	-	<b>0.44</b>	< 0.21
BENZO(A)PYRENE	mg/kg	2	-	-	<b>0.51</b>	< 0.21
BENZO(B)FLUORANTHENE	mg/kg	7	-	-	<b>0.63</b>	< 0.21
BENZO(G,H,I)PERYLENE	mg/kg	1000	-	-	<b>0.32</b>	< 0.21
4-CHLOROANILINE	mg/kg	1	-	-	< 1.1	< 0.81
CHRYSENE	mg/kg	70	-	-	<b>0.58</b>	< 0.21
FLUORANTHENE	mg/kg	1000	-	-	<b>0.96</b>	< 0.21
INDENO(1,2,3-CD)PYRENE	mg/kg	7	-	-	<b>0.34</b>	< 0.21
PHENANTHRENE	mg/kg	10	-	-	<b>0.46</b>	< 0.21
PYRENE	mg/kg	1000	-	-	<b>1.3</b>	<b>0.22</b>
TOTAL SVOCs	mg/kg	-	100	100	<b>5.54</b>	<b>0.22</b>
<b>Reactivity</b>						
REACTIVE CYANIDE	mg/kg	-	-	-	< 3.9	< 3.9
<b>SW-846 9030A</b>						
REACTIVE SULFIDE	mg/kg	-	-	-	< 19	< 20
<b>SW-846 9045C</b>						
PH	pH Units	-	-	-	<b>6.8</b>	<b>7.1</b>
<b>SM 2540G</b>						
% Solids	% Wt	-	-	-	<b>59.4</b>	<b>81.1</b>
<b>SM21-22 2510B Modified</b>						
SPECIFIC CONDUCTANCE	umhos/cm	-	8000	4000	<b>6.2</b>	<b>8.9</b>
<b>SW-846 1030</b>						
IGNITABILITY	present/absent	-	-	-	Absent	Absent

**NOTES:**

**BOLD** Parameters are equal to or exceed the laboratory reporting limit.  
**BOLD** Laboratory reporting limits are equal to or exceed the MCP Reportable Concentrations (RCs).  
**BOLD** Parameters are equal to or exceed the MCP Reportable Concentrations (RCs).  
**BOLD** Parameter equal to or exceeds the Comm 97 Contaminant Levels for Soil Reuse.

ND = Not detected above the lab reporting limits shown.

- = No Standard available.

**ABBREVIATIONS:**

% Wt = percent weight  
umhos/cm = micromhos per centimeter  
mg/kg = milligram per kilogram  
NT = Not tested

# Attachment 1

Laboratory Analytical Reports

April 12, 2022

Nick Ames  
Weston & Sampson Engineers MA  
55 Walkers Brook Drive  
Reading, MA 01867

Project Location: Millbury, MA  
Client Job Number:  
Project Number: 2180493  
Laboratory Work Order Number: 22D0082

Enclosed are results of analyses for samples as received by the laboratory on April 1, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kerry K. McGee  
Project Manager

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

 Weston & Sampson Engineers MA  
 55 Walkers Brook Drive  
 Reading, MA 01867  
 ATTN: Nick Ames

REPORT DATE: 4/12/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2180493

**ANALYTICAL SUMMARY**

WORK ORDER NUMBER: 22D0082

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Millbury, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SED-NORTH	22D0082-01	Sediment		- MADEP EPH rev 2.1 SM 2540G SM21-23 2510B Modified SW 846 9060A SW-846 1010A-B SW-846 1030 SW-846 6010D SW-846 7471B SW-846 8082A SW-846 8100 Modified SW-846 8260D SW-846 8270E SW-846 9014 SW-846 9030A SW-846 9045C	
SED-SOUTH	22D0082-02	Sediment		MADEP EPH rev 2.1 SM 2540G SM21-23 2510B Modified SW 846 9060A SW-846 1010A-B SW-846 1030 SW-846 6010D SW-846 7471B SW-846 8082A SW-846 8100 Modified SW-846 8260D SW-846 8270E SW-846 9014 SW-846 9030A SW-846 9045C	

**CASE NARRATIVE SUMMARY**

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332  
SW 846 9060A

**Qualifications:**

**MS-07**

Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.

**Analyte & Samples(s) Qualified:**

**Total Organic Carbon**

22D0082-01[SED-NORTH], B305226-MS1

SW-846 7471B

**Qualifications:**

**R-05**

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

**Analyte & Samples(s) Qualified:**

**Mercury**

B305126-BSD1

SW-846 8082A

**Qualifications:**

**O-32**

A dilution was performed as part of the standard analytical procedure.

**Analyte & Samples(s) Qualified:**

22D0082-02[SED-SOUTH]

SW-846 8260D

**Qualifications:**

**L-02**

Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.

**Analyte & Samples(s) Qualified:**

**Trichlorofluoromethane (Freon 11)**

B304829-BS1, B304829-BSD1

**Vinyl Chloride**

B304829-BS1, B304829-BSD1

**L-07**

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

**Analyte & Samples(s) Qualified:**

**1,1-Dichloroethylene**

B304829-BS1

**RL-07**

Elevated reporting limit based on lowest point in calibration.

MA CAM reporting limit not met.

**Analyte & Samples(s) Qualified:**

**Carbon Disulfide**

22D0082-02[SED-SOUTH]

**Methylene Chloride**

22D0082-02[SED-SOUTH]

**V-16**

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.

**Analyte & Samples(s) Qualified:**

**1,4-Dioxane**

S069940-CCV1, S069950-CCV1

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**V-20**

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

**Analyte & Samples(s) Qualified:**

**1,1-Dichloroethylene**

B304829-BS1, B304829-BSD1, S069940-CCV1

**Chlorobenzene**

B304831-BS1, B304831-BSD1, S069950-CCV1

**Chloromethane**

B304831-BS1, B304831-BSD1, S069950-CCV1

**Dichlorodifluoromethane (Freon 12)**

B304829-BS1, B304829-BSD1, S069940-CCV1

**Styrene**

B304831-BS1, B304831-BSD1, S069950-CCV1

**tert-Amyl Methyl Ether (TAME)**

B304831-BS1, B304831-BSD1, S069950-CCV1

**Tetrachloroethylene**

B304831-BS1, B304831-BSD1, S069950-CCV1

**Trichlorofluoromethane (Freon 11)**

B304829-BS1, B304829-BSD1, S069940-CCV1

**V-34**

Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

**Analyte & Samples(s) Qualified:**

**Bromomethane**

22D0082-01[SED-NORTH], B304829-BLK1, B304829-BS1, B304829-BSD1, S069940-CCV1

**SW-846 8270E**

**Qualifications:**

**V-05**

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

**Analyte & Samples(s) Qualified:**

**Aniline**

22D0082-01[SED-NORTH], 22D0082-02[SED-SOUTH], B304885-BLK1, B304885-BS1, B304885-BSD1, S070121-CCV1

**V-34**

Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

**Analyte & Samples(s) Qualified:**

**4-Chloroaniline**

22D0082-01[SED-NORTH], 22D0082-02[SED-SOUTH], B304885-BLK1, B304885-BS1, B304885-BSD1, S070121-CCV1

**SW-846 8100 Modified**

TPH (C9-C36) is quantitated against a calibration made with a diesel standard.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Tod E. Kopyscinski  
Laboratory Director

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

## Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.33	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Benzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Bromobenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Bromochloromethane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Bromodichloromethane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Bromoform	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Bromomethane	ND	0.033	mg/Kg dry	1	V-34	SW-846 8260D	4/4/22	4/4/22 11:16	MFF
2-Butanone (MEK)	ND	0.13	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
n-Butylbenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
sec-Butylbenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
tert-Butylbenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Carbon Disulfide	ND	0.033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Carbon Tetrachloride	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Chlorobenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Chlorodibromomethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Chloroethane	ND	0.066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Chloroform	ND	0.013	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Chloromethane	ND	0.033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
2-Chlorotoluene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
4-Chlorotoluene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.013	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2-Dibromoethane (EDB)	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Dibromomethane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2-Dichlorobenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,3-Dichlorobenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,4-Dichlorobenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,1-Dichloroethane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2-Dichloroethane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,1-Dichloroethylene	ND	0.013	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
cis-1,2-Dichloroethylene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
trans-1,2-Dichloroethylene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2-Dichloropropane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,3-Dichloropropane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
2,2-Dichloropropane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,1-Dichloropropene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
cis-1,3-Dichloropropene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
trans-1,3-Dichloropropene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Diethyl Ether	ND	0.066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Diisopropyl Ether (DIPE)	ND	0.0033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,4-Dioxane	ND	0.33	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Ethylbenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

## Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
2-Hexanone (MBK)	ND	0.066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Isopropylbenzene (Cumene)	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.013	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Methylene Chloride	ND	0.066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Naphthalene	ND	0.013	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
n-Propylbenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Styrene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,1,1,2-Tetrachloroethane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,1,2,2-Tetrachloroethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Tetrachloroethylene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Tetrahydrofuran	ND	0.033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Toluene	ND	0.013	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2,3-Trichlorobenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2,4-Trichlorobenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,1,1-Trichloroethane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,1,2-Trichloroethane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Trichloroethylene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Trichlorofluoromethane (Freon 11)	ND	0.033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2,3-Trichloropropane	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,2,4-Trimethylbenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
1,3,5-Trimethylbenzene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
Vinyl Chloride	ND	0.033	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
m+p Xylene	ND	0.027	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF
o-Xylene	ND	0.013	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 11:16	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	99.7	70-130	4/4/22 11:16
Toluene-d8	99.4	70-130	4/4/22 11:16
4-Bromofluorobenzene	94.5	70-130	4/4/22 11:16

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

## Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	1.1	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Acenaphthene	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Acenaphthylene	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Acetophenone	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Aniline	ND	0.57	mg/Kg dry	1	V-05	SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Anthracene	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Benzo(a)anthracene	0.44	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Benzo(a)pyrene	0.51	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Benzo(b)fluoranthene	0.63	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Benzo(g,h,i)perylene	0.32	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Benzo(k)fluoranthene	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Bis(2-chloroethoxy)methane	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Bis(2-chloroethyl)ether	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Bis(2-chloroisopropyl)ether	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Bis(2-Ethylhexyl)phthalate	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
4-Bromophenylphenylether	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Butylbenzylphthalate	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
4-Chloroaniline	ND	1.1	mg/Kg dry	1	V-34	SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2-Chloronaphthalene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2-Chlorophenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Chrysene	0.58	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Dibenz(a,h)anthracene	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Dibenzofuran	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Di-n-butylphthalate	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
1,2-Dichlorobenzene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
1,3-Dichlorobenzene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
1,4-Dichlorobenzene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
3,3-Dichlorobenzidine	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2,4-Dichlorophenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Diethylphthalate	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2,4-Dimethylphenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Dimethylphthalate	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2,4-Dinitrophenol	ND	1.1	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2,4-Dinitrotoluene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2,6-Dinitrotoluene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Di-n-octylphthalate	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
1,2-Diphenylhydrazine/Azobenzene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Fluoranthene	0.96	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Fluorene	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Hexachlorobenzene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Hexachlorobutadiene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Hexachloroethane	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Indeno(1,2,3-cd)pyrene	0.34	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Isophorone	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

## Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2-Methylphenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
3/4-Methylphenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Naphthalene	ND	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Nitrobenzene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2-Nitrophenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
4-Nitrophenol	ND	1.1	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Pentachlorophenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Phenanthrene	0.46	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Phenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Pyrene	1.3	0.29	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
Pyridine	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
1,2,4-Trichlorobenzene	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2,4,5-Trichlorophenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA
2,4,6-Trichlorophenol	ND	0.57	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 12:56	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual
2-Fluorophenol	44.9	30-130	
Phenol-d6	44.7	30-130	
Nitrobenzene-d5	46.4	30-130	
2-Fluorobiphenyl	52.0	30-130	
2,4,6-Tribromophenol	51.2	30-130	
p-Terphenyl-d14	57.0	30-130	



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Aroclor-1221 [1]	ND	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Aroclor-1232 [1]	ND	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Aroclor-1242 [1]	ND	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Aroclor-1248 [1]	ND	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Aroclor-1254 [1]	ND	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Aroclor-1260 [2]	0.13	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Aroclor-1262 [1]	ND	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Aroclor-1268 [1]	ND	0.13	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:06	TG
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		83.6	30-150					4/6/22 12:06	
Decachlorobiphenyl [2]		87.0	30-150					4/6/22 12:06	
Tetrachloro-m-xylene [1]		84.6	30-150					4/6/22 12:06	
Tetrachloro-m-xylene [2]		84.8	30-150					4/6/22 12:06	

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

**Petroleum Hydrocarbons Analyses**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	470	70	mg/Kg dry	5		SW-846 8100 Modified	4/4/22	4/6/22 16:49	SFM
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
2-Fluorobiphenyl	63.7	40-140				4/6/22 16:49			

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

**Petroleum Hydrocarbons Analyses - EPH**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
C19-C36 Aliphatics	100	17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Unadjusted C11-C22 Aromatics	73	17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
C11-C22 Aromatics	64	17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Acenaphthene	0.22	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Acenaphthylene	ND	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Anthracene	ND	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Benzo(a)anthracene	0.81	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Benzo(a)pyrene	1.4	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Benzo(b)fluoranthene	0.83	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Benzo(g,h,i)perylene	0.76	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Benzo(k)fluoranthene	0.33	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Chrysene	0.92	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Dibenz(a,h)anthracene	ND	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Fluoranthene	1.2	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Fluorene	ND	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Indeno(1,2,3-cd)pyrene	0.45	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
2-Methylnaphthalene	ND	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Naphthalene	ND	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Phenanthrene	0.53	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH
Pyrene	1.3	0.17	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:01	TYH

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Chlorooctadecane (COD)	60.1	40-140	4/8/22 1:01
o-Terphenyl (OTP)	61.7	40-140	4/8/22 1:01
2-Bromonaphthalene	103	40-140	4/8/22 1:01
2-Fluorobiphenyl	104	40-140	4/8/22 1:01

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	2.6	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Arsenic	22	5.3	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Barium	52	2.6	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Beryllium	0.59	0.26	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Cadmium	0.86	0.53	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Chromium	25	1.1	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Copper	32	1.1	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Lead	72	0.79	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Mercury	0.10	0.041	mg/Kg dry	1		SW-846 7471B	4/6/22	4/8/22 13:06	MJH
Nickel	20	1.1	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Selenium	ND	5.3	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Silver	ND	0.53	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Thallium	2.7	2.6	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Vanadium	23	1.1	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW
Zinc	130	1.1	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:03	QNW

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0082-01

Sample Matrix: Sediment

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	59.4		% Wt	1		SM 2540G	4/6/22	4/7/22 9:23	KJC
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	4/4/22	4/4/22 15:30	DET
Ignitability	Absent		present/absent	1		SW-846 1030	4/5/22	4/5/22 14:20	DRA
pH @16.4°C	6.8		pH Units	1		SW-846 9045C	4/1/22	4/1/22 20:15	JEC
Reactive Cyanide	ND	3.9	mg/Kg	1		SW-846 9014	4/5/22	4/6/22 16:12	DRA
Reactive Sulfide	ND	19	mg/Kg	1		SW-846 9030A	4/5/22	4/7/22 11:30	DRA
Specific conductance	6.2	2.0	µmhos/cm	1		SM21-23 2510B Modified	4/5/22	4/6/22 16:00	EC
Total Organic Carbon	23000	170	mg/Kg dry	1	MS-07	SW 846 9060A	4/8/22	4/8/22 9:19	IS

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

## Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	3.6	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Benzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Bromobenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Bromochloromethane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Bromodichloromethane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Bromoform	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Bromomethane	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
2-Butanone (MEK)	ND	1.5	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
n-Butylbenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
sec-Butylbenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
tert-Butylbenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Carbon Disulfide	ND	0.73	mg/Kg dry	1	RL-07	SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Carbon Tetrachloride	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Chlorobenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Chlorodibromomethane	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Chloroethane	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Chloroform	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Chloromethane	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
2-Chlorotoluene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
4-Chlorotoluene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.29	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2-Dibromoethane (EDB)	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Dibromomethane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2-Dichlorobenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,3-Dichlorobenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,4-Dichlorobenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,1-Dichloroethane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2-Dichloroethane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,1-Dichloroethylene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
cis-1,2-Dichloroethylene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
trans-1,2-Dichloroethylene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2-Dichloropropane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,3-Dichloropropane	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
2,2-Dichloropropane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,1-Dichloropropene	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
cis-1,3-Dichloropropene	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
trans-1,3-Dichloropropene	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Diethyl Ether	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Diisopropyl Ether (DIPE)	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,4-Dioxane	ND	3.6	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Ethylbenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

## Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
2-Hexanone (MBK)	ND	0.73	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Isopropylbenzene (Cumene)	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Methylene Chloride	ND	0.36	mg/Kg dry	1	RL-07	SW-846 8260D	4/4/22	4/4/22 19:01	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.73	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Naphthalene	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
n-Propylbenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Styrene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,1,1,2-Tetrachloroethane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,1,2,2-Tetrachloroethane	ND	0.036	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Tetrachloroethylene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Tetrahydrofuran	ND	0.29	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Toluene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2,3-Trichlorobenzene	ND	0.29	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2,4-Trichlorobenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,1,1-Trichloroethane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,1,2-Trichloroethane	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Trichloroethylene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Trichlorofluoromethane (Freon 11)	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2,3-Trichloropropane	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,2,4-Trimethylbenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
1,3,5-Trimethylbenzene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
Vinyl Chloride	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
m+p Xylene	ND	0.15	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF
o-Xylene	ND	0.073	mg/Kg dry	1		SW-846 8260D	4/4/22	4/4/22 19:01	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	87.2	70-130	4/4/22 19:01
Toluene-d8	97.6	70-130	4/4/22 19:01
4-Bromofluorobenzene	98.9	70-130	4/4/22 19:01

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

## Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	0.83	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Acenaphthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Acenaphthylene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Acetophenone	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Aniline	ND	0.42	mg/Kg dry	1	V-05	SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Benzo(a)anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Benzo(a)pyrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Benzo(b)fluoranthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Benzo(g,h,i)perylene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Benzo(k)fluoranthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Bis(2-chloroethoxy)methane	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Bis(2-chloroethyl)ether	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Bis(2-chloroisopropyl)ether	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Bis(2-Ethylhexyl)phthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
4-Bromophenylphenylether	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Butylbenzylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
4-Chloroaniline	ND	0.81	mg/Kg dry	1	V-34	SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2-Chloronaphthalene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2-Chlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Chrysene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Dibenz(a,h)anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Dibenzofuran	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Di-n-butylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
1,2-Dichlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
1,3-Dichlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
1,4-Dichlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
3,3-Dichlorobenzidine	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2,4-Dichlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Diethylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2,4-Dimethylphenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Dimethylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2,4-Dinitrophenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2,4-Dinitrotoluene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2,6-Dinitrotoluene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Di-n-octylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
1,2-Diphenylhydrazine/Azobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Fluoranthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Fluorene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Hexachlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Hexachlorobutadiene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Hexachloroethane	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Indeno(1,2,3-cd)pyrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Isophorone	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA



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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

## Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2-Methylphenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
3/4-Methylphenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Naphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Nitrobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2-Nitrophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
4-Nitrophenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Pentachlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Phenanthrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Phenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Pyrene	0.22	0.21	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
Pyridine	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
1,2,4-Trichlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2,4,5-Trichlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA
2,4,6-Trichlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	4/4/22	4/7/22 13:22	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual
2-Fluorophenol	39.0	30-130	
Phenol-d6	39.3	30-130	
Nitrobenzene-d5	41.4	30-130	
2-Fluorobiphenyl	46.2	30-130	
2,4,6-Tribromophenol	43.6	30-130	
p-Terphenyl-d14	49.7	30-130	

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Aroclor-1221 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Aroclor-1232 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Aroclor-1242 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Aroclor-1248 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Aroclor-1254 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Aroclor-1260 [2]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Aroclor-1262 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Aroclor-1268 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	4/2/22	4/6/22 12:23	TG
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		87.5	30-150					4/6/22 12:23	
Decachlorobiphenyl [2]		89.3	30-150					4/6/22 12:23	
Tetrachloro-m-xylene [1]		86.3	30-150					4/6/22 12:23	
Tetrachloro-m-xylene [2]		86.6	30-150					4/6/22 12:23	

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

**Petroleum Hydrocarbons Analyses**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	390	51	mg/Kg dry	5		SW-846 8100 Modified	4/4/22	4/6/22 17:21	SFM
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
2-Fluorobiphenyl	61.0		40-140				4/6/22 17:21		

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

**Petroleum Hydrocarbons Analyses - EPH**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
C19-C36 Aliphatics	61	12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Unadjusted C11-C22 Aromatics	32	12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
C11-C22 Aromatics	30	12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Acenaphthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Acenaphthylene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Anthracene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Benzo(a)anthracene	0.47	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Benzo(a)pyrene	0.46	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Benzo(b)fluoranthene	0.27	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Benzo(g,h,i)perylene	0.20	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Benzo(k)fluoranthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Chrysene	0.33	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Dibenz(a,h)anthracene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Fluoranthene	0.29	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Fluorene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Indeno(1,2,3-cd)pyrene	0.13	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
2-Methylnaphthalene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Naphthalene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Phenanthrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
Pyrene	0.33	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	4/4/22	4/8/22 1:20	TYH
<b>Surrogates</b>		<b>% Recovery</b>	<b>Recovery Limits</b>		<b>Flag/Qual</b>				
Chlorooctadecane (COD)		69.8	40-140					4/8/22 1:20	
o-Terphenyl (OTP)		76.7	40-140					4/8/22 1:20	
2-Bromonaphthalene		119	40-140					4/8/22 1:20	
2-Fluorobiphenyl		118	40-140					4/8/22 1:20	

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	2.0	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Arsenic	9.7	4.0	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Barium	32	2.0	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Beryllium	0.23	0.20	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Cadmium	ND	0.40	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Chromium	13	0.79	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Copper	13	0.79	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Lead	77	0.59	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Mercury	ND	0.030	mg/Kg dry	1		SW-846 7471B	4/6/22	4/8/22 13:07	MJH
Nickel	12	0.79	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Selenium	ND	4.0	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Silver	ND	0.40	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Thallium	ND	2.0	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Vanadium	14	0.79	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW
Zinc	50	0.79	mg/Kg dry	1		SW-846 6010D	4/5/22	4/6/22 21:10	QNW

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0082

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0082-02

Sample Matrix: Sediment

**Conventional Chemistry Parameters by EPA/PHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	81.1		% Wt	1		SM 2540G	4/6/22	4/7/22 9:23	KJC
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	4/4/22	4/4/22 15:30	DET
Ignitability	Absent		present/absent	1		SW-846 1030	4/5/22	4/5/22 14:20	DRA
pH @18.4°C	7.1		pH Units	1		SW-846 9045C	4/1/22	4/1/22 20:15	JEC
Reactive Cyanide	ND	3.9	mg/Kg	1		SW-846 9014	4/5/22	4/6/22 16:12	DRA
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	4/5/22	4/7/22 11:30	DRA
Specific conductance	8.9	2.0	µmhos/cm	1		SM21-23 2510B Modified	4/5/22	4/6/22 16:00	EC
Total Organic Carbon	5600	120	mg/Kg dry	1		SW 846 9060A	4/8/22	4/8/22 10:33	IS

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**Sample Extraction Data**
**Prep Method: SW-846 3546 Analytical Method: MADEP EPH rev 2.1**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B304863	20.0	2.00	04/04/22
22D0082-02 [SED-SOUTH]	B304863	20.0	2.00	04/04/22

**Prep Method: % Solids Analytical Method: SM 2540G**

Lab Number [Field ID]	Batch	Date
22D0082-01 [SED-NORTH]	B305119	04/06/22
22D0082-02 [SED-SOUTH]	B305119	04/06/22

**SM21-23 2510B Modified**

Lab Number [Field ID]	Batch	Initial [g]	Date
22D0082-01 [SED-NORTH]	B304944	1.00	04/05/22
22D0082-02 [SED-SOUTH]	B304944	1.00	04/05/22

**SW 846 9060A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B305226	1.00	1.00	04/08/22
22D0082-02 [SED-SOUTH]	B305226	1.00	1.00	04/08/22

**SW-846 1010A-B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B304826	50.0	50.0	04/04/22
22D0082-02 [SED-SOUTH]	B304826	50.0	50.0	04/04/22

**SW-846 1030**

Lab Number [Field ID]	Batch	Initial [g]	Date
22D0082-01 [SED-NORTH]	B304935	50.0	04/05/22
22D0082-02 [SED-SOUTH]	B304935	50.0	04/05/22

**Prep Method: SW-846 3050B Analytical Method: SW-846 6010D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B305002	1.59	50.0	04/05/22
22D0082-02 [SED-SOUTH]	B305002	1.56	50.0	04/05/22

**Prep Method: SW-846 7471 Analytical Method: SW-846 7471B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B305126	0.616	50.0	04/06/22
22D0082-02 [SED-SOUTH]	B305126	0.617	50.0	04/06/22

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**Sample Extraction Data**
**Prep Method: SW-846 3540C Analytical Method: SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B304768	10.4	10.0	04/02/22
22D0082-02 [SED-SOUTH]	B304768	10.1	10.0	04/02/22

**Prep Method: SW-846 3546 Analytical Method: SW-846 8100 Modified**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B304886	30.0	1.00	04/04/22
22D0082-02 [SED-SOUTH]	B304886	30.0	1.00	04/04/22

**Prep Method: SW-846 5035 Analytical Method: SW-846 8260D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B304829	2.53	10.0	04/04/22

**Prep Method: SW-846 5035 Analytical Method: SW-846 8260D**

Lab Number [Field ID]	Batch	Sample Amount(g)	Methanol Volume(mL)	Methanol Aliquot(mL)	Final Volume(mL)	Date
22D0082-02 [SED-SOUTH]	B304831	5.06	5.96	1	50	04/04/22

**Prep Method: SW-846 3546 Analytical Method: SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B304885	30.0	1.00	04/04/22
22D0082-02 [SED-SOUTH]	B304885	30.0	1.00	04/04/22

**Prep Method: SW-846 7.3 Analytical Method: SW-846 9014**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B304927	25.7	250	04/05/22
22D0082-02 [SED-SOUTH]	B304927	25.6	250	04/05/22

**SW-846 9030A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0082-01 [SED-NORTH]	B304929	25.7	250	04/05/22
22D0082-02 [SED-SOUTH]	B304929	25.6	250	04/05/22

**SW-846 9045C**

Lab Number [Field ID]	Batch	Initial [g]	Date
22D0082-01 [SED-NORTH]	B304761	20.0	04/01/22
22D0082-02 [SED-SOUTH]	B304761	20.0	04/01/22



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**QUALITY CONTROL**
**Volatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304829 - SW-846 5035</b>										
<b>Blank (B304829-BLK1)</b>										
Prepared & Analyzed: 04/04/22										
Acetone	ND	0.10	mg/Kg wet							
tert-Amyl Methyl Ether (TAME)	ND	0.0010	mg/Kg wet							
Benzene	ND	0.0020	mg/Kg wet							
Bromobenzene	ND	0.0020	mg/Kg wet							
Bromochloromethane	ND	0.0020	mg/Kg wet							
Bromodichloromethane	ND	0.0020	mg/Kg wet							
Bromoform	ND	0.0020	mg/Kg wet							
Bromomethane	ND	0.010	mg/Kg wet							V-34
2-Butanone (MEK)	ND	0.040	mg/Kg wet							
n-Butylbenzene	ND	0.0020	mg/Kg wet							
sec-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butyl Ethyl Ether (TBEE)	ND	0.0010	mg/Kg wet							
Carbon Disulfide	ND	0.010	mg/Kg wet							
Carbon Tetrachloride	ND	0.0020	mg/Kg wet							
Chlorobenzene	ND	0.0020	mg/Kg wet							
Chlorodibromomethane	ND	0.0010	mg/Kg wet							
Chloroethane	ND	0.020	mg/Kg wet							
Chloroform	ND	0.0040	mg/Kg wet							
Chloromethane	ND	0.010	mg/Kg wet							
2-Chlorotoluene	ND	0.0020	mg/Kg wet							
4-Chlorotoluene	ND	0.0020	mg/Kg wet							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0020	mg/Kg wet							
1,2-Dibromoethane (EDB)	ND	0.0010	mg/Kg wet							
Dibromomethane	ND	0.0020	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.0020	mg/Kg wet							
Dichlorodifluoromethane (Freon 12)	ND	0.020	mg/Kg wet							
1,1-Dichloroethane	ND	0.0020	mg/Kg wet							
1,2-Dichloroethane	ND	0.0020	mg/Kg wet							
1,1-Dichloroethylene	ND	0.0040	mg/Kg wet							
cis-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
trans-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
1,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,3-Dichloropropane	ND	0.0010	mg/Kg wet							
2,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,1-Dichloropropene	ND	0.0020	mg/Kg wet							
cis-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
trans-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
Diethyl Ether	ND	0.020	mg/Kg wet							
Diisopropyl Ether (DIPE)	ND	0.0010	mg/Kg wet							
1,4-Dioxane	ND	0.10	mg/Kg wet							
Ethylbenzene	ND	0.0020	mg/Kg wet							
Hexachlorobutadiene	ND	0.0020	mg/Kg wet							
2-Hexanone (MBK)	ND	0.020	mg/Kg wet							
Isopropylbenzene (Cumene)	ND	0.0020	mg/Kg wet							
p-Isopropyltoluene (p-Cymene)	ND	0.0020	mg/Kg wet							
Methyl tert-Butyl Ether (MTBE)	ND	0.0040	mg/Kg wet							
Methylene Chloride	ND	0.020	mg/Kg wet							
4-Methyl-2-pentanone (MIBK)	ND	0.020	mg/Kg wet							
Naphthalene	ND	0.0040	mg/Kg wet							

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## QUALITY CONTROL

## Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304829 - SW-846 5035</b>										
<b>Blank (B304829-BLK1)</b>										
Prepared & Analyzed: 04/04/22										
n-Propylbenzene	ND	0.0020	mg/Kg wet							
Styrene	ND	0.0020	mg/Kg wet							
1,1,1,2-Tetrachloroethane	ND	0.0020	mg/Kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0010	mg/Kg wet							
Tetrachloroethylene	ND	0.0020	mg/Kg wet							
Tetrahydrofuran	ND	0.010	mg/Kg wet							
Toluene	ND	0.0020	mg/Kg wet							
1,2,3-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,1,1-Trichloroethane	ND	0.0020	mg/Kg wet							
1,1,2-Trichloroethane	ND	0.0020	mg/Kg wet							
Trichloroethylene	ND	0.0020	mg/Kg wet							
Trichlorofluoromethane (Freon 11)	ND	0.010	mg/Kg wet							
1,2,3-Trichloropropane	ND	0.0020	mg/Kg wet							
1,2,4-Trimethylbenzene	ND	0.0020	mg/Kg wet							
1,3,5-Trimethylbenzene	ND	0.0020	mg/Kg wet							
Vinyl Chloride	ND	0.010	mg/Kg wet							
m+p Xylene	ND	0.0040	mg/Kg wet							
o-Xylene	ND	0.0020	mg/Kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0482		mg/Kg wet	0.0500		96.4	70-130			
Surrogate: Toluene-d8	0.0485		mg/Kg wet	0.0500		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.0479		mg/Kg wet	0.0500		95.7	70-130			
<b>LCS (B304829-BS1)</b>										
Prepared & Analyzed: 04/04/22										
Acetone	0.215	0.10	mg/Kg wet	0.200		108	40-160			†
tert-Amyl Methyl Ether (TAME)	0.0179	0.0010	mg/Kg wet	0.0200		89.7	70-130			
Benzene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130			
Bromobenzene	0.0198	0.0020	mg/Kg wet	0.0200		99.0	70-130			
Bromochloromethane	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130			
Bromodichloromethane	0.0188	0.0020	mg/Kg wet	0.0200		94.2	70-130			
Bromoform	0.0207	0.0020	mg/Kg wet	0.0200		103	70-130			
Bromomethane	0.0230	0.010	mg/Kg wet	0.0200		115	40-160			V-34 †
2-Butanone (MEK)	0.188	0.040	mg/Kg wet	0.200		94.1	40-160			†
n-Butylbenzene	0.0177	0.0020	mg/Kg wet	0.0200		88.7	70-130			
sec-Butylbenzene	0.0176	0.0020	mg/Kg wet	0.0200		88.2	70-130			
tert-Butylbenzene	0.0181	0.0020	mg/Kg wet	0.0200		90.4	70-130			
tert-Butyl Ethyl Ether (TBEE)	0.0181	0.0010	mg/Kg wet	0.0200		90.6	70-130			
Carbon Disulfide	0.241	0.010	mg/Kg wet	0.200		120	70-130			
Carbon Tetrachloride	0.0218	0.0020	mg/Kg wet	0.0200		109	70-130			
Chlorobenzene	0.0214	0.0020	mg/Kg wet	0.0200		107	70-130			
Chlorodibromomethane	0.0202	0.0010	mg/Kg wet	0.0200		101	70-130			
Chloroethane	0.0243	0.020	mg/Kg wet	0.0200		122	70-130			
Chloroform	0.0203	0.0040	mg/Kg wet	0.0200		102	70-130			
Chloromethane	0.0233	0.010	mg/Kg wet	0.0200		117	40-160			†
2-Chlorotoluene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130			
4-Chlorotoluene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	0.0169	0.0020	mg/Kg wet	0.0200		84.5	70-130			
1,2-Dibromoethane (EDB)	0.0184	0.0010	mg/Kg wet	0.0200		91.9	70-130			
Dibromomethane	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130			
1,2-Dichlorobenzene	0.0181	0.0020	mg/Kg wet	0.0200		90.7	70-130			
1,3-Dichlorobenzene	0.0183	0.0020	mg/Kg wet	0.0200		91.6	70-130			
1,4-Dichlorobenzene	0.0185	0.0020	mg/Kg wet	0.0200		92.6	70-130			

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**QUALITY CONTROL**
**Volatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304829 - SW-846 5035</b>										
<b>LCS (B304829-BS1)</b>										
Prepared & Analyzed: 04/04/22										
Dichlorodifluoromethane (Freon 12)	0.0277	0.020	mg/Kg wet	0.0200		138	40-160			L-14, V-20 †
1,1-Dichloroethane	0.0209	0.0020	mg/Kg wet	0.0200		104	70-130			
1,2-Dichloroethane	0.0197	0.0020	mg/Kg wet	0.0200		98.4	70-130			
<b>1,1-Dichloroethylene</b>	0.0265	0.0040	mg/Kg wet	0.0200		<b>132</b> *	70-130			L-07, V-20
cis-1,2-Dichloroethylene	0.0214	0.0020	mg/Kg wet	0.0200		107	70-130			
trans-1,2-Dichloroethylene	0.0214	0.0020	mg/Kg wet	0.0200		107	70-130			
1,2-Dichloropropane	0.0194	0.0020	mg/Kg wet	0.0200		96.9	70-130			
1,3-Dichloropropane	0.0195	0.0010	mg/Kg wet	0.0200		97.7	70-130			
2,2-Dichloropropane	0.0216	0.0020	mg/Kg wet	0.0200		108	70-130			
1,1-Dichloropropene	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130			
cis-1,3-Dichloropropene	0.0185	0.0010	mg/Kg wet	0.0200		92.3	70-130			
trans-1,3-Dichloropropene	0.0182	0.0010	mg/Kg wet	0.0200		90.9	70-130			
Diethyl Ether	0.0239	0.020	mg/Kg wet	0.0200		119	70-130			
Diisopropyl Ether (DIPE)	0.0191	0.0010	mg/Kg wet	0.0200		95.4	70-130			
1,4-Dioxane	0.192	0.10	mg/Kg wet	0.200		95.9	40-160			†
Ethylbenzene	0.0205	0.0020	mg/Kg wet	0.0200		102	70-130			
Hexachlorobutadiene	0.0176	0.0020	mg/Kg wet	0.0200		88.0	70-130			
2-Hexanone (MBK)	0.173	0.020	mg/Kg wet	0.200		86.6	40-160			†
Isopropylbenzene (Cumene)	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130			
p-Isopropyltoluene (p-Cymene)	0.0183	0.0020	mg/Kg wet	0.0200		91.4	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0199	0.0040	mg/Kg wet	0.0200		99.7	70-130			
Methylene Chloride	0.0216	0.020	mg/Kg wet	0.0200		108	70-130			
4-Methyl-2-pentanone (MIBK)	0.174	0.020	mg/Kg wet	0.200		86.9	40-160			†
Naphthalene	0.0169	0.0040	mg/Kg wet	0.0200		84.6	70-130			
n-Propylbenzene	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130			
Styrene	0.0201	0.0020	mg/Kg wet	0.0200		101	70-130			
1,1,1,2-Tetrachloroethane	0.0207	0.0020	mg/Kg wet	0.0200		103	70-130			
1,1,2,2-Tetrachloroethane	0.0197	0.0010	mg/Kg wet	0.0200		98.4	70-130			
Tetrachloroethylene	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130			
Tetrahydrofuran	0.0168	0.010	mg/Kg wet	0.0200		83.9	70-130			
Toluene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130			
1,2,3-Trichlorobenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.7	70-130			
1,2,4-Trichlorobenzene	0.0184	0.0020	mg/Kg wet	0.0200		92.2	70-130			
1,1,1-Trichloroethane	0.0205	0.0020	mg/Kg wet	0.0200		102	70-130			
1,1,2-Trichloroethane	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130			
Trichloroethylene	0.0194	0.0020	mg/Kg wet	0.0200		97.0	70-130			
<b>Trichlorofluoromethane (Freon 11)</b>	0.0282	0.010	mg/Kg wet	0.0200		<b>141</b> *	70-130			L-02, V-20
1,2,3-Trichloropropane	0.0188	0.0020	mg/Kg wet	0.0200		93.9	70-130			
1,2,4-Trimethylbenzene	0.0170	0.0020	mg/Kg wet	0.0200		84.8	70-130			
1,3,5-Trimethylbenzene	0.0201	0.0020	mg/Kg wet	0.0200		101	70-130			
<b>Vinyl Chloride</b>	0.0280	0.010	mg/Kg wet	0.0200		<b>140</b> *	70-130			L-02
m+p Xylene	0.0372	0.0040	mg/Kg wet	0.0400		93.1	70-130			
o-Xylene	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0463		mg/Kg wet	0.0500		92.7	70-130			
Surrogate: Toluene-d8	0.0487		mg/Kg wet	0.0500		97.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.0498		mg/Kg wet	0.0500		99.5	70-130			

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**QUALITY CONTROL**
**Volatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304829 - SW-846 5035</b>										
<b>LCS Dup (B304829-BSD1)</b>										
Prepared & Analyzed: 04/04/22										
Acetone	0.209	0.10	mg/Kg wet	0.200		105	40-160	2.81	20	†
tert-Amyl Methyl Ether (TAME)	0.0178	0.0010	mg/Kg wet	0.0200		88.8	70-130	0.997	20	
Benzene	0.0198	0.0020	mg/Kg wet	0.0200		99.1	70-130	4.11	20	
Bromobenzene	0.0207	0.0020	mg/Kg wet	0.0200		104	70-130	4.54	20	
Bromochloromethane	0.0198	0.0020	mg/Kg wet	0.0200		98.8	70-130	3.42	20	
Bromodichloromethane	0.0193	0.0020	mg/Kg wet	0.0200		96.3	70-130	2.14	20	
Bromoform	0.0211	0.0020	mg/Kg wet	0.0200		106	70-130	2.09	20	
Bromomethane	0.0210	0.010	mg/Kg wet	0.0200		105	40-160	8.81	20	V-34 †
2-Butanone (MEK)	0.178	0.040	mg/Kg wet	0.200		88.8	40-160	5.79	20	†
n-Butylbenzene	0.0177	0.0020	mg/Kg wet	0.0200		88.7	70-130	0.0226	20	
sec-Butylbenzene	0.0181	0.0020	mg/Kg wet	0.0200		90.6	70-130	2.71	20	
tert-Butylbenzene	0.0183	0.0020	mg/Kg wet	0.0200		91.6	70-130	1.37	20	
tert-Butyl Ethyl Ether (TBEE)	0.0174	0.0010	mg/Kg wet	0.0200		86.9	70-130	4.16	20	
Carbon Disulfide	0.228	0.010	mg/Kg wet	0.200		114	70-130	5.45	20	
Carbon Tetrachloride	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130	8.41	20	
Chlorobenzene	0.0225	0.0020	mg/Kg wet	0.0200		113	70-130	5.09	20	
Chlorodibromomethane	0.0210	0.0010	mg/Kg wet	0.0200		105	70-130	3.62	20	
Chloroethane	0.0234	0.020	mg/Kg wet	0.0200		117	70-130	3.88	20	
Chloroform	0.0193	0.0040	mg/Kg wet	0.0200		96.5	70-130	5.23	20	
Chloromethane	0.0223	0.010	mg/Kg wet	0.0200		111	40-160	4.65	20	†
2-Chlorotoluene	0.0210	0.0020	mg/Kg wet	0.0200		105	70-130	1.88	20	
4-Chlorotoluene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130	0.243	20	
1,2-Dibromo-3-chloropropane (DBCP)	0.0170	0.0020	mg/Kg wet	0.0200		84.8	70-130	0.390	20	
1,2-Dibromoethane (EDB)	0.0197	0.0010	mg/Kg wet	0.0200		98.7	70-130	7.12	20	
Dibromomethane	0.0209	0.0020	mg/Kg wet	0.0200		105	70-130	5.67	20	
1,2-Dichlorobenzene	0.0184	0.0020	mg/Kg wet	0.0200		91.8	70-130	1.18	20	
1,3-Dichlorobenzene	0.0190	0.0020	mg/Kg wet	0.0200		95.1	70-130	3.66	20	
1,4-Dichlorobenzene	0.0184	0.0020	mg/Kg wet	0.0200		92.2	70-130	0.411	20	
Dichlorodifluoromethane (Freon 12)	0.0259	0.020	mg/Kg wet	0.0200		129	40-160	6.84	20	V-20 †
1,1-Dichloroethane	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130	2.66	20	
1,2-Dichloroethane	0.0199	0.0020	mg/Kg wet	0.0200		99.4	70-130	0.940	20	
1,1-Dichloroethylene	0.0248	0.0040	mg/Kg wet	0.0200		124	70-130	6.61	20	V-20
cis-1,2-Dichloroethylene	0.0209	0.0020	mg/Kg wet	0.0200		105	70-130	1.96	20	
trans-1,2-Dichloroethylene	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	5.81	20	
1,2-Dichloropropane	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	4.03	20	
1,3-Dichloropropane	0.0196	0.0010	mg/Kg wet	0.0200		97.9	70-130	0.204	20	
2,2-Dichloropropane	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130	7.50	20	
1,1-Dichloropropene	0.0193	0.0020	mg/Kg wet	0.0200		96.7	70-130	2.27	20	
cis-1,3-Dichloropropene	0.0189	0.0010	mg/Kg wet	0.0200		94.4	70-130	2.24	20	
trans-1,3-Dichloropropene	0.0183	0.0010	mg/Kg wet	0.0200		91.3	70-130	0.450	20	
Diethyl Ether	0.0219	0.020	mg/Kg wet	0.0200		110	70-130	8.67	20	
Diisopropyl Ether (DIPE)	0.0183	0.0010	mg/Kg wet	0.0200		91.5	70-130	4.12	20	
1,4-Dioxane	0.202	0.10	mg/Kg wet	0.200		101	40-160	5.11	20	†
Ethylbenzene	0.0216	0.0020	mg/Kg wet	0.0200		108	70-130	5.52	20	
Hexachlorobutadiene	0.0178	0.0020	mg/Kg wet	0.0200		88.9	70-130	1.09	20	
2-Hexanone (MBK)	0.176	0.020	mg/Kg wet	0.200		87.9	40-160	1.50	20	†
Isopropylbenzene (Cumene)	0.0214	0.0020	mg/Kg wet	0.0200		107	70-130	2.77	20	
p-Isopropyltoluene (p-Cymene)	0.0181	0.0020	mg/Kg wet	0.0200		90.7	70-130	0.780	20	
Methyl tert-Butyl Ether (MTBE)	0.0190	0.0040	mg/Kg wet	0.0200		95.1	70-130	4.77	20	
Methylene Chloride	0.0208	0.020	mg/Kg wet	0.0200		104	70-130	3.54	20	
4-Methyl-2-pentanone (MIBK)	0.176	0.020	mg/Kg wet	0.200		88.1	40-160	1.35	20	†
Naphthalene	0.0170	0.0040	mg/Kg wet	0.0200		84.8	70-130	0.283	20	

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**QUALITY CONTROL**
**Volatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304829 - SW-846 5035</b>										
<b>LCS Dup (B304829-BSD1)</b>										
Prepared & Analyzed: 04/04/22										
n-Propylbenzene	0.0218	0.0020	mg/Kg wet	0.0200		109	70-130	4.49	20	
Styrene	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130	3.36	20	
1,1,1,2-Tetrachloroethane	0.0207	0.0020	mg/Kg wet	0.0200		104	70-130	0.329	20	
1,1,2,2-Tetrachloroethane	0.0198	0.0010	mg/Kg wet	0.0200		98.9	70-130	0.527	20	
Tetrachloroethylene	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	0.464	20	
Tetrahydrofuran	0.0178	0.010	mg/Kg wet	0.0200		88.9	70-130	5.79	20	
Toluene	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130	0.811	20	
1,2,3-Trichlorobenzene	0.0196	0.0020	mg/Kg wet	0.0200		98.0	70-130	4.53	20	
1,2,4-Trichlorobenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.3	70-130	1.19	20	
1,1,1-Trichloroethane	0.0197	0.0020	mg/Kg wet	0.0200		98.5	70-130	3.77	20	
1,1,2-Trichloroethane	0.0195	0.0020	mg/Kg wet	0.0200		97.3	70-130	3.74	20	
Trichloroethylene	0.0197	0.0020	mg/Kg wet	0.0200		98.6	70-130	1.61	20	
<b>Trichlorofluoromethane (Freon 11)</b>	0.0274	0.010	mg/Kg wet	0.0200		<b>137</b> *	70-130	3.05	20	L-02, V-20
1,2,3-Trichloropropane	0.0212	0.0020	mg/Kg wet	0.0200		106	70-130	11.9	20	
1,2,4-Trimethylbenzene	0.0172	0.0020	mg/Kg wet	0.0200		85.9	70-130	1.18	20	
1,3,5-Trimethylbenzene	0.0205	0.0020	mg/Kg wet	0.0200		102	70-130	1.74	20	
<b>Vinyl Chloride</b>	0.0273	0.010	mg/Kg wet	0.0200		<b>136</b> *	70-130	2.66	20	L-02
m+p Xylene	0.0384	0.0040	mg/Kg wet	0.0400		96.0	70-130	3.09	20	
o-Xylene	0.0211	0.0020	mg/Kg wet	0.0200		105	70-130	6.29	20	
Surrogate: 1,2-Dichloroethane-d4	0.0441		mg/Kg wet	0.0500		88.3	70-130			
Surrogate: Toluene-d8	0.0504		mg/Kg wet	0.0500		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.0510		mg/Kg wet	0.0500		102	70-130			
<b>Batch B304831 - SW-846 5035</b>										
<b>Blank (B304831-BLK1)</b>										
Prepared & Analyzed: 04/04/22										
Acetone	ND	2.5	mg/Kg wet							
tert-Amyl Methyl Ether (TAME)	ND	0.025	mg/Kg wet							
Benzene	ND	0.050	mg/Kg wet							
Bromobenzene	ND	0.050	mg/Kg wet							
Bromochloromethane	ND	0.050	mg/Kg wet							
Bromodichloromethane	ND	0.050	mg/Kg wet							
Bromoform	ND	0.050	mg/Kg wet							
Bromomethane	ND	0.10	mg/Kg wet							
2-Butanone (MEK)	ND	1.0	mg/Kg wet							
n-Butylbenzene	ND	0.050	mg/Kg wet							
sec-Butylbenzene	ND	0.050	mg/Kg wet							
tert-Butylbenzene	ND	0.050	mg/Kg wet							
tert-Butyl Ethyl Ether (TBEE)	ND	0.025	mg/Kg wet							
Carbon Disulfide	ND	0.50	mg/Kg wet							
Carbon Tetrachloride	ND	0.050	mg/Kg wet							
Chlorobenzene	ND	0.050	mg/Kg wet							
Chlorodibromomethane	ND	0.025	mg/Kg wet							
Chloroethane	ND	0.10	mg/Kg wet							
Chloroform	ND	0.10	mg/Kg wet							
Chloromethane	ND	0.10	mg/Kg wet							
2-Chlorotoluene	ND	0.050	mg/Kg wet							
4-Chlorotoluene	ND	0.050	mg/Kg wet							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.20	mg/Kg wet							
1,2-Dibromoethane (EDB)	ND	0.025	mg/Kg wet							
Dibromomethane	ND	0.050	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.050	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.050	mg/Kg wet							

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**QUALITY CONTROL**
**Volatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304831 - SW-846 5035</b>										
<b>Blank (B304831-BLK1)</b>										
Prepared & Analyzed: 04/04/22										
1,4-Dichlorobenzene	ND	0.050	mg/Kg wet							
Dichlorodifluoromethane (Freon 12)	ND	0.10	mg/Kg wet							
1,1-Dichloroethane	ND	0.050	mg/Kg wet							
1,2-Dichloroethane	ND	0.050	mg/Kg wet							
1,1-Dichloroethylene	ND	0.050	mg/Kg wet							
cis-1,2-Dichloroethylene	ND	0.050	mg/Kg wet							
trans-1,2-Dichloroethylene	ND	0.050	mg/Kg wet							
1,2-Dichloropropane	ND	0.050	mg/Kg wet							
1,3-Dichloropropane	ND	0.025	mg/Kg wet							
2,2-Dichloropropane	ND	0.050	mg/Kg wet							
1,1-Dichloropropene	ND	0.10	mg/Kg wet							
cis-1,3-Dichloropropene	ND	0.025	mg/Kg wet							
trans-1,3-Dichloropropene	ND	0.025	mg/Kg wet							
Diethyl Ether	ND	0.10	mg/Kg wet							
Diisopropyl Ether (DIPE)	ND	0.025	mg/Kg wet							
1,4-Dioxane	ND	2.5	mg/Kg wet							
Ethylbenzene	ND	0.050	mg/Kg wet							
Hexachlorobutadiene	ND	0.050	mg/Kg wet							
2-Hexanone (MBK)	ND	0.50	mg/Kg wet							
Isopropylbenzene (Cumene)	ND	0.050	mg/Kg wet							
p-Isopropyltoluene (p-Cymene)	ND	0.050	mg/Kg wet							
Methyl tert-Butyl Ether (MTBE)	ND	0.050	mg/Kg wet							
Methylene Chloride	ND	0.25	mg/Kg wet							
4-Methyl-2-pentanone (MIBK)	ND	0.50	mg/Kg wet							
Naphthalene	ND	0.10	mg/Kg wet							
n-Propylbenzene	ND	0.050	mg/Kg wet							
Styrene	ND	0.050	mg/Kg wet							
1,1,1,2-Tetrachloroethane	ND	0.050	mg/Kg wet							
1,1,2,2-Tetrachloroethane	ND	0.025	mg/Kg wet							
Tetrachloroethylene	ND	0.050	mg/Kg wet							
Tetrahydrofuran	ND	0.20	mg/Kg wet							
Toluene	ND	0.050	mg/Kg wet							
1,2,3-Trichlorobenzene	ND	0.20	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.050	mg/Kg wet							
1,1,1-Trichloroethane	ND	0.050	mg/Kg wet							
1,1,2-Trichloroethane	ND	0.050	mg/Kg wet							
Trichloroethylene	ND	0.050	mg/Kg wet							
Trichlorofluoromethane (Freon 11)	ND	0.10	mg/Kg wet							
1,2,3-Trichloropropane	ND	0.10	mg/Kg wet							
1,2,4-Trimethylbenzene	ND	0.050	mg/Kg wet							
1,3,5-Trimethylbenzene	ND	0.050	mg/Kg wet							
Vinyl Chloride	ND	0.10	mg/Kg wet							
m+p Xylene	ND	0.10	mg/Kg wet							
o-Xylene	ND	0.050	mg/Kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0214		mg/Kg wet	0.0250		85.6	70-130			
Surrogate: Toluene-d8	0.0244		mg/Kg wet	0.0250		97.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.0238		mg/Kg wet	0.0250		95.3	70-130			

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**QUALITY CONTROL**
**Volatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304831 - SW-846 5035</b>										
<b>LCS (B304831-BS1)</b>										
Prepared & Analyzed: 04/04/22										
Acetone	0.104	0.057	mg/Kg wet	0.113		92.0	40-160			†
tert-Amyl Methyl Ether (TAME)	0.0135	0.00057	mg/Kg wet	0.0113		119	70-130			V-20
Benzene	0.0130	0.0011	mg/Kg wet	0.0113		115	70-130			
Bromobenzene	0.0119	0.0011	mg/Kg wet	0.0113		105	70-130			
Bromochloromethane	0.0123	0.0011	mg/Kg wet	0.0113		108	70-130			
Bromodichloromethane	0.0129	0.0011	mg/Kg wet	0.0113		113	70-130			
Bromoform	0.0125	0.0011	mg/Kg wet	0.0113		110	70-130			
Bromomethane	0.0131	0.0023	mg/Kg wet	0.0113		115	40-160			†
2-Butanone (MEK)	0.109	0.023	mg/Kg wet	0.113		96.3	40-160			†
n-Butylbenzene	0.0117	0.0011	mg/Kg wet	0.0113		104	70-130			
sec-Butylbenzene	0.0131	0.0011	mg/Kg wet	0.0113		116	70-130			
tert-Butylbenzene	0.0135	0.0011	mg/Kg wet	0.0113		119	70-130			
tert-Butyl Ethyl Ether (TBEE)	0.0123	0.00057	mg/Kg wet	0.0113		108	70-130			
Carbon Disulfide	0.130	0.011	mg/Kg wet	0.113		115	70-130			
Carbon Tetrachloride	0.0127	0.0011	mg/Kg wet	0.0113		112	70-130			
Chlorobenzene	0.0140	0.0011	mg/Kg wet	0.0113		124	70-130			V-20
Chlorodibromomethane	0.0128	0.00057	mg/Kg wet	0.0113		113	70-130			
Chloroethane	0.0138	0.0023	mg/Kg wet	0.0113		121	70-130			
Chloroform	0.0125	0.0023	mg/Kg wet	0.0113		110	70-130			
Chloromethane	0.0129	0.0023	mg/Kg wet	0.0113		114	40-160			V-20 †
2-Chlorotoluene	0.0125	0.0011	mg/Kg wet	0.0113		110	70-130			
4-Chlorotoluene	0.0123	0.0011	mg/Kg wet	0.0113		108	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	0.0115	0.0045	mg/Kg wet	0.0113		102	70-130			
1,2-Dibromoethane (EDB)	0.0126	0.00057	mg/Kg wet	0.0113		112	70-130			
Dibromomethane	0.0123	0.0011	mg/Kg wet	0.0113		108	70-130			
1,2-Dichlorobenzene	0.0131	0.0011	mg/Kg wet	0.0113		116	70-130			
1,3-Dichlorobenzene	0.0133	0.0011	mg/Kg wet	0.0113		118	70-130			
1,4-Dichlorobenzene	0.0128	0.0011	mg/Kg wet	0.0113		113	70-130			
Dichlorodifluoromethane (Freon 12)	0.0113	0.0023	mg/Kg wet	0.0113		99.6	40-160			†
1,1-Dichloroethane	0.0123	0.0011	mg/Kg wet	0.0113		109	70-130			
1,2-Dichloroethane	0.0116	0.0011	mg/Kg wet	0.0113		103	70-130			
1,1-Dichloroethylene	0.0125	0.0011	mg/Kg wet	0.0113		110	70-130			
cis-1,2-Dichloroethylene	0.0122	0.0011	mg/Kg wet	0.0113		108	70-130			
trans-1,2-Dichloroethylene	0.0120	0.0011	mg/Kg wet	0.0113		106	70-130			
1,2-Dichloropropane	0.0125	0.0011	mg/Kg wet	0.0113		110	70-130			
1,3-Dichloropropane	0.0123	0.00057	mg/Kg wet	0.0113		109	70-130			
2,2-Dichloropropane	0.0125	0.0011	mg/Kg wet	0.0113		110	70-130			
1,1-Dichloropropene	0.0126	0.0023	mg/Kg wet	0.0113		111	70-130			
cis-1,3-Dichloropropene	0.0125	0.00057	mg/Kg wet	0.0113		110	70-130			
trans-1,3-Dichloropropene	0.0113	0.00057	mg/Kg wet	0.0113		100	70-130			
Diethyl Ether	0.0119	0.0023	mg/Kg wet	0.0113		105	70-130			
Diisopropyl Ether (DIPE)	0.0116	0.00057	mg/Kg wet	0.0113		102	70-130			
1,4-Dioxane	0.118	0.057	mg/Kg wet	0.113		104	40-160			†
Ethylbenzene	0.0132	0.0011	mg/Kg wet	0.0113		117	70-130			
Hexachlorobutadiene	0.0130	0.0011	mg/Kg wet	0.0113		115	70-130			
2-Hexanone (MBK)	0.108	0.011	mg/Kg wet	0.113		95.4	40-160			†
Isopropylbenzene (Cumene)	0.0136	0.0011	mg/Kg wet	0.0113		120	70-130			
p-Isopropyltoluene (p-Cymene)	0.0129	0.0011	mg/Kg wet	0.0113		114	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0129	0.0011	mg/Kg wet	0.0113		114	70-130			
Methylene Chloride	0.0116	0.0057	mg/Kg wet	0.0113		102	70-130			
4-Methyl-2-pentanone (MIBK)	0.115	0.011	mg/Kg wet	0.113		101	40-160			†
Naphthalene	0.00985	0.0023	mg/Kg wet	0.0113		86.9	70-130			



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**QUALITY CONTROL**
**Volatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304831 - SW-846 5035</b>										
<b>LCS (B304831-BS1)</b>										
Prepared & Analyzed: 04/04/22										
n-Propylbenzene	0.0127	0.0011	mg/Kg wet	0.0113		112	70-130			
Styrene	0.0138	0.0011	mg/Kg wet	0.0113		122	70-130			V-20
1,1,1,2-Tetrachloroethane	0.0139	0.0011	mg/Kg wet	0.0113		122	70-130			
1,1,2,2-Tetrachloroethane	0.0125	0.00057	mg/Kg wet	0.0113		110	70-130			
Tetrachloroethylene	0.0138	0.0011	mg/Kg wet	0.0113		122	70-130			V-20
Tetrahydrofuran	0.0124	0.0045	mg/Kg wet	0.0113		109	70-130			
Toluene	0.0134	0.0011	mg/Kg wet	0.0113		118	70-130			
1,2,3-Trichlorobenzene	0.0108	0.0045	mg/Kg wet	0.0113		95.3	70-130			
1,2,4-Trichlorobenzene	0.0112	0.0011	mg/Kg wet	0.0113		99.2	70-130			
1,1,1-Trichloroethane	0.0126	0.0011	mg/Kg wet	0.0113		111	70-130			
1,1,2-Trichloroethane	0.0130	0.0011	mg/Kg wet	0.0113		115	70-130			
Trichloroethylene	0.0132	0.0011	mg/Kg wet	0.0113		116	70-130			
Trichlorofluoromethane (Freon 11)	0.0122	0.0023	mg/Kg wet	0.0113		107	70-130			
1,2,3-Trichloropropane	0.0110	0.0023	mg/Kg wet	0.0113		97.1	70-130			
1,2,4-Trimethylbenzene	0.0128	0.0011	mg/Kg wet	0.0113		113	70-130			
1,3,5-Trimethylbenzene	0.0130	0.0011	mg/Kg wet	0.0113		114	70-130			
Vinyl Chloride	0.0128	0.0023	mg/Kg wet	0.0113		113	70-130			
m+p Xylene	0.0262	0.0023	mg/Kg wet	0.0227		116	70-130			
o-Xylene	0.0134	0.0011	mg/Kg wet	0.0113		118	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0246		mg/Kg wet	0.0283		86.7	70-130			
Surrogate: Toluene-d8	0.0279		mg/Kg wet	0.0283		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.0267		mg/Kg wet	0.0283		94.2	70-130			
<b>LCS Dup (B304831-BSD1)</b>										
Prepared & Analyzed: 04/04/22										
Acetone	0.0967	0.057	mg/Kg wet	0.113		85.3	40-160	7.47	20	†
tert-Amyl Methyl Ether (TAME)	0.0130	0.00057	mg/Kg wet	0.0113		115	70-130	3.25	20	V-20
Benzene	0.0128	0.0011	mg/Kg wet	0.0113		113	70-130	1.67	20	
Bromobenzene	0.0119	0.0011	mg/Kg wet	0.0113		105	70-130	0.477	20	
Bromochloromethane	0.0120	0.0011	mg/Kg wet	0.0113		106	70-130	2.25	20	
Bromodichloromethane	0.0123	0.0011	mg/Kg wet	0.0113		109	70-130	4.42	20	
Bromoform	0.0123	0.0011	mg/Kg wet	0.0113		109	70-130	1.64	20	
Bromomethane	0.0129	0.0023	mg/Kg wet	0.0113		113	40-160	1.57	20	†
2-Butanone (MEK)	0.105	0.023	mg/Kg wet	0.113		92.3	40-160	4.24	20	†
n-Butylbenzene	0.0118	0.0011	mg/Kg wet	0.0113		104	70-130	0.482	20	
sec-Butylbenzene	0.0129	0.0011	mg/Kg wet	0.0113		114	70-130	1.39	20	
tert-Butylbenzene	0.0132	0.0011	mg/Kg wet	0.0113		117	70-130	1.70	20	
tert-Butyl Ethyl Ether (TBEE)	0.0120	0.00057	mg/Kg wet	0.0113		106	70-130	2.62	20	
Carbon Disulfide	0.129	0.011	mg/Kg wet	0.113		114	70-130	1.03	20	
Carbon Tetrachloride	0.0126	0.0011	mg/Kg wet	0.0113		111	70-130	0.807	20	
Chlorobenzene	0.0137	0.0011	mg/Kg wet	0.0113		121	70-130	2.45	20	V-20
Chlorodibromomethane	0.0125	0.00057	mg/Kg wet	0.0113		111	70-130	1.79	20	
Chloroethane	0.0141	0.0023	mg/Kg wet	0.0113		125	70-130	2.76	20	
Chloroform	0.0123	0.0023	mg/Kg wet	0.0113		109	70-130	1.28	20	
Chloromethane	0.0120	0.0023	mg/Kg wet	0.0113		106	40-160	7.10	20	V-20 †
2-Chlorotoluene	0.0123	0.0011	mg/Kg wet	0.0113		109	70-130	1.64	20	
4-Chlorotoluene	0.0122	0.0011	mg/Kg wet	0.0113		108	70-130	0.278	20	
1,2-Dibromo-3-chloropropane (DBCP)	0.0108	0.0045	mg/Kg wet	0.0113		94.9	70-130	7.02	20	
1,2-Dibromoethane (EDB)	0.0124	0.00057	mg/Kg wet	0.0113		109	70-130	2.27	20	
Dibromomethane	0.0124	0.0011	mg/Kg wet	0.0113		110	70-130	1.38	20	
1,2-Dichlorobenzene	0.0133	0.0011	mg/Kg wet	0.0113		117	70-130	1.20	20	
1,3-Dichlorobenzene	0.0130	0.0011	mg/Kg wet	0.0113		114	70-130	2.76	20	
1,4-Dichlorobenzene	0.0126	0.0011	mg/Kg wet	0.0113		112	70-130	1.51	20	



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**QUALITY CONTROL**
**Volatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304831 - SW-846 5035</b>										
<b>LCS Dup (B304831-BSD1)</b>										
Prepared & Analyzed: 04/04/22										
Dichlorodifluoromethane (Freon 12)	0.0112	0.0023	mg/Kg wet	0.0113		99.2	40-160	0.402	20	†
1,1-Dichloroethane	0.0120	0.0011	mg/Kg wet	0.0113		106	70-130	2.23	20	
1,2-Dichloroethane	0.0114	0.0011	mg/Kg wet	0.0113		101	70-130	1.77	20	
1,1-Dichloroethylene	0.0121	0.0011	mg/Kg wet	0.0113		107	70-130	2.58	20	
cis-1,2-Dichloroethylene	0.0123	0.0011	mg/Kg wet	0.0113		109	70-130	0.924	20	
trans-1,2-Dichloroethylene	0.0120	0.0011	mg/Kg wet	0.0113		106	70-130	0.567	20	
1,2-Dichloropropane	0.0124	0.0011	mg/Kg wet	0.0113		109	70-130	1.00	20	
1,3-Dichloropropane	0.0120	0.00057	mg/Kg wet	0.0113		106	70-130	2.70	20	
2,2-Dichloropropane	0.0121	0.0011	mg/Kg wet	0.0113		107	70-130	3.03	20	
1,1-Dichloropropene	0.0122	0.0023	mg/Kg wet	0.0113		108	70-130	3.02	20	
cis-1,3-Dichloropropene	0.0120	0.00057	mg/Kg wet	0.0113		106	70-130	4.07	20	
trans-1,3-Dichloropropene	0.0111	0.00057	mg/Kg wet	0.0113		98.2	70-130	1.82	20	
Diethyl Ether	0.0113	0.0023	mg/Kg wet	0.0113		100	70-130	4.59	20	
Diisopropyl Ether (DIPE)	0.0115	0.00057	mg/Kg wet	0.0113		102	70-130	0.687	20	
1,4-Dioxane	0.102	0.057	mg/Kg wet	0.113		89.8	40-160	14.7	20	†
Ethylbenzene	0.0131	0.0011	mg/Kg wet	0.0113		116	70-130	0.861	20	
Hexachlorobutadiene	0.0132	0.0011	mg/Kg wet	0.0113		116	70-130	1.21	20	
2-Hexanone (MBK)	0.101	0.011	mg/Kg wet	0.113		89.5	40-160	6.34	20	†
Isopropylbenzene (Cumene)	0.0133	0.0011	mg/Kg wet	0.0113		118	70-130	2.18	20	
p-Isopropyltoluene (p-Cymene)	0.0129	0.0011	mg/Kg wet	0.0113		114	70-130	0.00	20	
Methyl tert-Butyl Ether (MTBE)	0.0130	0.0011	mg/Kg wet	0.0113		115	70-130	0.611	20	
Methylene Chloride	0.0111	0.0057	mg/Kg wet	0.0113		98.1	70-130	4.09	20	
4-Methyl-2-pentanone (MIBK)	0.109	0.011	mg/Kg wet	0.113		96.2	40-160	4.96	20	†
Naphthalene	0.00975	0.0023	mg/Kg wet	0.0113		86.0	70-130	1.04	20	
n-Propylbenzene	0.0124	0.0011	mg/Kg wet	0.0113		110	70-130	2.07	20	
Styrene	0.0134	0.0011	mg/Kg wet	0.0113		119	70-130	2.83	20	V-20
1,1,1,2-Tetrachloroethane	0.0136	0.0011	mg/Kg wet	0.0113		120	70-130	1.98	20	
1,1,1,2,2-Tetrachloroethane	0.0124	0.00057	mg/Kg wet	0.0113		109	70-130	0.913	20	
Tetrachloroethylene	0.0135	0.0011	mg/Kg wet	0.0113		119	70-130	2.16	20	V-20
Tetrahydrofuran	0.0116	0.0045	mg/Kg wet	0.0113		103	70-130	6.23	20	
Toluene	0.0130	0.0011	mg/Kg wet	0.0113		114	70-130	3.10	20	
1,2,3-Trichlorobenzene	0.0109	0.0045	mg/Kg wet	0.0113		96.3	70-130	1.04	20	
1,2,4-Trichlorobenzene	0.0113	0.0011	mg/Kg wet	0.0113		100	70-130	0.903	20	
1,1,1-Trichloroethane	0.0126	0.0011	mg/Kg wet	0.0113		111	70-130	0.0900	20	
1,1,2-Trichloroethane	0.0127	0.0011	mg/Kg wet	0.0113		112	70-130	2.65	20	
Trichloroethylene	0.0133	0.0011	mg/Kg wet	0.0113		117	70-130	0.600	20	
Trichlorofluoromethane (Freon 11)	0.0120	0.0023	mg/Kg wet	0.0113		106	70-130	1.22	20	
1,2,3-Trichloropropane	0.0118	0.0023	mg/Kg wet	0.0113		104	70-130	7.34	20	
1,2,4-Trimethylbenzene	0.0126	0.0011	mg/Kg wet	0.0113		111	70-130	2.14	20	
1,3,5-Trimethylbenzene	0.0127	0.0011	mg/Kg wet	0.0113		112	70-130	2.21	20	
Vinyl Chloride	0.0124	0.0023	mg/Kg wet	0.0113		110	70-130	2.61	20	
m+p Xylene	0.0260	0.0023	mg/Kg wet	0.0227		115	70-130	0.824	20	
o-Xylene	0.0129	0.0011	mg/Kg wet	0.0113		114	70-130	3.28	20	
Surrogate: 1,2-Dichloroethane-d4	0.0247		mg/Kg wet	0.0283		87.2	70-130			
Surrogate: Toluene-d8	0.0280		mg/Kg wet	0.0283		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.0270		mg/Kg wet	0.0283		95.2	70-130			

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**QUALITY CONTROL**
**Semivolatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304885 - SW-846 3546</b>										
<b>Blank (B304885-BLK1)</b>										
Prepared: 04/04/22 Analyzed: 04/07/22										
Biphenyl	ND	0.67	mg/Kg wet							
Acenaphthene	ND	0.17	mg/Kg wet							
Acenaphthylene	ND	0.17	mg/Kg wet							
Acetophenone	ND	0.34	mg/Kg wet							
Aniline	ND	0.34	mg/Kg wet							V-05
Anthracene	ND	0.17	mg/Kg wet							
Benzo(a)anthracene	ND	0.17	mg/Kg wet							
Benzo(a)pyrene	ND	0.17	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.17	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.17	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.17	mg/Kg wet							
Bis(2-chloroethoxy)methane	ND	0.34	mg/Kg wet							
Bis(2-chloroethyl)ether	ND	0.34	mg/Kg wet							
Bis(2-chloroisopropyl)ether	ND	0.34	mg/Kg wet							
Bis(2-Ethylhexyl)phthalate	ND	0.34	mg/Kg wet							
4-Bromophenylphenylether	ND	0.34	mg/Kg wet							
Butylbenzylphthalate	ND	0.34	mg/Kg wet							
4-Chloroaniline	ND	0.66	mg/Kg wet							V-34
2-Chloronaphthalene	ND	0.34	mg/Kg wet							
2-Chlorophenol	ND	0.34	mg/Kg wet							
Chrysene	ND	0.17	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.17	mg/Kg wet							
Dibenzofuran	ND	0.34	mg/Kg wet							
Di-n-butylphthalate	ND	0.34	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.34	mg/Kg wet							
3,3-Dichlorobenzidine	ND	0.17	mg/Kg wet							
2,4-Dichlorophenol	ND	0.34	mg/Kg wet							
Diethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dimethylphenol	ND	0.34	mg/Kg wet							
Dimethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dinitrophenol	ND	0.66	mg/Kg wet							
2,4-Dinitrotoluene	ND	0.34	mg/Kg wet							
2,6-Dinitrotoluene	ND	0.34	mg/Kg wet							
Di-n-octylphthalate	ND	0.34	mg/Kg wet							
1,2-Diphenylhydrazine/Azobenzene	ND	0.34	mg/Kg wet							
Fluoranthene	ND	0.17	mg/Kg wet							
Fluorene	ND	0.17	mg/Kg wet							
Hexachlorobenzene	ND	0.34	mg/Kg wet							
Hexachlorobutadiene	ND	0.34	mg/Kg wet							
Hexachloroethane	ND	0.34	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.17	mg/Kg wet							
Isophorone	ND	0.34	mg/Kg wet							
2-Methylnaphthalene	ND	0.17	mg/Kg wet							
2-Methylphenol	ND	0.34	mg/Kg wet							
3/4-Methylphenol	ND	0.34	mg/Kg wet							
Naphthalene	ND	0.17	mg/Kg wet							
Nitrobenzene	ND	0.34	mg/Kg wet							
2-Nitrophenol	ND	0.34	mg/Kg wet							
4-Nitrophenol	ND	0.66	mg/Kg wet							
Pentachlorophenol	ND	0.34	mg/Kg wet							

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**QUALITY CONTROL**
**Semivolatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304885 - SW-846 3546</b>										
<b>Blank (B304885-BLK1)</b>										
Prepared: 04/04/22 Analyzed: 04/07/22										
Phenanthrene	ND	0.17	mg/Kg wet							
Phenol	ND	0.34	mg/Kg wet							
Pyrene	ND	0.17	mg/Kg wet							
Pyridine	ND	0.34	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.34	mg/Kg wet							
2,4,5-Trichlorophenol	ND	0.34	mg/Kg wet							
2,4,6-Trichlorophenol	ND	0.34	mg/Kg wet							
Surrogate: 2-Fluorophenol	4.05		mg/Kg wet	6.67		60.8	30-130			
Surrogate: Phenol-d6	4.02		mg/Kg wet	6.67		60.3	30-130			
Surrogate: Nitrobenzene-d5	2.15		mg/Kg wet	3.33		64.6	30-130			
Surrogate: 2-Fluorobiphenyl	2.22		mg/Kg wet	3.33		66.6	30-130			
Surrogate: 2,4,6-Tribromophenol	4.88		mg/Kg wet	6.67		73.3	30-130			
Surrogate: p-Terphenyl-d14	2.34		mg/Kg wet	3.33		70.3	30-130			
<b>LCS (B304885-BS1)</b>										
Prepared: 04/04/22 Analyzed: 04/07/22										
Biphenyl	1.27	0.67	mg/Kg wet	1.67		76.0	40-140			
Acenaphthene	1.17	0.17	mg/Kg wet	1.67		70.0	40-140			
Acenaphthylene	1.22	0.17	mg/Kg wet	1.67		73.0	40-140			
Acetophenone	1.13	0.34	mg/Kg wet	1.67		67.6	40-140			
Aniline	0.909	0.34	mg/Kg wet	1.67		54.6	40-140			V-05
Anthracene	1.24	0.17	mg/Kg wet	1.67		74.5	40-140			
Benzo(a)anthracene	1.21	0.17	mg/Kg wet	1.67		72.6	40-140			
Benzo(a)pyrene	1.34	0.17	mg/Kg wet	1.67		80.4	40-140			
Benzo(b)fluoranthene	1.33	0.17	mg/Kg wet	1.67		79.6	40-140			
Benzo(g,h,i)perylene	1.43	0.17	mg/Kg wet	1.67		86.0	40-140			
Benzo(k)fluoranthene	1.40	0.17	mg/Kg wet	1.67		84.3	40-140			
Bis(2-chloroethoxy)methane	1.12	0.34	mg/Kg wet	1.67		67.2	40-140			
Bis(2-chloroethyl)ether	1.00	0.34	mg/Kg wet	1.67		60.1	40-140			
Bis(2-chloroisopropyl)ether	1.18	0.34	mg/Kg wet	1.67		70.9	40-140			
Bis(2-Ethylhexyl)phthalate	1.15	0.34	mg/Kg wet	1.67		69.0	40-140			
4-Bromophenylphenylether	1.15	0.34	mg/Kg wet	1.67		69.3	40-140			
Butylbenzylphthalate	1.14	0.34	mg/Kg wet	1.67		68.6	40-140			
4-Chloroaniline	0.942	0.66	mg/Kg wet	1.67		56.5	15-140			V-34 †
2-Chloronaphthalene	1.09	0.34	mg/Kg wet	1.67		65.2	40-140			
2-Chlorophenol	1.07	0.34	mg/Kg wet	1.67		64.0	30-130			
Chrysene	1.18	0.17	mg/Kg wet	1.67		71.0	40-140			
Dibenz(a,h)anthracene	1.33	0.17	mg/Kg wet	1.67		79.5	40-140			
Dibenzofuran	1.30	0.34	mg/Kg wet	1.67		78.1	40-140			
Di-n-butylphthalate	1.16	0.34	mg/Kg wet	1.67		69.9	40-140			
1,2-Dichlorobenzene	1.11	0.34	mg/Kg wet	1.67		66.7	40-140			
1,3-Dichlorobenzene	1.06	0.34	mg/Kg wet	1.67		63.9	40-140			
1,4-Dichlorobenzene	1.09	0.34	mg/Kg wet	1.67		65.4	40-140			
3,3-Dichlorobenzidine	0.971	0.17	mg/Kg wet	1.67		58.3	40-140			
2,4-Dichlorophenol	1.15	0.34	mg/Kg wet	1.67		69.1	30-130			
Diethylphthalate	1.16	0.34	mg/Kg wet	1.67		69.4	40-140			
2,4-Dimethylphenol	1.13	0.34	mg/Kg wet	1.67		67.8	30-130			
Dimethylphthalate	1.14	0.34	mg/Kg wet	1.67		68.6	40-140			
2,4-Dinitrophenol	0.874	0.66	mg/Kg wet	1.67		52.5	15-140			†
2,4-Dinitrotoluene	1.26	0.34	mg/Kg wet	1.67		75.3	40-140			
2,6-Dinitrotoluene	1.26	0.34	mg/Kg wet	1.67		75.5	40-140			
Di-n-octylphthalate	1.51	0.34	mg/Kg wet	1.67		90.8	40-140			
1,2-Diphenylhydrazine/Azobenzene	1.29	0.34	mg/Kg wet	1.67		77.6	40-140			

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**QUALITY CONTROL**
**Semivolatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304885 - SW-846 3546</b>										
<b>LCS (B304885-BS1)</b>										
					Prepared: 04/04/22 Analyzed: 04/07/22					
Fluoranthene	1.27	0.17	mg/Kg wet	1.67		76.3	40-140			
Fluorene	1.23	0.17	mg/Kg wet	1.67		73.7	40-140			
Hexachlorobenzene	1.23	0.34	mg/Kg wet	1.67		73.9	40-140			
Hexachlorobutadiene	1.14	0.34	mg/Kg wet	1.67		68.2	40-140			
Hexachloroethane	1.06	0.34	mg/Kg wet	1.67		63.6	40-140			
Indeno(1,2,3-cd)pyrene	1.30	0.17	mg/Kg wet	1.67		78.2	40-140			
Isophorone	1.23	0.34	mg/Kg wet	1.67		73.7	40-140			
2-Methylnaphthalene	1.24	0.17	mg/Kg wet	1.67		74.6	40-140			
2-Methylphenol	1.15	0.34	mg/Kg wet	1.67		68.9	30-130			
3/4-Methylphenol	1.18	0.34	mg/Kg wet	1.67		70.6	30-130			
Naphthalene	1.17	0.17	mg/Kg wet	1.67		70.2	40-140			
Nitrobenzene	1.15	0.34	mg/Kg wet	1.67		69.0	40-140			
2-Nitrophenol	1.10	0.34	mg/Kg wet	1.67		66.2	30-130			
4-Nitrophenol	1.16	0.66	mg/Kg wet	1.67		69.5	15-140			†
Pentachlorophenol	1.16	0.34	mg/Kg wet	1.67		69.8	30-130			
Phenanthrene	1.23	0.17	mg/Kg wet	1.67		74.0	40-140			
Phenol	1.01	0.34	mg/Kg wet	1.67		60.7	15-140			†
Pyrene	1.24	0.17	mg/Kg wet	1.67		74.3	40-140			
Pyridine	0.670	0.34	mg/Kg wet	1.67		40.2	30-140			†
1,2,4-Trichlorobenzene	1.17	0.34	mg/Kg wet	1.67		70.3	40-140			
2,4,5-Trichlorophenol	1.32	0.34	mg/Kg wet	1.67		78.9	30-130			
2,4,6-Trichlorophenol	1.24	0.34	mg/Kg wet	1.67		74.2	30-130			
Surrogate: 2-Fluorophenol	4.80		mg/Kg wet	6.67		72.0	30-130			
Surrogate: Phenol-d6	4.65		mg/Kg wet	6.67		69.7	30-130			
Surrogate: Nitrobenzene-d5	2.45		mg/Kg wet	3.33		73.5	30-130			
Surrogate: 2-Fluorobiphenyl	2.61		mg/Kg wet	3.33		78.3	30-130			
Surrogate: 2,4,6-Tribromophenol	5.27		mg/Kg wet	6.67		79.0	30-130			
Surrogate: p-Terphenyl-d14	2.42		mg/Kg wet	3.33		72.5	30-130			
<b>LCS Dup (B304885-BSD1)</b>										
					Prepared: 04/04/22 Analyzed: 04/07/22					
Biphenyl	1.24	0.67	mg/Kg wet	1.67		74.6	40-140	1.89	20	
Acenaphthene	1.16	0.17	mg/Kg wet	1.67		69.8	40-140	0.343	30	
Acenaphthylene	1.21	0.17	mg/Kg wet	1.67		72.9	40-140	0.247	30	
Acetophenone	1.07	0.34	mg/Kg wet	1.67		64.0	40-140	5.41	30	
Aniline	0.864	0.34	mg/Kg wet	1.67		51.8	40-140	5.11	30	V-05
Anthracene	1.24	0.17	mg/Kg wet	1.67		74.7	40-140	0.268	30	
Benzo(a)anthracene	1.22	0.17	mg/Kg wet	1.67		73.3	40-140	0.959	30	
Benzo(a)pyrene	1.36	0.17	mg/Kg wet	1.67		81.4	40-140	1.29	30	
Benzo(b)fluoranthene	1.34	0.17	mg/Kg wet	1.67		80.4	40-140	1.03	30	
Benzo(g,h,i)perylene	1.45	0.17	mg/Kg wet	1.67		86.7	40-140	0.810	30	
Benzo(k)fluoranthene	1.43	0.17	mg/Kg wet	1.67		85.6	40-140	1.55	30	
Bis(2-chloroethoxy)methane	1.08	0.34	mg/Kg wet	1.67		64.8	40-140	3.70	30	
Bis(2-chloroethyl)ether	0.969	0.34	mg/Kg wet	1.67		58.1	40-140	3.25	30	
Bis(2-chloroisopropyl)ether	1.13	0.34	mg/Kg wet	1.67		68.0	40-140	4.23	30	
Bis(2-Ethylhexyl)phthalate	1.16	0.34	mg/Kg wet	1.67		69.5	40-140	0.664	30	
4-Bromophenylphenylether	1.16	0.34	mg/Kg wet	1.67		69.6	40-140	0.518	30	
Butylbenzylphthalate	1.15	0.34	mg/Kg wet	1.67		69.3	40-140	0.899	30	
4-Chloroaniline	0.901	0.66	mg/Kg wet	1.67		54.1	15-140	4.41	30	V-34 †
2-Chloronaphthalene	1.03	0.34	mg/Kg wet	1.67		61.8	40-140	5.29	30	
2-Chlorophenol	1.02	0.34	mg/Kg wet	1.67		61.0	30-130	4.83	30	
Chrysene	1.19	0.17	mg/Kg wet	1.67		71.6	40-140	0.814	30	
Dibenz(a,h)anthracene	1.32	0.17	mg/Kg wet	1.67		78.9	40-140	0.757	30	

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**QUALITY CONTROL**
**Semivolatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304885 - SW-846 3546</b>										
<b>LCS Dup (B304885-BSD1)</b>										
					Prepared: 04/04/22 Analyzed: 04/07/22					
Dibenzofuran	1.28	0.34	mg/Kg wet	1.67		77.0	40-140	1.37	30	
Di-n-butylphthalate	1.18	0.34	mg/Kg wet	1.67		70.9	40-140	1.53	30	
1,2-Dichlorobenzene	1.06	0.34	mg/Kg wet	1.67		63.9	40-140	4.26	30	
1,3-Dichlorobenzene	1.02	0.34	mg/Kg wet	1.67		61.3	40-140	4.19	30	
1,4-Dichlorobenzene	1.03	0.34	mg/Kg wet	1.67		61.7	40-140	5.89	30	
3,3-Dichlorobenzidine	0.977	0.17	mg/Kg wet	1.67		58.6	40-140	0.548	30	
2,4-Dichlorophenol	1.11	0.34	mg/Kg wet	1.67		66.8	30-130	3.33	30	
Diethylphthalate	1.18	0.34	mg/Kg wet	1.67		71.1	40-140	2.48	30	
2,4-Dimethylphenol	1.09	0.34	mg/Kg wet	1.67		65.6	30-130	3.27	30	
Dimethylphthalate	1.15	0.34	mg/Kg wet	1.67		68.7	40-140	0.146	30	
2,4-Dinitrophenol	0.875	0.66	mg/Kg wet	1.67		52.5	15-140	0.0381	30	†
2,4-Dinitrotoluene	1.26	0.34	mg/Kg wet	1.67		75.6	40-140	0.318	30	
2,6-Dinitrotoluene	1.29	0.34	mg/Kg wet	1.67		77.3	40-140	2.38	30	
Di-n-octylphthalate	1.50	0.34	mg/Kg wet	1.67		89.8	40-140	1.15	30	
1,2-Diphenylhydrazine/Azobenzene	1.30	0.34	mg/Kg wet	1.67		77.8	40-140	0.309	30	
Fluoranthene	1.28	0.17	mg/Kg wet	1.67		76.6	40-140	0.366	30	
Fluorene	1.23	0.17	mg/Kg wet	1.67		73.8	40-140	0.217	30	
Hexachlorobenzene	1.24	0.34	mg/Kg wet	1.67		74.5	40-140	0.782	30	
Hexachlorobutadiene	1.09	0.34	mg/Kg wet	1.67		65.3	40-140	4.37	30	
Hexachloroethane	1.02	0.34	mg/Kg wet	1.67		61.1	40-140	4.04	30	
Indeno(1,2,3-cd)pyrene	1.32	0.17	mg/Kg wet	1.67		79.2	40-140	1.27	30	
Isophorone	1.19	0.34	mg/Kg wet	1.67		71.4	40-140	3.17	30	
2-Methylnaphthalene	1.21	0.17	mg/Kg wet	1.67		72.6	40-140	2.72	30	
2-Methylphenol	1.11	0.34	mg/Kg wet	1.67		66.7	30-130	3.30	30	
3/4-Methylphenol	1.12	0.34	mg/Kg wet	1.67		67.4	30-130	4.64	30	
Naphthalene	1.12	0.17	mg/Kg wet	1.67		67.0	40-140	4.72	30	
Nitrobenzene	1.12	0.34	mg/Kg wet	1.67		67.0	40-140	2.85	30	
2-Nitrophenol	1.05	0.34	mg/Kg wet	1.67		63.2	30-130	4.67	30	
4-Nitrophenol	1.20	0.66	mg/Kg wet	1.67		71.8	15-140	3.26	30	†
Pentachlorophenol	1.17	0.34	mg/Kg wet	1.67		70.1	30-130	0.457	30	
Phenanthrene	1.24	0.17	mg/Kg wet	1.67		74.6	40-140	0.888	30	
Phenol	0.970	0.34	mg/Kg wet	1.67		58.2	15-140	4.17	30	†
Pyrene	1.26	0.17	mg/Kg wet	1.67		75.5	40-140	1.63	30	
Pyridine	0.621	0.34	mg/Kg wet	1.67		37.3	30-140	7.49	30	†
1,2,4-Trichlorobenzene	1.12	0.34	mg/Kg wet	1.67		67.3	40-140	4.45	30	
2,4,5-Trichlorophenol	1.31	0.34	mg/Kg wet	1.67		78.7	30-130	0.330	30	
2,4,6-Trichlorophenol	1.24	0.34	mg/Kg wet	1.67		74.1	30-130	0.108	30	
Surrogate: 2-Fluorophenol	4.53		mg/Kg wet	6.67		67.9	30-130			
Surrogate: Phenol-d6	4.37		mg/Kg wet	6.67		65.6	30-130			
Surrogate: Nitrobenzene-d5	2.34		mg/Kg wet	3.33		70.2	30-130			
Surrogate: 2-Fluorobiphenyl	2.51		mg/Kg wet	3.33		75.3	30-130			
Surrogate: 2,4,6-Tribromophenol	5.19		mg/Kg wet	6.67		77.9	30-130			
Surrogate: p-Terphenyl-d14	2.41		mg/Kg wet	3.33		72.2	30-130			

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**QUALITY CONTROL**
**Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304768 - SW-846 3540C</b>										
<b>Blank (B304768-BLK1)</b>										
Prepared: 04/02/22 Analyzed: 04/06/22										
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.183		mg/Kg wet	0.200		91.3	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.190		mg/Kg wet	0.200		95.2	30-150			
Surrogate: Tetrachloro-m-xylene	0.166		mg/Kg wet	0.200		82.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.172		mg/Kg wet	0.200		86.1	30-150			
<b>LCS (B304768-BS1)</b>										
Prepared: 04/02/22 Analyzed: 04/06/22										
Aroclor-1016	0.14	0.020	mg/Kg wet	0.200		68.3	40-140			
Aroclor-1016 [2C]	0.15	0.020	mg/Kg wet	0.200		75.0	40-140			
Aroclor-1260	0.14	0.020	mg/Kg wet	0.200		72.4	40-140			
Aroclor-1260 [2C]	0.16	0.020	mg/Kg wet	0.200		80.0	40-140			
Surrogate: Decachlorobiphenyl	0.172		mg/Kg wet	0.200		86.1	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.183		mg/Kg wet	0.200		91.3	30-150			
Surrogate: Tetrachloro-m-xylene	0.139		mg/Kg wet	0.200		69.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.143		mg/Kg wet	0.200		71.7	30-150			
<b>LCS Dup (B304768-BSD1)</b>										
Prepared: 04/02/22 Analyzed: 04/06/22										
Aroclor-1016	0.11	0.020	mg/Kg wet	0.200		57.3	40-140	17.6	30	
Aroclor-1016 [2C]	0.13	0.020	mg/Kg wet	0.200		63.0	40-140	17.3	30	
Aroclor-1260	0.13	0.020	mg/Kg wet	0.200		62.6	40-140	14.5	30	
Aroclor-1260 [2C]	0.14	0.020	mg/Kg wet	0.200		69.4	40-140	14.2	30	
Surrogate: Decachlorobiphenyl	0.152		mg/Kg wet	0.200		76.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.157		mg/Kg wet	0.200		78.7	30-150			
Surrogate: Tetrachloro-m-xylene	0.110		mg/Kg wet	0.200		55.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.114		mg/Kg wet	0.200		56.9	30-150			

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**QUALITY CONTROL**
**Petroleum Hydrocarbons Analyses - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304886 - SW-846 3546</b>									
<b>Blank (B304886-BLK1)</b>					Prepared: 04/04/22 Analyzed: 04/06/22				
TPH (C9-C36)	ND	8.3	mg/Kg wet						
Surrogate: 2-Fluorobiphenyl	2.20		mg/Kg wet	3.33		65.9 40-140			
<b>LCS (B304886-BS1)</b>					Prepared: 04/04/22 Analyzed: 04/06/22				
TPH (C9-C36)	33.5	8.3	mg/Kg wet	33.3		101 40-140			
Surrogate: 2-Fluorobiphenyl	2.51		mg/Kg wet	3.33		75.3 40-140			
<b>LCS Dup (B304886-BSD1)</b>					Prepared: 04/04/22 Analyzed: 04/06/22				
TPH (C9-C36)	33.6	8.3	mg/Kg wet	33.3		101 40-140	0.284	30	
Surrogate: 2-Fluorobiphenyl	2.62		mg/Kg wet	3.33		78.5 40-140			

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**QUALITY CONTROL**
**Petroleum Hydrocarbons Analyses - EPH - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304863 - SW-846 3546</b>										
<b>Blank (B304863-BLK1)</b>										
Prepared: 04/04/22 Analyzed: 04/06/22										
C9-C18 Aliphatics	ND	10	mg/Kg wet							
C19-C36 Aliphatics	ND	10	mg/Kg wet							
Unadjusted C11-C22 Aromatics	ND	10	mg/Kg wet							
C11-C22 Aromatics	ND	10	mg/Kg wet							
Acenaphthene	ND	0.10	mg/Kg wet							
Acenaphthylene	ND	0.10	mg/Kg wet							
Anthracene	ND	0.10	mg/Kg wet							
Benzo(a)anthracene	ND	0.10	mg/Kg wet							
Benzo(a)pyrene	ND	0.10	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.10	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.10	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.10	mg/Kg wet							
Chrysene	ND	0.10	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.10	mg/Kg wet							
Fluoranthene	ND	0.10	mg/Kg wet							
Fluorene	ND	0.10	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.10	mg/Kg wet							
2-Methylnaphthalene	ND	0.10	mg/Kg wet							
Naphthalene	ND	0.10	mg/Kg wet							
Phenanthrene	ND	0.10	mg/Kg wet							
Pyrene	ND	0.10	mg/Kg wet							
Surrogate: Chlorooctadecane (COD)	4.30		mg/Kg wet	5.00		86.1	40-140			
Surrogate: o-Terphenyl (OTP)	3.91		mg/Kg wet	5.00		78.2	40-140			
Surrogate: 2-Bromonaphthalene	5.18		mg/Kg wet	5.00		104	40-140			
Surrogate: 2-Fluorobiphenyl	5.16		mg/Kg wet	5.00		103	40-140			
<b>LCS (B304863-BS1)</b>										
Prepared: 04/04/22 Analyzed: 04/06/22										
C9-C18 Aliphatics	23.5	10	mg/Kg wet	30.0		78.5	40-140			
C19-C36 Aliphatics	37.6	10	mg/Kg wet	40.0		94.0	40-140			
Unadjusted C11-C22 Aromatics	72.2	10	mg/Kg wet	85.0		85.0	40-140			
Acenaphthene	3.85	0.10	mg/Kg wet	5.00		76.9	40-140			
Acenaphthylene	3.61	0.10	mg/Kg wet	5.00		72.2	40-140			
Anthracene	4.23	0.10	mg/Kg wet	5.00		84.6	40-140			
Benzo(a)anthracene	4.49	0.10	mg/Kg wet	5.00		89.8	40-140			
Benzo(a)pyrene	4.16	0.10	mg/Kg wet	5.00		83.2	40-140			
Benzo(b)fluoranthene	4.22	0.10	mg/Kg wet	5.00		84.4	40-140			
Benzo(g,h,i)perylene	3.75	0.10	mg/Kg wet	5.00		75.1	40-140			
Benzo(k)fluoranthene	3.81	0.10	mg/Kg wet	5.00		76.3	40-140			
Chrysene	4.25	0.10	mg/Kg wet	5.00		85.0	40-140			
Dibenz(a,h)anthracene	4.04	0.10	mg/Kg wet	5.00		80.9	40-140			
Fluoranthene	4.26	0.10	mg/Kg wet	5.00		85.3	40-140			
Fluorene	4.05	0.10	mg/Kg wet	5.00		80.9	40-140			
Indeno(1,2,3-cd)pyrene	3.90	0.10	mg/Kg wet	5.00		78.0	40-140			
2-Methylnaphthalene	3.53	0.10	mg/Kg wet	5.00		70.6	40-140			
Naphthalene	3.32	0.10	mg/Kg wet	5.00		66.3	40-140			
Phenanthrene	4.24	0.10	mg/Kg wet	5.00		84.9	40-140			
Pyrene	4.33	0.10	mg/Kg wet	5.00		86.5	40-140			
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
Surrogate: Chlorooctadecane (COD)	4.55		mg/Kg wet	5.00		91.0	40-140			
Surrogate: o-Terphenyl (OTP)	4.22		mg/Kg wet	5.00		84.4	40-140			
Surrogate: 2-Bromonaphthalene	5.38		mg/Kg wet	5.00		108	40-140			



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**QUALITY CONTROL**
**Petroleum Hydrocarbons Analyses - EPH - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304863 - SW-846 3546</b>										
<b>LCS (B304863-BS1)</b>										
					Prepared: 04/04/22 Analyzed: 04/06/22					
Surrogate: 2-Fluorobiphenyl	5.41		mg/Kg wet	5.00		108	40-140			
<b>LCS Dup (B304863-BSD1)</b>										
					Prepared: 04/04/22 Analyzed: 04/06/22					
C9-C18 Aliphatics	23.7	10	mg/Kg wet	30.0		78.9	40-140	0.537	25	
C19-C36 Aliphatics	35.7	10	mg/Kg wet	40.0		89.2	40-140	5.21	25	
Unadjusted C11-C22 Aromatics	70.7	10	mg/Kg wet	85.0		83.2	40-140	2.09	25	
Acenaphthene	3.78	0.10	mg/Kg wet	5.00		75.6	40-140	1.66	25	
Acenaphthylene	3.57	0.10	mg/Kg wet	5.00		71.3	40-140	1.25	25	
Anthracene	4.12	0.10	mg/Kg wet	5.00		82.4	40-140	2.57	25	
Benzo(a)anthracene	4.37	0.10	mg/Kg wet	5.00		87.4	40-140	2.76	25	
Benzo(a)pyrene	4.04	0.10	mg/Kg wet	5.00		80.7	40-140	2.96	25	
Benzo(b)fluoranthene	4.11	0.10	mg/Kg wet	5.00		82.2	40-140	2.62	25	
Benzo(g,h,i)perylene	3.64	0.10	mg/Kg wet	5.00		72.8	40-140	3.04	25	
Benzo(k)fluoranthene	3.69	0.10	mg/Kg wet	5.00		73.8	40-140	3.32	25	
Chrysene	4.13	0.10	mg/Kg wet	5.00		82.5	40-140	3.02	25	
Dibenz(a,h)anthracene	3.92	0.10	mg/Kg wet	5.00		78.4	40-140	3.11	25	
Fluoranthene	4.15	0.10	mg/Kg wet	5.00		83.0	40-140	2.70	25	
Fluorene	3.96	0.10	mg/Kg wet	5.00		79.3	40-140	2.05	25	
Indeno(1,2,3-cd)pyrene	3.79	0.10	mg/Kg wet	5.00		75.7	40-140	2.98	25	
2-Methylnaphthalene	3.54	0.10	mg/Kg wet	5.00		70.7	40-140	0.164	25	
Naphthalene	3.31	0.10	mg/Kg wet	5.00		66.2	40-140	0.181	25	
Phenanthrene	4.13	0.10	mg/Kg wet	5.00		82.6	40-140	2.73	25	
Pyrene	4.21	0.10	mg/Kg wet	5.00		84.2	40-140	2.72	25	
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
Surrogate: Chlorooctadecane (COD)	4.31		mg/Kg wet	5.00		86.2	40-140			
Surrogate: o-Terphenyl (OTP)	4.08		mg/Kg wet	5.00		81.6	40-140			
Surrogate: 2-Bromonaphthalene	5.31		mg/Kg wet	5.00		106	40-140			
Surrogate: 2-Fluorobiphenyl	5.37		mg/Kg wet	5.00		107	40-140			

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**QUALITY CONTROL**
**Metals Analyses (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B305002 - SW-846 3050B**
**Blank (B305002-BLK1)**

Prepared: 04/05/22 Analyzed: 04/06/22

Antimony	ND	1.7	mg/Kg wet							
Arsenic	ND	3.3	mg/Kg wet							
Barium	ND	1.7	mg/Kg wet							
Beryllium	ND	0.17	mg/Kg wet							
Cadmium	ND	0.33	mg/Kg wet							
Chromium	ND	0.67	mg/Kg wet							
Copper	ND	0.67	mg/Kg wet							
Lead	ND	0.50	mg/Kg wet							
Nickel	ND	0.67	mg/Kg wet							
Selenium	ND	3.3	mg/Kg wet							
Silver	ND	0.33	mg/Kg wet							
Thallium	ND	1.7	mg/Kg wet							
Vanadium	ND	0.67	mg/Kg wet							
Zinc	ND	0.67	mg/Kg wet							

**LCS (B305002-BS1)**

Prepared: 04/05/22 Analyzed: 04/06/22

Antimony	84.2	4.7	mg/Kg wet	99.5		84.6	2.5-209			
Arsenic	126	9.4	mg/Kg wet	140		90.1	82.9-117.9			
Barium	191	4.7	mg/Kg wet	202		94.5	81.2-118.3			
Beryllium	43.0	0.47	mg/Kg wet	42.6		101	81-119			
Cadmium	90.6	0.94	mg/Kg wet	97.9		92.5	80-119.5			
Chromium	57.5	1.9	mg/Kg wet	60.4		95.2	80.3-119.7			
Copper	118	1.9	mg/Kg wet	122		96.8	82.8-117.2			
Lead	51.2	1.4	mg/Kg wet	56.7		90.3	82.9-116.9			
Nickel	142	1.9	mg/Kg wet	151		94.2	79.5-121.2			
Selenium	34.0	9.4	mg/Kg wet	35.5		95.7	77.5-122.3			
Silver	19.2	0.94	mg/Kg wet	20.4		94.3	79.4-121.1			
Thallium	73.8	4.7	mg/Kg wet	69.3		107	79.4-120.6			
Vanadium	41.4	1.9	mg/Kg wet	44.9		92.2	78-121.8			
Zinc	166	1.9	mg/Kg wet	186		89.5	79-121			

**LCS Dup (B305002-BSD1)**

Prepared: 04/05/22 Analyzed: 04/06/22

Antimony	90.4	4.8	mg/Kg wet	99.5		90.9	2.5-209	7.19	30	
Arsenic	136	9.6	mg/Kg wet	140		97.3	82.9-117.9	7.73	30	
Barium	208	4.8	mg/Kg wet	202		103	81.2-118.3	8.58	20	
Beryllium	46.4	0.48	mg/Kg wet	42.6		109	81-119	7.68	30	
Cadmium	97.9	0.96	mg/Kg wet	97.9		100	80-119.5	7.83	20	
Chromium	61.1	1.9	mg/Kg wet	60.4		101	80.3-119.7	6.13	30	
Copper	129	1.9	mg/Kg wet	122		106	82.8-117.2	9.00	30	
Lead	55.5	1.4	mg/Kg wet	56.7		97.9	82.9-116.9	8.01	30	
Nickel	153	1.9	mg/Kg wet	151		101	79.5-121.2	7.37	30	
Selenium	37.1	9.6	mg/Kg wet	35.5		104	77.5-122.3	8.79	30	
Silver	20.3	0.96	mg/Kg wet	20.4		99.4	79.4-121.1	5.28	30	
Thallium	80.5	4.8	mg/Kg wet	69.3		116	79.4-120.6	8.71	30	
Vanadium	44.8	1.9	mg/Kg wet	44.9		99.8	78-121.8	7.91	30	
Zinc	179	1.9	mg/Kg wet	186		96.5	79-121	7.51	30	

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**QUALITY CONTROL**
**Metals Analyses (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B305002 - SW-846 3050B</b>										
<b>Reference (B305002-SRM1) MRL CHECK</b>					Prepared: 04/05/22 Analyzed: 04/06/22					
Lead	0.490	0.50	mg/Kg wet	0.497		98.6	80-120			
<b>Batch B305126 - SW-846 7471</b>										
<b>Blank (B305126-BLK1)</b>					Prepared: 04/06/22 Analyzed: 04/08/22					
Mercury	ND	0.025	mg/Kg wet							
<b>LCS (B305126-BS1)</b>					Prepared: 04/06/22 Analyzed: 04/08/22					
Mercury	19.9	0.79	mg/Kg wet	16.5		120	74.5-124.8			
<b>LCS Dup (B305126-BSD1)</b>					Prepared: 04/06/22 Analyzed: 04/08/22					
Mercury	12.6	0.74	mg/Kg wet	16.5		76.3	74.5-124.8	44.8	* 20	R-05

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**QUALITY CONTROL**
**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304761 - SW-846 9045C</b>										
<b>LCS (B304761-BS1)</b>				Prepared & Analyzed: 04/01/22						
pH	5.98		pH Units	6.00		99.6	90-110			
<b>LCS (B304761-BS2)</b>				Prepared & Analyzed: 04/01/22						
pH	5.97		pH Units	6.00		99.4	90-110			
<b>LCS (B304761-BS3)</b>				Prepared & Analyzed: 04/01/22						
pH	5.96		pH Units	6.00		99.3	90-110			
<b>Duplicate (B304761-DUP3)</b>		<b>Source: 22D0082-02</b>		Prepared & Analyzed: 04/01/22						
pH	7.2		pH Units		7.1			1.35	10	
<b>Batch B304826 - SW-846 1010A-B</b>										
<b>Blank (B304826-BLK1)</b>				Prepared & Analyzed: 04/04/22						
Flashpoint	> 212 °F		°F							
<b>LCS (B304826-BS1)</b>				Prepared & Analyzed: 04/04/22						
Flashpoint	82		°F	81.0		101	98.8-101			
<b>LCS Dup (B304826-BSD1)</b>				Prepared & Analyzed: 04/04/22						
Flashpoint	81		°F	81.0		99.8	98.8-101	1.19	5	
<b>Batch B304927 - SW-846 7.3</b>										
<b>Blank (B304927-BLK1)</b>				Prepared: 04/05/22 Analyzed: 04/06/22						
Reactive Cyanide	ND	0.40	mg/Kg							
<b>LCS (B304927-BS1)</b>				Prepared: 04/05/22 Analyzed: 04/06/22						
Reactive Cyanide	9.4	0.40	mg/Kg	10.0		94.4	81.3-111			
<b>Batch B304929 - SW-846 9030A</b>										
<b>Blank (B304929-BLK1)</b>				Prepared: 04/05/22 Analyzed: 04/07/22						
Reactive Sulfide	ND	2.0	mg/Kg							
<b>LCS (B304929-BS1)</b>				Prepared: 04/05/22 Analyzed: 04/07/22						
Reactive Sulfide	10	2.0	mg/Kg	10.0		104	71.8-120			
<b>Batch B304944 - SM21-23 2510B Modified</b>										
<b>Blank (B304944-BLK1)</b>				Prepared: 04/05/22 Analyzed: 04/06/22						
Specific conductance	ND	2.0	µmhos/cm							

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**QUALITY CONTROL**
**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B304944 - SM21-23 2510B Modified</b>										
<b>LCS (B304944-BS1)</b>					Prepared: 04/05/22 Analyzed: 04/06/22					
Specific conductance	150		µmhos/cm	137		111	90-114			
<b>Batch B305119 - % Solids</b>										
<b>Blank (B305119-BLK1)</b>					Prepared: 04/06/22 Analyzed: 04/12/22					
% Solids	0.00		% Wt							
<b>Batch B305226 - SW 846 9060A</b>										
<b>Blank (B305226-BLK1)</b>					Prepared & Analyzed: 04/08/22					
Total Organic Carbon	ND	100	mg/Kg wet							
<b>LCS (B305226-BS1)</b>					Prepared & Analyzed: 04/08/22					
Total Organic Carbon	714	100	mg/Kg wet	750		95.2	64.9-118			
<b>LCS Dup (B305226-BSD1)</b>					Prepared & Analyzed: 04/08/22					
Total Organic Carbon	686	100	mg/Kg wet	750		91.5	64.9-118	4.01	16.9	
<b>Duplicate (B305226-DUP1)</b>					<b>Source: 22D0082-01</b> Prepared & Analyzed: 04/08/22					
Total Organic Carbon	19500	170	mg/Kg dry		22700			15.3	49.1	
<b>Matrix Spike (B305226-MS1)</b>					<b>Source: 22D0082-01</b> Prepared & Analyzed: 04/08/22					
<b>Total Organic Carbon</b>	14400	170	mg/Kg dry	1260	22700	-665 *	85-115			MS-07

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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS

*SW-846 8082A*

 Lab Sample ID:           B304768-BS1                                Date(s) Analyzed:           04/06/2022                     04/06/2022          

 Instrument ID (1):           ECD11                                                Instrument ID (2):           ECD11          

GC Column (1):                                      ID:                      (mm)                      GC Column (2):                                      ID:                      (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	-0.030	0.030	0.14	
	2	0.000	-0.030	0.030	0.15	6.9
Aroclor-1260	1	0.000	-0.030	0.030	0.14	
	2	0.000	-0.030	0.030	0.16	6.5

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**IDENTIFICATION SUMMARY  
 FOR SINGLE COMPONENT ANALYTES**
**LCS Dup**
*SW-846 8082A*

Lab Sample ID:           B304768-BSD1                    Date(s) Analyzed:       04/06/2022             04/06/2022        
 Instrument ID (1):           ECD11                        Instrument ID (2):           ECD11            
 GC Column (1):                      ID:                  (mm)      GC Column (2):                      ID:                  (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	-0.030	0.030	0.11	
	2	0.000	-0.030	0.030	0.13	8.0
Aroclor-1260	1	0.000	-0.030	0.030	0.13	
	2	0.000	-0.030	0.030	0.14	7.4

**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
L-02	Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.
L-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
L-14	Compound classified by MA CAM as difficult with acceptable recoveries of 40-160%. Recovery does not meet 70-130% criteria but does meet difficult compound criteria.
MS-07	Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.
O-32	A dilution was performed as part of the standard analytical procedure.
R-05	Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.
RL-07	Elevated reporting limit based on lowest point in calibration. MA CAM reporting limit not met.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-16	Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
V-34	Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.



**CERTIFICATIONS**
**Certified Analyses included in this Report**

Analyte	Certifications
<b>MADEP EPH rev 2.1 in Soil</b>	
C9-C18 Aliphatics	CT,NC,ME,NH-P
C19-C36 Aliphatics	CT,NC,ME,NH-P
Unadjusted C11-C22 Aromatics	CT,NC,ME,NH-P
C11-C22 Aromatics	CT,NC,ME,NH-P
Acenaphthene	CT,NC,ME,NH-P
Acenaphthylene	CT,NC,ME,NH-P
Anthracene	CT,NC,ME,NH-P
Benzo(a)anthracene	CT,NC,ME,NH-P
Benzo(a)pyrene	CT,NC,ME,NH-P
Benzo(b)fluoranthene	CT,NC,ME,NH-P
Benzo(g,h,i)perylene	CT,NC,ME,NH-P
Benzo(k)fluoranthene	CT,NC,ME,NH-P
Chrysene	CT,NC,ME,NH-P
Dibenz(a,h)anthracene	CT,NC,ME,NH-P
Fluoranthene	CT,NC,ME,NH-P
Fluorene	CT,NC,ME
Indeno(1,2,3-cd)pyrene	CT,NC,ME,NH-P
2-Methylnaphthalene	CT,NC
Naphthalene	CT,NC,ME,NH-P
Phenanthrene	CT,NC,ME,NH-P
Pyrene	CT,NC,ME,NH-P
<b>MADEP EPH rev 2.1 in Water</b>	
C9-C18 Aliphatics	CT,NC,ME,NH-P
C19-C36 Aliphatics	CT,NC,ME,NH-P
Unadjusted C11-C22 Aromatics	CT,NC,ME,NH-P
C11-C22 Aromatics	CT,NC,ME,NH-P
Acenaphthene	CT,NC,ME,NH-P
Acenaphthylene	CT,NC,ME,NH-P
Anthracene	CT,NC,ME,NH-P
Benzo(a)anthracene	CT,NC,ME,NH-P
Benzo(a)pyrene	CT,NC,ME,NH-P
Benzo(b)fluoranthene	CT,NC,ME,NH-P
Benzo(g,h,i)perylene	CT,NC,ME,NH-P
Benzo(k)fluoranthene	CT,NC,ME,NH-P
Chrysene	CT,NC,ME,NH-P
Dibenz(a,h)anthracene	CT,NC,ME,NH-P
Fluoranthene	CT,NC,ME,NH-P
Fluorene	CT,NC,ME
Indeno(1,2,3-cd)pyrene	CT,NC,ME,NH-P
2-Methylnaphthalene	CT,NC
Naphthalene	CT,NC,ME,NH-P
Phenanthrene	CT,NC,ME,NH-P
Pyrene	CT,NC,ME,NH-P
<b>SW-846 1010A-B in Soil</b>	
Flashpoint	NY,NC,ME,VA
<b>SW-846 1030 in Soil</b>	

**CERTIFICATIONS**
**Certified Analyses included in this Report**

Analyte	Certifications
<b>SW-846 1030 in Soil</b>	
Ignitability	NY,NH,CT,NC,ME,VA
<b>SW-846 6010D in Soil</b>	
Antimony	CT,NH,NY,ME,VA,NC
Arsenic	CT,NH,NY,ME,VA,NC
Barium	CT,NH,NY,ME,VA,NC
Beryllium	CT,NH,NY,ME,VA,NC
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Copper	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,AIHA,ME,VA,NC
Nickel	CT,NH,NY,ME,VA,NC
Selenium	CT,NH,NY,ME,VA,NC
Silver	CT,NH,NY,ME,VA,NC
Thallium	CT,NH,NY,ME,VA,NC
Vanadium	CT,NH,NY,ME,VA,NC
Zinc	CT,NH,NY,ME,VA,NC
<b>SW-846 7471B in Soil</b>	
Mercury	CT,NH,NY,NC,ME,VA
<b>SW-846 8082A in Soil</b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1221	CT,NH,NY,ME,NC,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1232	CT,NH,NY,ME,NC,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1242	CT,NH,NY,ME,NC,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1248	CT,NH,NY,ME,NC,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1254	CT,NH,NY,ME,NC,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1260	CT,NH,NY,ME,NC,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1262	NY,NC,VA,PA
Aroclor-1262 [2C]	NY,NC,VA,PA
Aroclor-1268	NY,NC,VA,PA
Aroclor-1268 [2C]	NY,NC,VA,PA
<b>SW-846 8260D in Soil</b>	
Acetone	CT,NH,NY,ME
Acetone	CT,NH,NY,ME
Benzene	CT,NH,NY,ME
Benzene	CT,NH,NY,ME
Bromobenzene	NH,NY,ME
Bromobenzene	NH,NY,ME
Bromochloromethane	NH,NY,ME

**CERTIFICATIONS**
**Certified Analyses included in this Report**

Analyte	Certifications
<i>SW-846 8260D in Soil</i>	
Bromochloromethane	NH,NY,ME
Bromodichloromethane	CT,NH,NY,ME
Bromodichloromethane	CT,NH,NY,ME
Bromoform	CT,NH,NY,ME
Bromoform	CT,NH,NY,ME
Bromomethane	CT,NH,NY,ME
Bromomethane	CT,NH,NY,ME
2-Butanone (MEK)	CT,NH,NY,ME
2-Butanone (MEK)	CT,NH,NY,ME
n-Butylbenzene	CT,NH,NY,ME
n-Butylbenzene	CT,NH,NY,ME
sec-Butylbenzene	CT,NH,NY,ME
sec-Butylbenzene	CT,NH,NY,ME
tert-Butylbenzene	CT,NH,NY,ME
tert-Butylbenzene	CT,NH,NY,ME
Carbon Disulfide	CT,NH,NY,ME
Carbon Disulfide	CT,NH,NY,ME
Carbon Tetrachloride	CT,NH,NY,ME
Carbon Tetrachloride	CT,NH,NY,ME
Chlorobenzene	CT,NH,NY,ME
Chlorobenzene	CT,NH,NY,ME
Chlorodibromomethane	CT,NH,NY,ME
Chlorodibromomethane	CT,NH,NY,ME
Chloroethane	CT,NH,NY,ME
Chloroethane	CT,NH,NY,ME
Chloroform	CT,NH,NY,ME
Chloroform	CT,NH,NY,ME
Chloromethane	CT,NH,NY,ME
Chloromethane	CT,NH,NY,ME
2-Chlorotoluene	CT,NH,NY,ME
2-Chlorotoluene	CT,NH,NY,ME
4-Chlorotoluene	CT,NH,NY,ME
4-Chlorotoluene	CT,NH,NY,ME
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromoethane (EDB)	NY
1,2-Dibromoethane (EDB)	NY
Dibromomethane	NH,NY,ME
Dibromomethane	NH,NY,ME
1,2-Dichlorobenzene	CT,NH,NY,ME
1,2-Dichlorobenzene	CT,NH,NY,ME
1,3-Dichlorobenzene	CT,NH,NY,ME
1,3-Dichlorobenzene	CT,NH,NY,ME
1,4-Dichlorobenzene	CT,NH,NY,ME
1,4-Dichlorobenzene	CT,NH,NY,ME
Dichlorodifluoromethane (Freon 12)	NY,ME
Dichlorodifluoromethane (Freon 12)	NY,ME

**CERTIFICATIONS**
**Certified Analyses included in this Report**

Analyte	Certifications
<i>SW-846 8260D in Soil</i>	
1,1-Dichloroethane	CT,NH,NY,ME
1,1-Dichloroethane	CT,NH,NY,ME
1,2-Dichloroethane	CT,NH,NY,ME
1,2-Dichloroethane	CT,NH,NY,ME
1,1-Dichloroethylene	CT,NH,NY,ME
1,1-Dichloroethylene	CT,NH,NY,ME
cis-1,2-Dichloroethylene	CT,NH,NY,ME
cis-1,2-Dichloroethylene	CT,NH,NY,ME
trans-1,2-Dichloroethylene	CT,NH,NY,ME
trans-1,2-Dichloroethylene	CT,NH,NY,ME
1,2-Dichloropropane	CT,NH,NY,ME
1,2-Dichloropropane	CT,NH,NY,ME
1,3-Dichloropropane	NH,NY,ME
1,3-Dichloropropane	NH,NY,ME
2,2-Dichloropropane	NH,NY,ME
2,2-Dichloropropane	NH,NY,ME
1,1-Dichloropropene	NH,NY,ME
1,1-Dichloropropene	NH,NY,ME
cis-1,3-Dichloropropene	CT,NH,NY,ME
cis-1,3-Dichloropropene	CT,NH,NY,ME
trans-1,3-Dichloropropene	CT,NH,NY,ME
trans-1,3-Dichloropropene	CT,NH,NY,ME
1,4-Dioxane	NY
Ethylbenzene	CT,NH,NY,ME
Ethylbenzene	CT,NH,NY,ME
Hexachlorobutadiene	NH,NY,ME
Hexachlorobutadiene	NH,NY,ME
2-Hexanone (MBK)	CT,NH,NY,ME
2-Hexanone (MBK)	CT,NH,NY,ME
Isopropylbenzene (Cumene)	CT,NH,NY,ME
Isopropylbenzene (Cumene)	CT,NH,NY,ME
p-Isopropyltoluene (p-Cymene)	NH,NY
p-Isopropyltoluene (p-Cymene)	NH,NY
Methyl tert-Butyl Ether (MTBE)	NH,NY
Methyl tert-Butyl Ether (MTBE)	NY
Methylene Chloride	CT,NH,NY,ME
Methylene Chloride	CT,NH,NY,ME
4-Methyl-2-pentanone (MIBK)	CT,NH,NY
4-Methyl-2-pentanone (MIBK)	CT,NH,NY
Naphthalene	NH,NY,ME
Naphthalene	NH,NY,ME
n-Propylbenzene	NH,NY
n-Propylbenzene	NH,NY
Styrene	CT,NH,NY,ME
Styrene	CT,NH,NY,ME
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME

**CERTIFICATIONS**
**Certified Analyses included in this Report**

Analyte	Certifications
<b><i>SW-846 8260D in Soil</i></b>	
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME
Tetrachloroethylene	CT,NH,NY,ME
Tetrachloroethylene	CT,NH,NY,ME
Toluene	CT,NH,NY,ME
Toluene	CT,NH,NY,ME
1,2,3-Trichlorobenzene	NY
1,2,3-Trichlorobenzene	ME
1,2,4-Trichlorobenzene	NH,NY,ME
1,2,4-Trichlorobenzene	NH,NY,ME
1,1,1-Trichloroethane	CT,NH,NY,ME
1,1,1-Trichloroethane	CT,NH,NY,ME
1,1,2-Trichloroethane	CT,NH,NY,ME
1,1,2-Trichloroethane	CT,NH,NY,ME
Trichloroethylene	CT,NH,NY,ME
Trichloroethylene	CT,NH,NY,ME
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME
1,2,3-Trichloropropane	NH,NY,ME
1,2,3-Trichloropropane	NH,NY,ME
1,2,4-Trimethylbenzene	CT,NH,NY,ME
1,2,4-Trimethylbenzene	CT,NH,NY,ME
1,3,5-Trimethylbenzene	CT,NH,NY,ME
1,3,5-Trimethylbenzene	CT,NH,NY,ME
Vinyl Chloride	CT,NH,NY,ME
Vinyl Chloride	CT,NH,NY,ME
m+p Xylene	CT,NH,NY,ME
m+p Xylene	CT,NH,NY,ME
o-Xylene	CT,NH,NY,ME
o-Xylene	CT,NH,NY,ME
<b><i>SW-846 8270E in Soil</i></b>	
Acenaphthene	CT,NY,NH
Acenaphthylene	CT,NY,NH
Acetophenone	NY,NH
Aniline	NY,NH
Anthracene	CT,NY,NH
Benzo(a)anthracene	CT,NY,NH
Benzo(a)pyrene	CT,NY,NH
Benzo(b)fluoranthene	CT,NY,NH
Benzo(g,h,i)perylene	CT,NY,NH
Benzo(k)fluoranthene	CT,NY,NH
Bis(2-chloroethoxy)methane	CT,NY,NH
Bis(2-chloroethyl)ether	CT,NY,NH
Bis(2-chloroisopropyl)ether	CT,NY,NH
Bis(2-Ethylhexyl)phthalate	CT,NY,NH
4-Bromophenylphenylether	CT,NY,NH

**CERTIFICATIONS**
**Certified Analyses included in this Report**

Analyte	Certifications
<i>SW-846 8270E in Soil</i>	
Butylbenzylphthalate	CT,NY,NH
4-Chloroaniline	CT,NY,NH
2-Chloronaphthalene	CT,NY,NH
2-Chlorophenol	CT,NY,NH
Chrysene	CT,NY,NH
Dibenz(a,h)anthracene	CT,NY,NH
Dibenzofuran	CT,NY,NH
Di-n-butylphthalate	CT,NY,NH
1,2-Dichlorobenzene	NY,NH
1,3-Dichlorobenzene	NY,NH
1,4-Dichlorobenzene	NY,NH
3,3-Dichlorobenzidine	CT,NY,NH
2,4-Dichlorophenol	CT,NY,NH
Diethylphthalate	CT,NY,NH
2,4-Dimethylphenol	CT,NY,NH
Dimethylphthalate	CT,NY,NH
2,4-Dinitrophenol	CT,NY,NH
2,4-Dinitrotoluene	CT,NY,NH
2,6-Dinitrotoluene	CT,NY,NH
Di-n-octylphthalate	CT,NY,NH
1,2-Diphenylhydrazine/Azobenzene	NY,NH
Fluoranthene	CT,NY,NH
Fluorene	NY,NH
Hexachlorobenzene	CT,NY,NH
Hexachlorobutadiene	CT,NY,NH
Hexachloroethane	CT,NY,NH
Indeno(1,2,3-cd)pyrene	CT,NY,NH
Isophorone	CT,NY,NH
2-Methylnaphthalene	CT,NY,NH
2-Methylphenol	CT,NY,NH
3/4-Methylphenol	CT,NY,NH
Naphthalene	CT,NY,NH
Nitrobenzene	CT,NY,NH
2-Nitrophenol	CT,NY,NH
4-Nitrophenol	CT,NY,NH
Pentachlorophenol	CT,NY,NH
Phenanthrene	CT,NY,NH
Phenol	CT,NY,NH
Pyrene	CT,NY,NH
1,2,4-Trichlorobenzene	CT,NY,NH
2,4,5-Trichlorophenol	CT,NY,NH
2,4,6-Trichlorophenol	CT,NY,NH

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Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2024
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
RI	Rhode Island Department of Health	LAO00373	12/30/2022
NC	North Carolina Div. of Water Quality	652	12/31/2022
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2022
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022





**Pace Analytical**  
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 Fax: 413-525-6405  
 Access COC's and Support Requests

http://www.pacelabs.com

39 Spruce Street  
 East Longmeadow, MA 01028

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 Page 2 of 2

Project Location: Project Number: Project Manager: Pace Quote Name/Number: Invoice Recipient: Sampled By:		7-Day PFAS 10-Day (std) <input type="checkbox"/> 10-Day <input type="checkbox"/> Due Date: 1-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> 4-Day <input type="checkbox"/> Format: PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> Other: CLP Like Data Pkg Required: <input type="checkbox"/> Email To: Fax To #:		ANALYSIS REQUESTED		2 Preservation Code Courier Use Only Total Number Of: VIALS 34 GLASS PLASTIC BACTERIA ENCORE Glassware in the fridge? Y/N Glassware in freezer? Y/N Prepackaged Cooler? Y/N *Pace Analytical is not responsible for missing samples from prepacked coolers							
Client Sample ID / Description 1 SEP NORTH 2 SEP SOUTH		Beginning Date/Time 0945 1030		Matrix Code 0 0		CONC CODE 34 34		VIALS 34 34		PLASTIC BACTERIA ENCORE		1 Matrix Codes: GW = Ground Water WW = Waste Water DW = Drinking Water A = Air S = Soil SL = Sludge SOL = Solid O = Other (please define) 2 Preservation Codes: I = Iced H = HCL M = Methanol N = Nitric Acid S = Sulfuric Acid B = Sodium Bisulfate X = Sodium Hydroxide T = Sodium Thiosulfate O = Other (please define)	
Relinquished by: (signature) Received by: (signature) Relinquished by: (signature) Received by: (signature) Relinquished by: (signature) Received by: (signature)		Date/Time: 4/12/20 4/12/20 4/12/20 4/12/20 4/12/20		Date/Time: 1520 1745 1705		Date/Time: 1520 1745 1705		Date/Time: 1520 1745 1705		Date/Time: 1520 1745 1705		Date/Time: 1520 1745 1705	
Client Comments: Room 1 Solids Room with amber		MA MCP Required <input type="checkbox"/> MA Certification Form Required <input type="checkbox"/> CT RCP Required <input type="checkbox"/> RCP Certification Form Required <input type="checkbox"/> MA State DW Required <input type="checkbox"/> PWSID #		Special Requirements: WRTA <input type="checkbox"/> MWRA <input type="checkbox"/> School <input type="checkbox"/> MBTA <input type="checkbox"/> Municipality <input type="checkbox"/> 21 J <input type="checkbox"/> Brownfield <input type="checkbox"/> Government <input type="checkbox"/> Federal <input type="checkbox"/> City <input type="checkbox"/>		Other: Chromatogram <input type="checkbox"/> AIHA-LAP, LLC <input type="checkbox"/>		Please use the following codes to indicate possible sample concentration within the Conc Code column above: H - High, M - Medium, L - Low, C - Clean, U - Unknown		NEHA-C and AIHA-LAP - LLC Accredited		Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.	

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples \_\_\_\_\_



**con-test**<sup>®</sup>  
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

**Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False**

Client W&S  
 Received By [Signature] Date 4/1/22 Time 1245  
 How were the samples received? In Cooler T No Cooler \_\_\_\_\_ On Ice T No Ice \_\_\_\_\_  
 Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ Melted Ice \_\_\_\_\_  
 Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp -2.0  
 By Blak # \_\_\_\_\_ Actual Temp - \_\_\_\_\_  
 Was Custody Seal Intact? na Were Samples Tampered with? na  
 Was COC Relinquished? T Does Chain Agree With Samples? T  
 Are there broken/leaking/loose caps on any samples? F  
 Is COC in ink/ Legible? T Were samples received within holding time? T  
 Did COC include all pertinent information? Client T Analysis T Sampler Name T  
 Project T ID's T Collection Dates/Times T  
 Are Sample labels filled out and legible? T  
 Are there Lab to Filters? F Who was notified? \_\_\_\_\_  
 Are there Rushes? F Who was notified? \_\_\_\_\_  
 Are there Short Holds? F Who was notified? \_\_\_\_\_  
 Is there enough Volume? T  
 Is there Headspace where applicable? na MS/MSD? F  
 Proper Media/Containers Used? T Is splitting samples required? F  
 Were trip blanks received? F On COC? F  
 Do all samples have the proper pH? \_\_\_\_\_ Acid na Base na

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	8
Meoh-	2	250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-	4	Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

**Unused Media**

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

## MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test, a Pace Analytical Laboratory	Project #: 22D0082
Project Location: Millbury, MA	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]  
22D0082-01 thru 22D0082-02

Matrices: Soil

**CAM Protocol (check all that below)**

8260 VOC CAM II A (X)	7470/7471 Hg CAM IIIB (X)	MassDEP VPH (GC/PID/FID) CAM IV A ( )	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )
8270 SVOC CAM II B (X)	7010 Metals CAM III C ( )	MassDEP VPH (GC/MS) CAM IV C ( )	8081 Pesticides CAM V B ( )	7196 Hex Cr CAM VI B ( )	MassDEP APH CAM IX A ( )
6010 Metals CAM III A (X)	6020 Metals CAM III D ( )	MassDEP EPH CAM IV B (X)	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )

**Affirmative response to Questions A through F is required for "Presumptive Certainty" status**

<b>A</b>	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E a</b>	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E b</b>	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

**A response to questions G, H and I below is required for "Presumptive Certainty" status**

<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>
----------	---	--

**Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

<sup>1</sup>All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

**I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.**

Signature: Lisa Worthington Position: Technical Representative  
Printed Name: Lisa A. Worthington Date: 04/08/22

April 13, 2022

Nick Ames  
Weston & Sampson Engineers MA  
55 Walkers Brook Drive  
Reading, MA 01867

Project Location: Millbury, MA  
Client Job Number:  
Project Number: 2180493  
Laboratory Work Order Number: 22D0086

Enclosed are results of analyses for samples as received by the laboratory on April 1, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kerry K. McGee  
Project Manager

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Weston & Sampson Engineers MA  
55 Walkers Brook Drive  
Reading, MA 01867  
ATTN: Nick Ames

REPORT DATE: 4/13/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2180493

**ANALYTICAL SUMMARY**

WORK ORDER NUMBER: 22D0086

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Millbury, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SED-NORTH	22D0086-01	Sediment		SM 2540G SW-846-8270M	
SED-SOUTH	22D0086-02	Sediment		SM 2540G SW-846-8270M	

**CASE NARRATIVE SUMMARY**

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

**SW-846-8270M**

**Qualifications:**

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**RL-12**

Elevated reporting limit due to matrix interference.

**Analyte & Samples(s) Qualified:**

22D0086-02[SED-SOUTH]

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington  
Technical Representative

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Millbury, MA

Sample Description:

Work Order: 22D0086

Date Received: 4/1/2022

Field Sample #: SED-NORTH

Sampled: 4/1/2022 09:45

Sample ID: 22D0086-01

Sample Matrix: Sediment

**PCB Congeners in Soil by GC/MS**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C12-BZ#8	ND	0.056	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C13-BZ#18	ND	0.056	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C13-BZ#28	ND	0.056	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C14-BZ#52	0.34	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C14-BZ#44	0.24	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C14-BZ#66	0.22	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C15-BZ#90/#101	0.83	0.22	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C15-BZ#118	0.44	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C16-BZ#153	3.1	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C15-BZ#105	0.13	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C16-BZ#138	1.6	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C17-BZ#187	2.4	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C16-BZ#128/#162	ND	0.22	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C17-BZ#180	5.4	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C17-BZ#170	1.5	0.11	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C18-BZ#195	0.46	0.17	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C19-BZ#206	0.95	0.17	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
C110-BZ#209	1.3	0.17	µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
Summation of Reportable NOAA 18 Congeners	18		µg/kg dry	1		SW-846-8270M	4/6/22	4/12/22 6:28	IMR
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Tetrachloro-m-xylene	110	40-140	4/12/22 6:28						



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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0086

Date Received: 4/1/2022

**Field Sample #: SED-NORTH**

Sampled: 4/1/2022 09:45

**Sample ID: 22D0086-01**

Sample Matrix: Sediment

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	59.4		% Wt	1		SM 2540G	4/6/22	4/7/22 9:10	AMM2

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0086

Date Received: 4/1/2022

Field Sample #: SED-SOUTH

Sampled: 4/1/2022 10:30

Sample ID: 22D0086-02

Sample Matrix: Sediment

Sample Flags: RL-12

**PCB Congeners in Soil by GC/MS**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C12-BZ#8	ND	0.21	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C13-BZ#18	ND	0.21	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C13-BZ#28	ND	0.21	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C14-BZ#52	ND	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C14-BZ#44	ND	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C14-BZ#66	ND	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C15-BZ#90/#101	ND	0.82	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C15-BZ#118	0.53	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C16-BZ#153	1.6	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C15-BZ#105	ND	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C16-BZ#138	0.94	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C17-BZ#187	1.0	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C16-BZ#128/#162	ND	0.82	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C17-BZ#180	2.5	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C17-BZ#170	0.73	0.41	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C18-BZ#195	ND	0.62	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C19-BZ#206	ND	0.62	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
C110-BZ#209	ND	0.62	µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
Summation of Reportable NOAA 18 Congeners	7.3		µg/kg dry	5		SW-846-8270M	4/6/22	4/11/22 20:27	IMR
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Tetrachloro-m-xylene	103	40-140	4/11/22 20:27						

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Project Location: Millbury, MA

Sample Description:

Work Order: 22D0086

Date Received: 4/1/2022

**Field Sample #: SED-SOUTH**

Sampled: 4/1/2022 10:30

**Sample ID: 22D0086-02**

Sample Matrix: Sediment

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	81.1		% Wt	1		SM 2540G	4/6/22	4/7/22 9:10	AMM2

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### Sample Extraction Data

**Prep Method: % Solids    Analytical Method: SM 2540G**

Lab Number [Field ID]	Batch	Date
22D0086-01 [SED-NORTH]	B305119	04/06/22
22D0086-02 [SED-SOUTH]	B305119	04/06/22

**Prep Method: SW-846 3540C    Analytical Method: SW-846-8270M**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22D0086-01 [SED-NORTH]	B305010	30.0	1.00	04/06/22
22D0086-02 [SED-SOUTH]	B305010	30.0	1.00	04/06/22

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**QUALITY CONTROL**
**PCB Congeners in Soil by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B305010 - SW-846 3540C</b>										
<b>Blank (B305010-BLK1)</b>										
Prepared: 04/06/22 Analyzed: 04/11/22										
C12-BZ#8	ND	0.033	µg/kg wet							
C13-BZ#18	ND	0.033	µg/kg wet							
C13-BZ#28	ND	0.033	µg/kg wet							
C14-BZ#52	ND	0.067	µg/kg wet							
C14-BZ#44	ND	0.067	µg/kg wet							
C14-BZ#66	ND	0.067	µg/kg wet							
C15-BZ#90/#101	ND	0.13	µg/kg wet							
C15-BZ#118	ND	0.067	µg/kg wet							
C16-BZ#153	ND	0.067	µg/kg wet							
C15-BZ#105	ND	0.067	µg/kg wet							
C16-BZ#138	ND	0.067	µg/kg wet							
C17-BZ#187	ND	0.067	µg/kg wet							
C16-BZ#128/#162	ND	0.13	µg/kg wet							
C17-BZ#180	ND	0.067	µg/kg wet							
C17-BZ#170	ND	0.067	µg/kg wet							
C18-BZ#195	ND	0.10	µg/kg wet							
C19-BZ#206	ND	0.10	µg/kg wet							
C110-BZ#209	ND	0.10	µg/kg wet							
Summation of Reportable NOAA 18 Congeners	0.0		µg/kg wet							
Surrogate: Tetrachloro-m-xylene	1.95		µg/kg wet	1.67		117	40-140			
<b>LCS (B305010-BS1)</b>										
Prepared: 04/06/22 Analyzed: 04/11/22										
C12-BZ#8	1.19	0.033	µg/kg wet	1.67		71.3	40-140			
C13-BZ#18	1.24	0.033	µg/kg wet	1.67		74.4	40-140			
C13-BZ#28	1.13	0.033	µg/kg wet	1.67		68.0	40-140			
C14-BZ#52	1.13	0.067	µg/kg wet	1.67		68.1	40-140			
C14-BZ#44	1.24	0.067	µg/kg wet	1.67		74.5	40-140			
C14-BZ#66	1.26	0.067	µg/kg wet	1.67		75.5	40-140			
C15-BZ#90/#101	1.09	0.13	µg/kg wet	1.67		65.6	40-140			
C15-BZ#118	1.18	0.067	µg/kg wet	1.67		70.9	40-140			
C16-BZ#153	1.12	0.067	µg/kg wet	1.67		67.2	40-140			
C15-BZ#105	0.996	0.067	µg/kg wet	1.67		59.8	40-140			
C16-BZ#138	1.10	0.067	µg/kg wet	1.67		65.7	40-140			
C17-BZ#187	0.991	0.067	µg/kg wet	1.67		59.4	40-140			
C16-BZ#128/#162	0.855	0.13	µg/kg wet	1.67		51.3	40-140			
C17-BZ#180	1.17	0.067	µg/kg wet	1.67		70.4	40-140			
C17-BZ#170	1.05	0.067	µg/kg wet	1.67		62.8	40-140			
C18-BZ#195	0.892	0.10	µg/kg wet	1.67		53.5	40-140			
C19-BZ#206	1.03	0.10	µg/kg wet	1.67		62.1	40-140			
C110-BZ#209	1.02	0.10	µg/kg wet	1.67		61.2	40-140			
Surrogate: Tetrachloro-m-xylene	1.82		µg/kg wet	1.67		109	40-140			
<b>LCS Dup (B305010-BSD1)</b>										
Prepared: 04/06/22 Analyzed: 04/11/22										
C12-BZ#8	1.21	0.033	µg/kg wet	1.67		72.7	40-140	1.92	30	
C13-BZ#18	1.29	0.033	µg/kg wet	1.67		77.3	40-140	3.90	30	
C13-BZ#28	1.15	0.033	µg/kg wet	1.67		69.0	40-140	1.49	30	
C14-BZ#52	1.21	0.067	µg/kg wet	1.67		72.5	40-140	6.28	30	
C14-BZ#44	1.33	0.067	µg/kg wet	1.67		80.0	40-140	7.09	30	
C14-BZ#66	1.34	0.067	µg/kg wet	1.67		80.3	40-140	6.14	30	
C15-BZ#90/#101	1.14	0.13	µg/kg wet	1.67		68.4	40-140	4.19	30	
C15-BZ#118	1.32	0.067	µg/kg wet	1.67		78.9	40-140	10.8	30	
C16-BZ#153	1.21	0.067	µg/kg wet	1.67		72.3	40-140	7.29	30	

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**QUALITY CONTROL**
**PCB Congeners in Soil by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B305010 - SW-846 3540C**
**LCS Dup (B305010-BSD1)**

Prepared: 04/06/22 Analyzed: 04/11/22

Cl5-BZ#105	1.06	0.067	µg/kg wet	1.67		63.6	40-140	6.18	30	
Cl6-BZ#138	1.17	0.067	µg/kg wet	1.67		70.4	40-140	6.83	30	
Cl7-BZ#187	1.05	0.067	µg/kg wet	1.67		62.8	40-140	5.50	30	
Cl6-BZ#128/#162	0.926	0.13	µg/kg wet	1.67		55.6	40-140	8.03	30	
Cl7-BZ#180	1.26	0.067	µg/kg wet	1.67		75.6	40-140	7.20	30	
Cl7-BZ#170	1.09	0.067	µg/kg wet	1.67		65.2	40-140	3.68	30	
Cl8-BZ#195	0.900	0.10	µg/kg wet	1.67		54.0	40-140	0.960	30	
Cl9-BZ#206	1.15	0.10	µg/kg wet	1.67		69.1	40-140	10.8	30	
Cl10-BZ#209	1.19	0.10	µg/kg wet	1.67		71.5	40-140	15.5	30	
Surrogate: Tetrachloro-m-xylene	1.66		µg/kg wet	1.67		99.5	40-140			

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**QUALITY CONTROL**
**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

**Batch B305119 - % Solids**
**Blank (B305119-BLK1)**

Prepared: 04/06/22 Analyzed: 04/12/22

% Solids	0.00		% Wt							
----------	------	--	------	--	--	--	--	--	--	--

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
RL-12	Elevated reporting limit due to matrix interference.



**CERTIFICATIONS**

**Certified Analyses included in this Report**

Analyte	Certifications
<b>No certified Analyses included in this Report</b>	

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2024
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
RI	Rhode Island Department of Health	LAO00373	12/30/2022
NC	North Carolina Div. of Water Quality	652	12/31/2022
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2022
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022

http://www.pacelabs.com

Doc # 381 Rev 5\_07/13/2021

39 Spruce Street  
East Longmeadow, MA 01028

CHAIN OF CUSTODY RECORD

Phone: 413-525-2332  
Fax: 413-525-6405

Access CDC's and Support Requests

Customer Name: **Walter F Sampson**

Address: **55 Walkers Brook Dr**

Phone: **508-665-7941**

Project Location: **Worcester State Park**

Project Number: **MA0001**

Project Manager: **Nick Amos**

Project Quote Name/Number: **COB PWS**

Invoice Recipient: **Nick Amos**

Sampled By: **Walter Sampson**

Client Sample ID / Description: **SED-NORTH**

Beginning Date/Time: **0945**

Ending Date/Time: **4-1**

Matrix Conc Code: **0**

COMP/GRAB: **COMB**

MA MCP Required:

MCP Certification Form Required:

CT RCP Required:

RCP Certification Form Required:

MA State DW required:

PWSID #

Project Entity: **Government**

Federal:

City: **Brownfield**

Municipality: **21 J**

MWRA School MBTA:

WRTA:

Other:

Chromatogram:

AIHA-LAP, LLC:

Lab Comments:

Relinquished by: (signature) **Walter Sampson**

Date/Time: **4-1 1230**

Received by: (signature) **Walter Sampson**

Date/Time: **4/12 1520**

Relinquished by: (signature) **Walter Sampson**

Date/Time: **4/12 1745**

Received by: (signature) **Walter Sampson**

Date/Time: **4/12 1745**

Relinquished by: (signature) **Walter Sampson**

Date/Time: **4/12 1745**

Received by: (signature) **Walter Sampson**

Date/Time: **4/12 1745**

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Date/Time: **4/12 1745**

Relinquished by: (signature) **Walter Sampson**

Date/Time: **4/12 1745**

Received by: (signature) **Walter Sampson**

Date/Time: **4/12 1745**

20 D0080

Page 1 of 2

ANALYSIS REQUESTED

ANALYSIS REQUESTED	Field Filtered Lab to Filter	Orthophosphate Samples	Field Filtered Lab to Filter	SOXHLET	NON SOXHLET	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	
MA MCP Required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	4				
MCP Certification Form Required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	4				
CT RCP Required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
RCP Certification Form Required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
MA State DW required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
PWSID #											
Project Entity	Government	Federal	City	Municipality	21 J	Brownfield	MWRA School MBTA	WRTA	Other	Chromatogram	AIHA-LAP, LLC

Matrix Codes:

1 Matrix Codes:  
 GW = Ground Water  
 WW = Waste Water  
 DW = Drinking Water  
 A = Air  
 S = Soil  
 SL = Sludge  
 SOL = Solid  
 O = Other (please define)

2 Preservation Codes:  
 I = Iced  
 H = HCL  
 M = Methanol  
 N = Nitric Acid  
 S = Sulfuric Acid  
 B = Sodium Bisulfate  
 X = Sodium Hydroxide  
 T = Sodium Thiosulfate  
 O = Other (please define)

\*Pace Analytical is not responsible for missing samples from prepacked coolers

Please use the following codes to indicate possible sample concentration within the Conc Code column above:  
 H - High; M - Medium; L - Low; C - Clean; U - Unknown

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. Chain of Custody is a legal document that must be complete and accurate and is used to determine who analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Analytical values your partnership on each project and will try to assist with missing information, but not be held accountable.

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples \_\_\_\_\_



**con-test**  
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

**Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False**

Client W&S  
 Received By [Signature] Date 4/11/22 Time 1745  
 How were the samples received? In Cooler T No Cooler \_\_\_\_\_ On Ice T No Ice \_\_\_\_\_  
 Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ Melted Ice \_\_\_\_\_  
 Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp -2.0  
 By Blank # \_\_\_\_\_ Actual Temp - \_\_\_\_\_  
 Was Custody Seal Intact? na Were Samples Tampered with? na  
 Was COC Relinquished? T Does Chain Agree With Samples? T  
 Are there broken/leaking/loose caps on any samples? F  
 Is COC in ink/ Legible? T Were samples received within holding time? T  
 Did COC include all pertinent information? Client T Analysis T Sampler Name T  
 Project T ID's T Collection Dates/Times T  
 Are Sample labels filled out and legible? F  
 Are there Lab to Filters? F Who was notified? \_\_\_\_\_  
 Are there Rushes? F Who was notified? \_\_\_\_\_  
 Are there Short Holds? F Who was notified? Fabida  
 Is there enough Volume? T  
 Is there Headspace where applicable? na MS/MSD? F  
 Proper Media/Containers Used? T Is splitting samples required? F  
 Were trip blanks received? F On COC? F  
 Do all samples have the proper pH? Acid na Base na

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-	<u>2</u>	250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-	<u>4</u>	Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

**Unused Media**

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

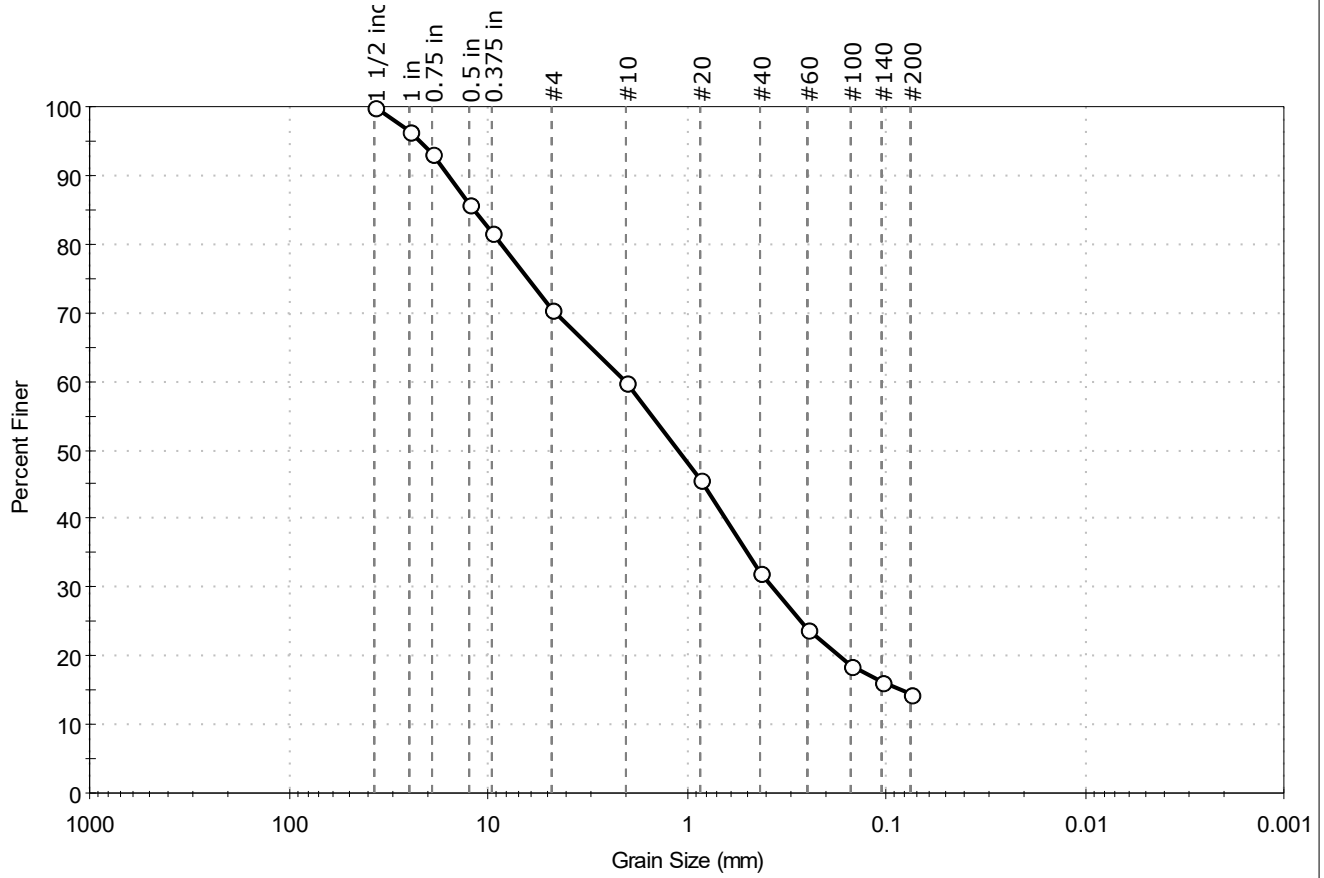
## Attachment 2

### Grain Size Analysis Results



Client:	Weston & Sampson Engineers		
Project:	Millbury - Wheelock		
Location:	Millbury, MA	Project No:	GTX-315277
Boring ID:	---	Sample Type:	bucket
Sample ID:	SED-NORTH	Test Date:	04/14/22
Depth :	---	Checked By:	bfs
		Test Id:	663738
Test Comment:	---		
Visual Description:	Moist, dark brownish gray silty sand with gravel		
Sample Comment:	---		

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	29.6	56.1	14.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 1/2 inch	37.50	100		
1 in	25.00	96		
0.75 in	19.00	93		
0.5 in	12.50	86		
0.375 in	9.50	82		
#4	4.75	70		
#10	2.00	60		
#20	0.85	46		
#40	0.42	32		
#60	0.25	24		
#100	0.15	19		
#140	0.11	16		
#200	0.075	14		

<u>Coefficients</u>	
D <sub>85</sub> = 11.7609 mm	D <sub>30</sub> = 0.3689 mm
D <sub>60</sub> = 1.9983 mm	D <sub>15</sub> = 0.0847 mm
D <sub>50</sub> = 1.1030 mm	D <sub>10</sub> = N/A
C <sub>u</sub> = N/A	C <sub>c</sub> = N/A

<u>Classification</u>	
ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (0))

**Sample/Test Description**  
 Sand/Gravel Particle Shape : ANGULAR  
 Sand/Gravel Hardness : HARD

**ATTACHMENT B**

**TO**

**SPECIAL PROVISIONS**

**MILLBURY, MA**

Wheelock Avenue over Dorothy Pond  
Bridge No. M-22-022

**Wheelock Avenue Bridge Replacement  
Millbury, Massachusetts  
Weston & Sampson Project No. 2180493**

August 16, 2024  
(Supersedes December 26, 2018)

Town of Millbury  
c/o Mr. Rafic Khalil, PE  
Weston & Sampson Engineers, Inc.  
100 International Drive, Suite 152  
Portsmouth, NH 03801

**RE: Geotechnical Engineering Report  
Wheelock Avenue Bridge Replacement  
Millbury, Massachusetts**

## **INTRODUCTION**

Weston & Sampson Engineers, Inc. (Weston & Sampson) is pleased to present our geotechnical engineering report for the proposed Wheelock Avenue bridge replacement at the crossing of Wheelock Avenue over Broad Meadow Brook in Millbury, Massachusetts. This report provides geotechnical recommendations based on our project understanding and interpretation of the subsurface conditions encountered in our explorations. Our recommendations may require adjustment based on the actual conditions encountered during construction. Additionally, our recommendations are limited to the proposed site improvements described herein. Please refer to the Limitations section of this report and the *Important Information about This Geotechnical-Engineering Report* document included in **Attachment C** for additional information.

## **EXISTING CONDITIONS**

The existing two-lane Wheelock Avenue bridge (the Site) carries Wheelock Avenue over Broad Meadow Brook where it enters the south portion of Dorothy Pond from the north. The bridge site is located in a generally suburban, residential area of Millbury, Massachusetts. A smaller, northern extension of Dorothy Pond exists to the northwest of the bridge. Rindge Avenue intersects with Wheelock Avenue approximately 30 ft. north of the bridge.

The existing substructure of the bridge is mortared fieldstone construction along the north side of both abutments. The bridge appears to have been widened to the south at some point after its original construction as the south side of both abutments is constructed of reinforced concrete with adjacent angled reinforced concrete training walls directing flow beneath the bridge. The superstructure of the bridge consists of steel beams spanning an approximately 10 ft. wide channel and reinforced concrete decking. The steel beams are heavily corroded in areas with

significant section loss and holes present. The fieldstone abutments are displaying mortar loss along the north side. The concrete decking has been paved over with asphalt concrete pavement for the roadway. No approach slab is apparent at the existing bridge. Metal guardrails with timber supports line both sides of the roadway at the bridge. Existing conditions at the Site are shown in *Figure 1*.

The Site is generally flat in the vicinity of the bridge with surface elevations at approximately El. 398. Grades gently increase to the east and west of the bridge. Road grades at the bridge are approximately 4 to 5 ft. above the water level in Dorothy Pond. Elevations described herein and shown in *Figure 1* reference the North American Vertical Datum of 1988 (NAVD88).

## PROPOSED CONDITIONS

Based on discussions with the Weston & Sampson project team, we understand that proposed replacement of the Wheelock Avenue bridge will consist of complete removal of the existing bridge substructure and superstructure and replacement with a precast concrete box culvert structure. The clear span of the culvert interior will be approximately 10 feet wide by approximately 10 feet high. The bottom of the culvert will be filled with natural stream bed material measuring approximately 3 to 4 feet thick.

Wing walls will be constructed at either end of the culvert to divert flow and retain grades. Concrete cutoff walls will be constructed beneath the upstream and downstream ends of the culvert. Concrete approach slabs are proposed along both roadway approaches.

## SUBSURFACE CONDITIONS

### Geologic Setting

Based on information available from the Massachusetts Bureau of Geographic Information (MassGIS), mapped surficial geology conditions at the site include sand and gravel deposits overlying till and bedrock at depths up to 50 ft. The nearest mapped bedrock at the site is approximately 0.3 miles northeast at I-90 and Wheelock Avenue. Bedrock is indicated as Sillimanite schist and gneiss of the Nashoba Formation. No bedrock outcrops were observed at the site.

### Subsurface Explorations

Subsurface conditions were explored by completing two borings (B-1 and B-2) and four probes (P-1, P-1A, P-2, and P-3) on September 24, 2018. Approximate exploration locations are shown in *Figure 1*. The borings were advanced to a depth of 32 ft. and the probes were advanced to depths ranging from 5.8 ft. to 15 ft. by Technical Drilling Services, Inc. of Sterling, MA using a truck-mounted drill rig and hollow stem auger drilling methods. Standard penetration tests (SPT) were conducted at 2 ft. to 5 ft. intervals in the borings by driving a 24-inch long by 1-3/8-inch inside diameter (2-inch outside diameter) split spoon sampler with blows from a 140 lb. automatic hammer falling 30 inches per blow. The blow counts for the middle 12 inches of sampler penetration are combined and designated as the SPT blow count, which is correlated to soil consistencies and engineering soil properties. No SPT sampling was conducted in the probes.



The purpose of the probes was to estimate the extent and dimensions of any existing concrete abutments for possible reuse in supporting the new bridge.

Weston & Sampson geotechnical engineering staff observed the subsurface investigations and prepared logs for each exploration. Subsurface conditions encountered in the explorations are described in the following sections and in the boring and probe logs included in **Attachment A**.

### **Subsurface Conditions**

**General** - Subsurface conditions encountered in the borings were generally consistent with the mapped surficial geology and site history. Subsurface conditions at the site generally consisted of 8 to 10 inches of asphalt concrete (AC) pavement overlying fill and organic silt over native gravel to the depths explored.

**Fill** – Medium dense to dense FILL was encountered in both borings to a depth of approximately 10 ft. The fill typically consisted of brown, fine to coarse SAND with varying amounts of gravel (some to gravelly) and silt (trace to little) or fine to coarse GRAVEL with varying amounts of sand (some to sandy) and silt (trace to little). Auger grinding was observed within the fill from approximately 4 ft. to 5 ft. in B-1, potentially indicating the presence of cobbles, boulders, or debris within the fill.

**Organic Silt** - A 2 ft. thick stratum of organic SILT was encountered beneath the fill in B-1 only. The organic SILT consisted of stiff, dark brown, organic SILT with little sand.

**Gravel** – Medium dense to very dense gravel was encountered beneath the organic silt in B-1 and beneath the fill in B-2. The gravel was encountered at a depth of 12 ft. in B-1 and 10 ft. in B-2 and extended to the depth explored in both borings. The gravel consisted of gray, fine to coarse GRAVEL with varying amounts of sand (trace to sandy) and silt (trace to little) or fine to coarse gravelly SAND with little silt. Auger grinding was observed in the gravel stratum at 26 ft. and 30 ft. in B-1 and at 19 ft. in B-2. The observed auger grinding may indicate the presence of boulders and/or cobbles in the gravel stratum.

**Groundwater** – Groundwater was observed below 4.8 ft. in B-1 and below 5.5 ft. in B-2 based on wet samples and measurements in the borehole after drilling. Observed groundwater elevations in the borings were approximately equal to the water level in Dorothy Pond.

Groundwater levels should be expected to fluctuate with season, variations in precipitation, construction in the area, and other factors. Perched groundwater conditions could exist close to the ground surface, especially during and after extended periods of wet weather.

**Probes** - P-1 and P-3 did not encounter existing abutments to the depth explored (9 ft.). P-1A did not encounter the top of an abutment to the depth explored (15 ft.) however, P-1A did encounter the possible backside of an existing abutment between approximately 5 ft. and 10 ft. as indicated by auger grinding and horizontal displacement (loss of verticality) during drilling. P-2 encountered a 10-inch thick stone block from approximately 5 ft. to 5.8 ft. A sample of the block collected from

the auger plug was observed to be flat along the top and bottom sides possibly indicating the stone was placed as part of an abutment or other structure.

## GEOTECHNICAL DESIGN RECOMMENDATIONS

### General

Based on the subsurface conditions encountered in our explorations and our geotechnical analyses, the existing Wheelock Avenue bridge can be replaced with a pre-cast concrete box culvert, as proposed. Wing walls can be supported on shallow foundations constructed as recommended below. New precast concrete box culvert sections and wing wall foundations should bear on a subgrade of native, inorganic, medium dense (or denser) gravel or compacted structural fill placed over such soils.

The existing undocumented (non-engineered) fill and organic silt are not suitable for support of the culverts or wing walls and should be removed to expose the inorganic, native gravel. Removal of existing fill and organic silt is anticipated to extend up to approximately 12 ft. beneath Wheelock Avenue (corresponding to about El. 386). Depending on the height of new culvert sections, this may be below the proposed bottom of new culverts and wing-wall foundations. Removal should include the zone-of-influence (ZOI) of the culvert sections and wing wall footings, which is defined by planes extending horizontally away from the outside bottom edges of the culvert sections and footings for 2 ft., then down and away at 1H:1V (Horizontal:Vertical) to the top of the inorganic glacial till. Over-excavation areas should be backfilled to proposed subgrade elevations with compacted structural fill as recommended below.

Construction will require temporary cofferdams and possibly diversion and control of flow through and around the work site. Construction will also require dewatering, excavation support, possible temporary relocation of utilities, and subgrade stabilization prior to installation of the new culvert sections and wing wall foundations. Our design and earthwork recommendations are provided in the following sections.

### Culvert and Wing Wall Foundation Design Recommendations

The culvert sections and wing wall foundations should be supported on a minimum 12-inch-thick layer of crushed stone wrapped in a geotextile filter fabric and overlying a properly prepared subgrade of native gravel. The crushed stone should extend to the ZOI limits beyond all edges of the culvert and wing walls. A Weston & Sampson geotechnical engineer should be contacted to evaluate the subgrade prior to crushed stone and filter fabric placement.

Wing walls and their foundations should be designed in accordance with provisions of the current edition of the AASHTO LRFD Bridge Design Specifications. Foundations bearing on native, undisturbed, medium dense (or denser) gravel or Structural Fill overlying such soils can be designed using the recommended net bearing resistances provided below. The factored resistance is based on a resistance factor of 0.45 for the Strength limit state, and 1.0 for the Extreme limit state in accordance with AASHTO (2020) section 10.5.5. Representative bearing capacity calculations for shallow foundations are included in *Attachment B*.

**Wingwalls: Factored Bearing Resistance**

Effective Footing Width, B' (ft.)	Factored Bearing Resistance (ksf)	
	Strength Limit	Extreme Limit
8.0	8.2	18.2
7.0	7.7	17.1
6.0	7.2	16.0
5.0	6.6	14.8

**Culvert: Factored Bearing Resistance**

Base Width, B' (ft.)	Factored Bearing Resistance (ksf)	
	Strength Limit	Extreme Limit
12.0	9.5	21.2
11.0	9.0	20.2
10.0	8.5	19.1
9.0	8.0	17.9

Shallow foundations constructed as recommended herein are anticipated to undergo total and differential settlements less than 1-inch and ½-inch, respectively. The majority of foundation settlement is expected to occur during construction.

Resistance to lateral loads can be provided following the recommendations for lateral pressures below.

**Wing Walls** – The following recommendations assume that the wing walls consist of concrete cantilevered retaining walls and are less than 10 feet in exposed height. Footings for wingwalls should be embedded at least 4 feet below the nearest proposed adjacent ground surface exposed to freezing or below the predicted scour depth, whichever is greater.

Lateral Pressures

Sliding stability and overturning should be evaluated at the Strength Limit State using a resistance factor of 0.80 for the cast-in-place concrete wingwalls and 0.90 for the pre-cast concrete culvert per AASHTO Table 10.5.5.2.2-1. The design lateral pressures should consider appropriate loading conditions and load combinations as required by AASHTO, including earth pressures, hydrostatic, traffic, wind, seismic, and other loads.

Lateral earth pressures should be computed per AASHTO Section 3.11.5 based on an angle of internal friction of 34 degrees, a total (moist) unit weight of 120 pcf, a submerged unit weight of 58 pcf, and an interface friction angle of 25 degrees for soil against formed concrete.

If the culvert or wing walls are restrained from lateral movement, at-rest earth pressures should be used. If the abutment or wing walls are free to rotate, active earth pressures may be used. Wall rotation associated with development of active pressures is expected to be approximately 1 percent of the expected wall height.

A frictional sliding coefficient of 0.50 may be assumed at the base of the culvert and wing walls when evaluating resistance to lateral loads. Passive earth pressures should be ignored when evaluating wing walls for sliding and overturning.

Wing walls should be backfilled with structural fill. Due to anticipated rotation of unrestrained wing walls, we recommend that construction of improvements adjacent to the top of walls be delayed until approximately two weeks after wall construction and backfill.

**Liquefaction Potential** – Liquefaction occurs in loose, saturated, granular soils. Strong shaking, such as that experienced during earthquakes, causes the densification and the subsequent settlement of these soils and overlying features. Given the soil type and consistency encountered in the borings, the risk of structurally damaging liquefaction-induced ground deformations is low at this site.

**Scour** – A scour analysis for the site should be completed if required by MassDOT design guidelines. Cut-off walls are recommended for the culvert to reduce the potential for undermining and development of alternative flow paths.

## CONSTRUCTION CONSIDERATIONS

### Excavation Considerations

Excavation for the culvert and wing wall foundations will extend below the groundwater table and will encounter fill, organic silt, and native gravel. The presence of cobbles and boulders should be anticipated in the fill and native gravel. Caving should be anticipated where seepage is present, especially in the fill. Excavation support structures and dewatering systems will need to accommodate management of flow through or around the work area.

All excavations should be made in accordance with applicable OSHA and local safety regulations. Excavations of about 12 ft. below Wheelock Avenue are anticipated for culvert and wing wall foundation construction. Temporary excavation support will be required. Temporary support of existing utilities may also be required. We recommend that the type and design of the shoring system be the responsibility of the Contractor who is in the best position to choose a system that fits the overall plan of operation. The system should be designed by a Professional Engineer licensed in the Commonwealth of Massachusetts and hired by the Contractor.

Dewatering will be necessary for culvert and wing wall foundation construction to allow excavations to be completed in-the-dry. Flow rates for dewatering are likely to vary depending on location, weather, and the season during which construction occurs. The dewatering system should be capable of lowering the groundwater table at least 2 ft. below the anticipated excavation depths and be kept operational until fill placement and compaction and culvert and foundation construction have been completed to at least 2 ft. above groundwater levels. The dewatering system should be capable of handling variable flow rates and should be the responsibility of the Contractor.

### **Subgrade Preparation and Protection**

Excavations should extend a minimum of 1 ft. below foundation subgrades and a minimum of 2 ft. beyond the outside edges of the culvert and wing wall foundations to accommodate placement of geotextile and compacted crushed stone. Deeper and wider excavations will likely be necessary to remove the unsuitable fill and organic silt from the foundation ZOI and to expose medium dense (or denser) inorganic gravel. The crushed stone should be completely encased in a geotextile fabric. We recommend a non-woven geosynthetic such as Mirafi 180N or approved equivalent.

Construction traffic should not operate directly on subgrades. Soils containing more than trace (>10 percent) amounts of silt are highly susceptible to softening and disturbance by construction activity during wet or freezing weather. Subgrade protection is the responsibility of the Contractor and special precautions and protective measures appropriate for the weather and traffic conditions during construction should be used during earthwork and foundation construction to preserve the integrity of subgrades.

A Weston & Sampson geotechnical engineer should be contacted to evaluate the stability and condition of the subgrade prior to placement of geotextile fabric and crushed stone. Soft and/or disturbed areas identified in the subgrade will require over-excavation and backfilling with structural fill.

Earthwork observation and quality control testing of structural fill and backfill densities is critical throughout construction. During earthwork activities, a representative of the geotechnical engineer should evaluate subgrades and compaction of the fill placed. If site grading and construction is to be performed during or shortly after rainy weather, the Contractor should be fully aware of the potential impact of wet weather. Earthwork during wet weather will require extra effort and caution by the Contractor. The soils may be too wet to compact which will require processing to dry the soil. The Contractor should be responsible to protect his work to avoid damage by rainstorms, including smooth rolling to seal off a pad or subgrade surface to facilitate drainage and to reduce rain damage. Pondered water should be pumped out of excavations and subgrade areas immediately.

### **Fill**

Imported, well-graded sand and gravel fill with less than approximately 10 percent fines (such as MassDOT M1.03.0-type B Gravel Borrow or M2.01.7 Dense-graded Crushed Stone) is recommended for use as Structural Fill behind the culvert and wing walls, temporary excavations and around the culvert structure. On-site materials meeting the gradation requirements for the aforementioned MassDOT materials may be acceptable for use as Structural Fill if approved by the geotechnical engineer.

Backfill should be placed in maximum 10-inch thick lifts (uncompacted thickness) and compacted to at least 95 percent of the material's maximum dry density as determined by ASTM D1557. Lifts should be reduced to not more than 6 inches (uncompacted thickness) where hand-operated compaction is used. Backfill within 3 ft. of the culvert walls should be compacted to not more than 92 percent relative to ASTM D1557 using hand-operated equipment to prevent generation of excessive lateral earth pressures.

Crushed stone should meet the requirements of MassDOT Material Specification M2.01.0 Crushed Stone and be free of snow, ice, organics, and other deleterious materials. Crushed stone should be fully encased in a non-woven geotextile filter fabric, as described above.

## LIMITATIONS

We have prepared this report for use by the Town of Millbury and the design and construction teams for this project and site only. The information herein can be used for bidding or estimating purposes but should not be construed as a warranty of subsurface conditions. We have made observations only at the aforementioned locations and only to the stated depths. These observations do not reflect soil types, strata thicknesses, water levels or seepage that may exist between observations.

We should be retained to observe site preparation, subgrade preparation, and fill placement and compaction. We should also be retained to review final design and specifications to see that our recommendations are suitably followed. If any changes are made to the anticipated locations, loads, grading, configurations, or construction timing, our recommendations may not be applicable, and we should be consulted. We should also review contractor prepared submittals for temporary excavation support and dewatering.

The preceding recommendations should be considered preliminary, as actual soil conditions may vary. For our recommendations to be final, we should be retained to observe actual subsurface conditions encountered. Our observations will allow us to interpret actual conditions and adapt our recommendations if needed.

Within the limitations of scope, schedule and budget, this geotechnical report has been completed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty, expressed or implied, is given.

It has been a pleasure assisting you with this project and we look forward to our continued involvement. Please call if you have any questions.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.



Stephen T. Spink, PE  
Geotechnical Engineering Team Leader



**Attachments:**

Figure 1 – Site Plan

Attachment A – Boring and Probe Logs

Attachment B – Bearing Capacity Calculations

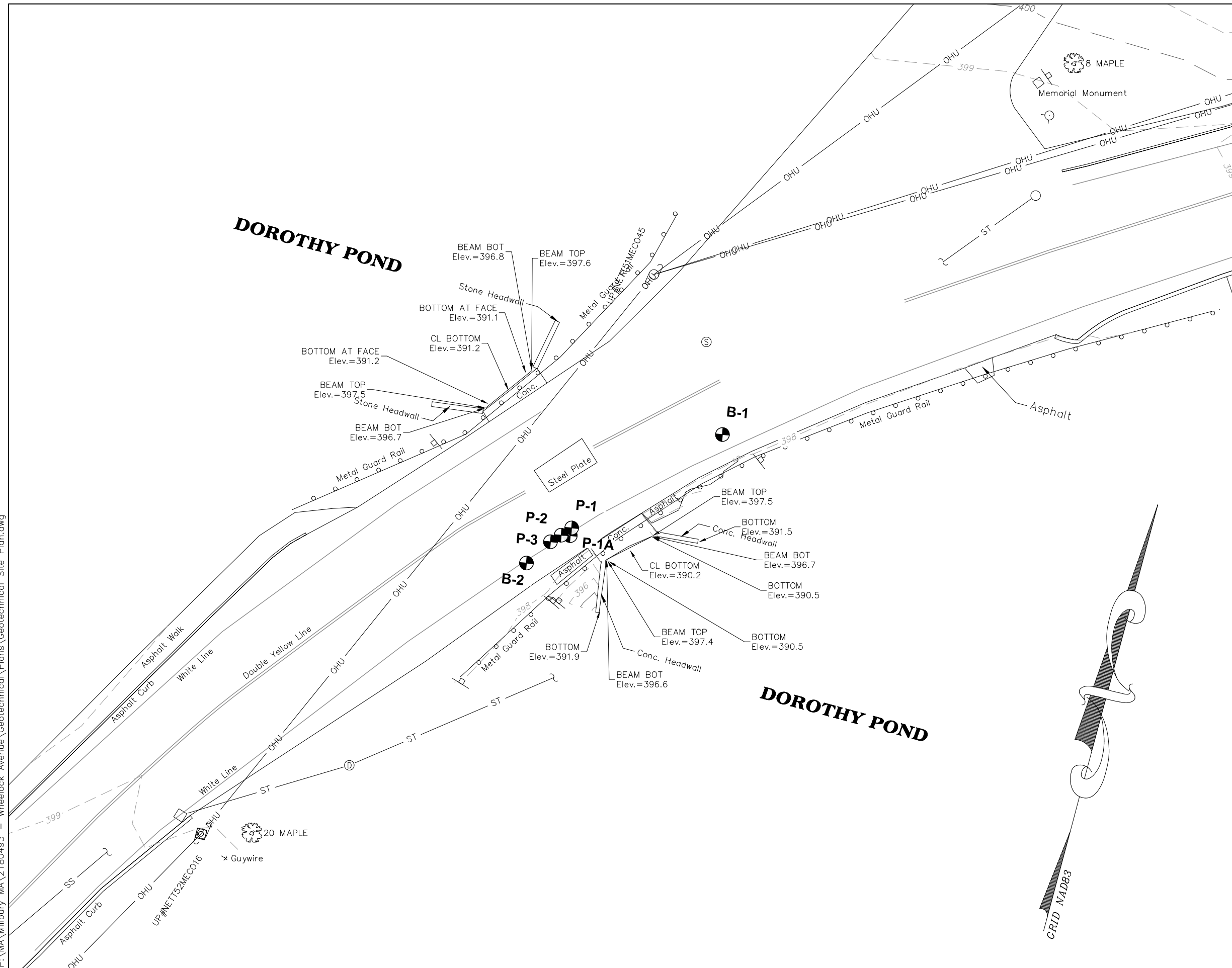
Attachment C – Important Information about This Geotechnical Engineering Report

MJZ:CJP:STS

\\wse03.local\WSE\Projects\MA\Millbury MA\2180493 - Wheelock Avenue\Geotechnical\Report\Revised August 2024\FINAL Geotech Letter Report - Wheelock Avenue Bridge 2024.08.15.doc



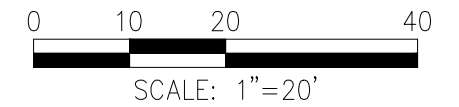
P:\MA\Millbury MA\2180493 - Wheelock Avenue\Geotechnical\Plans\Geotechnical Site Plan.dwg



- NOTES:**
1. THIS FIGURE IS BASED ON AN EXISTING CONDITIONS SURVEY PLAN PREPARED BY WESTON & SAMPSON ENGINEERS, INC. DATED JULY 2018.
  2. ELEVATIONS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  3. BORINGS B-1 THROUGH B-2 AND PROBES P-1 THROUGH P-3 COMPLETED BY TECHNICAL DRILLING SERVICES OF STERLING, MA AND OBSERVED BY WESTON & SAMPSON ENGINEERS, INC. ON SEPTEMBER 24, 2018.
  4. EXPLORATION LOCATIONS SHOWN ARE BASED ON FIELD MEASUREMENTS RELATIVE TO EXISTING SITE FEATURES.
  5. UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND BASED ON UTILITY EVIDENCE VISIBLE AT GROUND SURFACE AND RECORD DRAWINGS.

**LEGEND:**

 **B-1** BORING DESIGNATION AND APPROXIMATE LOCATION.



**FIGURE 1  
SITE PLAN**

WHELOCK AVENUE BRIDGE  
REPLACEMENT  
MILLBURY, MA

DESIGNED BY: MJZ | CHECKED BY: CJP | DECEMBER 2018





**ATTACHMENT A**  
Boring and Probe Logs

**CLIENT:** Town of Millbury  
**PROJECT NUMBER:** 2180493

**PROJECT NAME:** Wheelock Avenue Bridge Replacement  
**PROJECT LOCATION:** Millbury, Massachusetts

**DRILLER:** Darwin Newton - Technical Drilling Services  
**LOGGED / CHECKED BY:** M. Zanchi / C. Palmer, P.E.  
**RIG TYPE / DRILLING METHODS:** Truck / hollow-stem auger (HSA)  
**CASING DIAMETER:** 4.25 in. ID  
**SAMPLING METHODS:** Standard penetration test (SPT)  
**SAMPLER TYPE:** Standard 24" long x 2" OD (1-3/8" ID) split-spoon  
**SAMPLER HAMMER:** 140-lb. automatic hammer  
**OTHER:**
**BORING LOCATION:** See attached plan.  
**GROUND ELEVATION:** 398 ft. +/- **DATUM:** NAVD88  
**DRILLING START DATE:** 9/24/2018 **END DATE:** 9/24/2018

GROUNDWATER OBSERVATIONS		
DATE	DEPTH	COMMENTS
9/24/2018	4.8 ft. +/-	Measured in borehole.

DEPTH (ft.) Elevation	SAMPLE INFORMATION						GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION <small>(see guide below for soil classification based on constituent percentage)</small>	COMMENTS
	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE				
0									Mineral Soil GRAVEL, SAND, SILT, CLAY: >50% gravelly, sandy, silty, clayey: 35-50% some: 20-35% little: 10-20% trace: 0-10%  Organic Soil PEAT: 50-100% organic (soil): 15-50% with some organics: 5-15%	
398								10" Asphalt Concrete Pavement		
	S-1	1.0	14/24	14	23			Medium dense, brown, gravelly fine to coarse SAND, trace silt; moist. [FILL]		- Auger grinding from approximately 4 ft. to 5 ft.
	S-2	3.0	9/24	20	24			Top 6" - Medium dense, brown, fine to coarse SAND, some fine gravel, trace silt; moist. [FILL] Bottom 3" - Gravel-sized rock fragments		
5	S-3	5.0	8/24	11	24			Medium dense, brown, fine to coarse SAND, some fine to coarse gravel, little silt; wet. [FILL]		
	S-4	7.0	14/24	8	13			Medium dense, brown, fine to coarse GRAVEL, some fine to coarse sand, little silt; wet. [FILL]		
	S-5	9.0	4/24	13	19			Top 1" - Medium dense, brown, fine to coarse GRAVEL, some fine to coarse sand, little silt; wet. [FILL]		
10				6				Bottom 3" - Dark brown, ORGANIC SILT, little fine to medium sand; wet.		
388	S-6	11.0	13/24	12	15			Top 7" - Stiff, dark brown, ORGANIC SILT, little fine to medium sand; wet.		
	S-7	13.0	8/24	5	17		Bottom 6" - Gray, fine to coarse GRAVEL, little fine to coarse sand, little silt; wet.			
15				6			GRAVEL	Medium dense, gray, fine to coarse GRAVEL, some fine to coarse sand, trace silt; wet.		
383				11						
				31						
20	S-8	20.0	8/24	10	33			Dense, gray, fine to coarse GRAVEL, some fine to coarse sand, trace silt; wet.		
378				13						
				20						
				20						
25										

W&amp;S BORING LOG - DATA TEMPLATE - W&amp;S STANDARD LOGS.GDT - 12/11/18 15:04 - P:\MILLBURY MA2\B0493 - WHEELOCK AVENUE\GEO\TECHNICAL\FIELD\WHEELOCK AVE BRIDGE GINT LOGS.GPJ

SAMPLE		GRANULAR SOILS		COHESIVE SOILS		GENERAL NOTES:
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY	
S	Split spoon	0-4	Very Loose	< 2	Very Soft	1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.  2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.
ST	Shelby tube	4-10	Loose	2-4	Soft	
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff	
NX	Rock core	30-50	Dense	8-15	Stiff	
GP	Direct push	> 50	Very Dense	15-30	Very Stiff	
				> 30	Hard	

**CLIENT:** Town of Millbury      **PROJECT NAME:** Wheelock Avenue Bridge Replacement  
**PROJECT NUMBER:** 2180493      **PROJECT LOCATION:** Millbury, Massachusetts

DEPTH (ft.) Elevation	SAMPLE INFORMATION						GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION <small>(see guide below for soil classification based on constituent percentage)</small>	COMMENTS
	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE				
25								Mineral Soil GRAVEL, SAND, SILT, CLAY: >50% gravelly, sandy, silty, clayey: 35-50% some: 20-35% little: 10-20% trace: 0-10% Organic Soil PEAT: 50-100% organic (soil): 15-50% with some organics: 5-15%		
373	S-9	25.0	6/24	22 14 29 32	43		 GRAVEL	Dense, gray, fine to coarse GRAVEL, little fine to coarse sand, trace silt; wet.	- Possible boulder at 26 ft. based on auger grinding.	
30										
368	S-10	30.0	14/24	66 73 43 27	116			Very dense, gray, fine to coarse GRAVEL, some fine to coarse sand, little silt; wet.	- Possible boulder at 30 ft. based on auger grinding.	

End of boring at 32 ft.

W&amp;S BORING LOG - DATA TEMPLATE - W&amp;S STANDARD LOGS.GDT - 12/11/18 15:04 - P:\MILLBURY MA2\B0493 - WHEELOCK AVENUE\GEO\TECHNICAL\FIELD\WHEELOCK AVE BRIDGE GINT LOGS.GPJ

SAMPLE		GRANULAR SOILS		COHESIVE SOILS		GENERAL NOTES:
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY	
S	Split spoon	0-4	Very Loose	< 2	Very Soft	1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.  2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.
ST	Shelby tube	4-10	Loose	2-4	Soft	
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff	
NX	Rock core	30-50	Dense	8-15	Stiff	
GP	Direct push	> 50	Very Dense	15-30 > 30	Very Stiff Hard	

**CLIENT:** Town of Millbury  
**PROJECT NUMBER:** 2180493

**PROJECT NAME:** Wheelock Avenue Bridge Replacement  
**PROJECT LOCATION:** Millbury, Massachusetts

**DRILLER:** Darwin Newton - Technical Drilling Services  
**LOGGED / CHECKED BY:** M. Zanchi / C. Palmer, P.E.  
**RIG TYPE / DRILLING METHODS:** Truck / hollow-stem auger (HSA)  
**CASING DIAMETER:** 4.25 in. ID  
**SAMPLING METHODS:** Standard penetration test (SPT)  
**SAMPLER TYPE:** Standard 24" long x 2" OD (1-3/8" ID) split-spoon  
**SAMPLER HAMMER:** 140-lb. automatic hammer  
**OTHER:**
**BORING LOCATION:** See attached plan.  
**GROUND ELEVATION:** 398 ft. +/- **DATUM:** NAVD88  
**DRILLING START DATE:** 9/24/2018 **END DATE:** 9/24/2018

GROUNDWATER OBSERVATIONS		
DATE	DEPTH	COMMENTS
9/24/2018	5.5 ft. +/-	Measured in borehole.

DEPTH (ft.) Elevation	SAMPLE INFORMATION						GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION <small>(see guide below for soil classification based on constituent percentage)</small>	COMMENTS
	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE				
0									Mineral Soil GRAVEL, SAND, SILT, CLAY: >50% gravelly, sandy, silty, clayey: 35-50% some: 20-35% little: 10-20% trace: 0-10%  Organic Soil PEAT: 50-100% organic (soil): 15-50% with some organics: 5-15%	
398								8" Asphalt Concrete Pavement		
	S-1	1.0	11/24	7 13 25 13	38			FILL	Dense, brown, sandy fine to coarse GRAVEL, trace silt; moist. [FILL]	
	S-2	3.0	10/24	13 20 11 5	31		Dense, brown, fine to coarse SAND, some fine to coarse gravel, trace silt; moist. [FILL]			
5	S-3	5.0	11/24	6 5 6 7	11		Medium dense, brown, fine to coarse SAND, some fine to coarse gravel, little silt; wet. [FILL]			
	S-4	7.0	14/24	8 8 8 7	16		Medium dense, brown, fine to coarse GRAVEL, some fine to coarse sand, little silt; wet. [FILL]			
	S-5	9.0	11/24	10 9 19 33	28		Top 6" - Medium dense, brown, sandy fine to coarse GRAVEL, little silt; wet. [FILL]			
10								GRAVEL	Bottom 5" - Medium dense, dark brown, fine to coarse GRAVEL, some fine to coarse sand, little silt; wet.	
388	S-6	11.0	14/24	24 33 28 36	61		Very dense, white and brown, fine to coarse GRAVEL, some fine to coarse sand, trace silt; wet.			
15	S-7	15.0	20/24	22 36 52 61	88			Very dense, gray, sandy fine to coarse GRAVEL, trace silt; wet.		
20										
378	S-8	20.0	19/24	40 29 22 13	51			Very dense, gray, gravelly fine to coarse SAND, little silt; wet.		
25										

- Auger grinding on possible boulder from approximately 19 ft. to 20 ft.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS		GENERAL NOTES:
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY	
S	Split spoon	0-4	Very Loose	< 2	Very Soft	1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.
ST	Shelby tube	4-10	Loose	2-4	Soft	
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff	2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.
NX	Rock core	30-50	Dense	8-15	Stiff	
GP	Direct push	> 50	Very Dense	15-30	Very Stiff	
				> 30	Hard	

W&amp;S BORING LOG - DATA TEMPLATE - W&amp;S STANDARD LOGS.GDT - 12/11/18 15:04 - P:\MILLBURY MA2\B0489 - WHEELOCK AVENUE\TECHNICAL\FIELD\WHEELOCK AVE BRIDGE GINT LOGS.GPJ

**CLIENT:** Town of Millbury      **PROJECT NAME:** Wheelock Avenue Bridge Replacement  
**PROJECT NUMBER:** 2180493      **PROJECT LOCATION:** Millbury, Massachusetts

DEPTH (ft.) Elevation	SAMPLE INFORMATION							GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION <small>(see guide below for soil classification based on constituent percentage)</small>	COMMENTS
	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)				
25										Mineral Soil GRAVEL, SAND, SILT, CLAY: >50% gravelly, sandy, silty, clayey: 35-50% some: 20-35% little: 10-20% trace: 0-10%  Organic Soil PEAT: 50-100% organic (soil): 15-50% with some organics: 5-15%	
373	S-9	25.0	18/24	8 15 21 50	36				GRAVEL	Dense, gray, fine to coarse GRAVEL, little fine to coarse sand, trace silt; wet.	
30											
368	S-10	30.0	8/24	17 16 15 35	31					Dense, gray, fine to coarse GRAVEL, trace fine to coarse sand, trace silt; wet.	

End of boring at 32 ft.

W&amp;S BORING LOG - DATA TEMPLATE - W&amp;S STANDARD LOGS.GDT - 12/11/18 15:04 - P:\MILLBURY MA2180493 - WHEELOCK AVENUE\GEO\TECHNICAL\FIELD\WHEELOCK AVE BRIDGE GINT LOGS.GPJ

SAMPLE		GRANULAR SOILS		COHESIVE SOILS		GENERAL NOTES:
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY	
S	Split spoon	0-4	Very Loose	< 2	Very Soft	1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.  2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.
ST	Shelby tube	4-10	Loose	2-4	Soft	
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff	
NX	Rock core	30-50	Dense	8-15	Stiff	
GP	Direct push	> 50	Very Dense	15-30	Very Stiff	
				> 30	Hard	

**CLIENT:** Town of Millbury  
**PROJECT NUMBER:** 2180493

**PROJECT NAME:** Wheelock Avenue Bridge Replacement  
**PROJECT LOCATION:** Millbury, Massachusetts

**DRILLER:** Darwin Newton - Technical Drilling Services  
**LOGGED / CHECKED BY:** M. Zanchi / C. Palmer, P.E.  
**RIG TYPE / DRILLING METHODS:** Truck / hollow-stem auger (HSA)  
**CASING DIAMETER:** 4.25 in. ID  
**SAMPLING METHODS:** No soil sampling conducted  
**SAMPLER TYPE:**  
**SAMPLER HAMMER:**  
**OTHER:**
**BORING LOCATION:** See attached plan.  
**GROUND ELEVATION:** 398 ft. +/- **DATUM:** NAVD88  
**DRILLING START DATE:** 9/24/2018 **END DATE:** 9/24/2018

GROUNDWATER OBSERVATIONS		
DATE	DEPTH	COMMENTS
	5.5 ft. +/-	Measured in borehole.

DEPTH (ft.) Elevation	SAMPLE INFORMATION						GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION <small>(see guide below for soil classification based on constituent percentage)</small>	COMMENTS
	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE				
0									Mineral Soil GRAVEL, SAND, SILT, CLAY: >50% gravelly, sandy, silty, clayey: 35-50% some: 20-35% little: 10-20% trace: 0-10%  Organic Soil PEAT: 50-100% organic (soil): 15-50% with some organics: 5-15%	
398								8" Asphalt Concrete Pavement		
								Brown, sandy fine to coarse GRAVEL, trace silt; moist. [FILL]		- Soil description based on auger cuttings.
5										
393										

End of probe at 9 ft.

W&amp;S BORING LOG - DATA TEMPLATE - W&amp;S STANDARD LOGS.GDT - 12/11/18 15:04 - P:\MILLBURY MA2180493 - WHEELOCK AVENUE\GEO\TECHNICAL\FIELD\WHEELOCK AVE BRIDGE GINT LOGS.GPJ

SAMPLE		GRANULAR SOILS		COHESIVE SOILS		GENERAL NOTES:
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY	
S	Split spoon	0-4	Very Loose	< 2	Very Soft	1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.
ST	Shelby tube	4-10	Loose	2-4	Soft	
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff	2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.
NX	Rock core	30-50	Dense	8-15	Stiff	
GP	Direct push	> 50	Very Dense	15-30	Very Stiff	
				> 30	Hard	

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**RIG TYPE / DRILLING METHODS:** Truck / hollow-stem auger (HSA)  
**CASING DIAMETER:** 4.25 in. ID  
**SAMPLING METHODS:** No soil sampling conducted  
**SAMPLER TYPE:**  
**SAMPLER HAMMER:**  
**OTHER:**
**BORING LOCATION:** See attached plan.  
**GROUND ELEVATION:** 398 ft. +/- **DATUM:** NAVD88  
**DRILLING START DATE:** 9/24/2018 **END DATE:** 9/24/2018

GROUNDWATER OBSERVATIONS		
DATE	DEPTH	COMMENTS
	5.5 ft. +/-	Measured in borehole.

DEPTH (ft.) Elevation	SAMPLE INFORMATION						GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION <small>(see guide below for soil classification based on constituent percentage)</small>	COMMENTS
	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE				
0									Mineral Soil GRAVEL, SAND, SILT, CLAY: >50% gravelly, sandy, silty, clayey: 35-50% some: 20-35% little: 10-20% trace: 0-10%  Organic Soil PEAT: 50-100% organic (soil): 15-50% with some organics: 5-15%	
398								8" Asphalt Concrete Pavement		
									Brown, sandy fine to coarse GRAVEL, trace silt; moist. [FILL]	- Soil description based on auger cuttings.
5										
393										▼ - Possible backside of battered concrete wall encountered between 5 ft. to 10 ft. Wall is causing augers to angle.
10										
388										
15										
383									End of probe at 15 ft.	

W&amp;S BORING LOG - DATA TEMPLATE - W&amp;S STANDARD LOGS.GDT - 12/11/18 15:04 - P:\MILLBURY MA2\B0489 - WHEELOCK AVENUE\TECHNICAL\FIELD\WHEELOCK AVE BRIDGE GINT LOGS.GPJ

SAMPLE		GRANULAR SOILS		COHESIVE SOILS		GENERAL NOTES:
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY	
S	Split spoon	0-4	Very Loose	< 2	Very Soft	1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.
ST	Shelby tube	4-10	Loose	2-4	Soft	
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff	2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.
NX	Rock core	30-50	Dense	8-15	Stiff	
GP	Direct push	> 50	Very Dense	15-30	Very Stiff	
				> 30	Hard	

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**SAMPLER TYPE:**  
**SAMPLER HAMMER:**  
**OTHER:**
**BORING LOCATION:** See attached plan.  
**GROUND ELEVATION:** 398 ft. +/- **DATUM:** NAVD88  
**DRILLING START DATE:** 9/24/2018 **END DATE:** 9/24/2018

GROUNDWATER OBSERVATIONS		
DATE	DEPTH	COMMENTS
	5.5 ft. +/-	Measured in borehole.

DEPTH (ft.) Elevation	SAMPLE INFORMATION						GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION <small>(see guide below for soil classification based on constituent percentage)</small>	COMMENTS
	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE				
0									Mineral Soil GRAVEL, SAND, SILT, CLAY: >50% gravelly, sandy, silty, clayey: 35-50% some: 20-35% little: 10-20% trace: 0-10%  Organic Soil PEAT: 50-100% organic (soil): 15-50% with some organics: 5-15%	
398							8" Asphalt Concrete Pavement		8" Asphalt Concrete Pavement	
							FILL		Brown, sandy fine to coarse GRAVEL, trace silt; moist. [FILL]	- Soil description based on auger cuttings.
5							Possible Stone Block		Possible Stone Block	
393							- Fragment of stone block recovered from auger plug; appears to be flat on top and bottom		- Fragment of stone block recovered from auger plug; appears to be flat on top and bottom	- Auger through 10 in. thick stone block from 5 ft to 5.8 ft.. Penetrate bottom side of stone block at 5.8 ft.
							End of probe at 5.8 ft.		End of probe at 5.8 ft.	

W&amp;S BORING LOG - DATA TEMPLATE - W&amp;S STANDARD LOGS.GDT - 12/11/18 15:04 - P:\MILLBURY MA2\B0489 - WHEELOCK AVENUE\GEO\TECHNICAL\FIELD\WHEELOCK AVE BRIDGE GINT LOGS.GPJ

SAMPLE		GRANULAR SOILS		COHESIVE SOILS		GENERAL NOTES:
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY	
S	Split spoon	0-4	Very Loose	< 2	Very Soft	1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.  2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.
ST	Shelby tube	4-10	Loose	2-4	Soft	
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff	
NX	Rock core	30-50	Dense	8-15	Stiff	
GP	Direct push	> 50	Very Dense	15-30	Very Stiff	
				> 30	Hard	



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**OTHER:**
**BORING LOCATION:** See attached plan.  
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**DRILLING START DATE:** 9/24/2018 **END DATE:** 9/24/2018

GROUNDWATER OBSERVATIONS		
DATE	DEPTH	COMMENTS
	5.5 ft. +/-	Measured in borehole.

DEPTH (ft.) Elevation	SAMPLE INFORMATION						GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION <small>(see guide below for soil classification based on constituent percentage)</small>	COMMENTS
	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE				
0									Mineral Soil GRAVEL, SAND, SILT, CLAY: >50% gravelly, sandy, silty, clayey: 35-50% some: 20-35% little: 10-20% trace: 0-10%  Organic Soil PEAT: 50-100% organic (soil): 15-50% with some organics: 5-15%	
398								8" Asphalt Concrete Pavement		
									Brown, sandy fine to coarse GRAVEL, trace silt; moist. [FILL]	- Soil description based on auger cuttings.
5										
393										

End of probe at 9 ft.

W&amp;S BORING LOG - DATA TEMPLATE - W&amp;S STANDARD LOGS.GDT - 12/11/18 15:04 - P:\MILLBURY MA2180493 - WHEELOCK AVENUE\GEO\TECHNICAL\FIELD\WHEELOCK AVE BRIDGE GINT LOGS.GPJ

SAMPLE		GRANULAR SOILS		COHESIVE SOILS		GENERAL NOTES:
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY	
S	Split spoon	0-4	Very Loose	< 2	Very Soft	1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.
ST	Shelby tube	4-10	Loose	2-4	Soft	
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff	2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.
NX	Rock core	30-50	Dense	8-15	Stiff	
GP	Direct push	> 50	Very Dense	15-30	Very Stiff	
				> 30	Hard	

**ATTACHMENT B**  
Bearing Capacity Calculations

Project: Wheelock Avenue Bridge Replacement  
 Location: Millbury, MA  
 WSE Project No: ENG22-0478  
 Calculation: 02B - Bearing Resistance for Wingwalls



55 Walkers Brook Dr., Suite 100, Reading, MA 01867 (HQ)  
 Tel: 978.532.1900

Calc By: SLW Check by: STS  
 Date: 7/15/2024 Date: 8/14/2024

**OBJECTIVE:** Estimate the factored bearing resistance for the wingwalls at the above referenced site for the Strength Limit and Extreme Limit states for varying load eccentricities.

- REFERENCES:**
- 1) AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020.
  - 2) Borings B-1 and B-2 (refer to report Appendix).
  - 3) Das, Braja M. (2002), "Principles of Geotechnical Engineering." Pacific Grove, CA. 5th Ed.

- DESIGN BASIS AND ASSUMPTIONS:**
- Bearing resistance factors presented in AASHTO (2020) are used in the analysis.
  - Shape, depth, and water factors are included in the analysis; inclination factors are ignored.
  - Assume ground surface in front of footing is relatively flat, and therefore modifications for sloping ground are not used.
  - Bearing resistance equation for strip footing applies
  - Footing bears within the medium dense to very dense gravel.

**INPUTS**

**Abutment Geometry:**

Proposed Footing Embedment Depth,  $D_f = 4$  ft  
 Footing Width,  $B = 9$  ft  
 Footing Length,  $L = 11.2$  ft  
 Depth to Groundwater,  $D_w = 0$  ft

**Basis / Reference**

Assumed embedment depth  
 Based on 100% design plans, north and south wingwalls 9 ft  
 Based on 100% design plans, north and south wingwalls 10 and 11.2 ft, respectively (use south as controlling case)  
 Groundwater located above bottom of footing based on borings B-1 and B-2

**Soil Parameters:**

Overburden and Bearing Soil Unit Weight,  $g = 125$  pcf  
 Friction Angle (for bearing soils),  $f = 34$  degrees  
 Cohesion (for bearing soils),  $c = 0$  psf  
 Cohesion Bearing Capacity Factor,  $N_c = 42.2$   
 Embedment Bearing Capacity Factor,  $N_q = 29.4$   
 Unit Weight Bearing Capacity Factor,  $N_\gamma = 41.1$

**Basis / Reference**

Medium dense fill  
 Assume medium dense to very dense gravel or structural fill below footing elevation (based on borings B-1 and B-2). See the Massachusetts State LRFD Bridge Manual for compacted fill strength.  
 Soil is assumed to be cohesionless  
 AASHTO Table 10.6.3.1.2a-1  
 AASHTO Table 10.6.3.1.2a-1  
 AASHTO Table 10.6.3.1.2a-1

**Resistance Factors:**

Strength Limit,  $\phi_{b\_strength} = 0.45$   
 Extreme Limit,  $\phi_{b\_extreme} = 1.00$

**Basis / Reference**

AASHTO Table 10.5.5.2.2-1  
 AASHTO Section 10.5.5.3.3

- Factored Bearing Resistance,  $q_r$ , estimated using equation 10.6.3.1.1-1:

$q_r = q_{r,b}$

**CALCULATIONS**

**DETERMINE FACTORED BEARING RESISTANCE,  $q_r$**

- Nominal Bearing Resistance,  $q_n$ , determined using equation 10.6.3.1.2a-1

$$q_n = cN_{cm} + \gamma D_f N_{qm} C_{wq} + 0.5gB' N_{qm} C_{wg}$$

where:

$$N_{qm} = N_q s_q d_q i_q$$

$$N_{qm} = N_g s_g i_g$$

$$N_{cm} = N_c s_c i_c$$

Eccentricity and Effective Footing Width (See Note 1)			B'/L	Groundwater Modifications (see Note 2)		Slope Modifications (See Note 3)		Shape Factors (See Note 4)			D <sub>f</sub> /B'	Depth Factor (see Note 5)
e/B	e [ft]	B' [ft]		C <sub>wq</sub>	C <sub>wg</sub>	N <sub>qs</sub>	N <sub>qs</sub>	s <sub>c</sub>	s <sub>g</sub>	s <sub>q</sub>		d <sub>q</sub>
-0.03	-0.25	9.50	0.848	0.5	0.5			1.591	0.661	1.572	0.421	1.000
0.00	0.00	9.00	0.804	0.5	0.5			1.560	0.679	1.542	0.444	1.000
0.06	0.50	8.00	0.714	0.5	0.5			1.498	0.714	1.482	0.500	1.000
0.11	1.00	7.00	0.625	0.5	0.5			1.435	0.750	1.422	0.571	1.000
0.14	1.25	6.50	0.580	0.5	0.5			1.404	0.768	1.391	0.615	1.000
0.17	1.50	6.00	0.536	0.5	0.5			1.373	0.786	1.361	0.667	1.000
0.19	1.75	5.50	0.491	0.5	0.5			1.342	0.804	1.331	0.727	1.000
0.22	2.00	5.00	0.446	0.5	0.5			1.311	0.821	1.301	0.800	1.000
0.25	2.25	4.50	0.402	0.5	0.5			1.280	0.839	1.271	0.889	1.000
0.28	2.50	4.00	0.357	0.5	0.5			1.249	0.857	1.241	1.000	1.000

Project: Wheelock Avenue Bridge Replacement  
 Location: Millbury, MA  
 WSE Project No: ENG22-0478  
 Calculation: 02B - Bearing Resistance for Wingwalls



55 Walkers Brook Dr., Suite 100, Reading, MA 01867 (HQ)  
 Tel: 978.532.1900

Calc By: SLW      Check by: STS  
 Date: 7/15/2024      Date: 8/14/2024

e/B	B'	N <sub>qm</sub>	N <sub>gm</sub>	N <sub>cm</sub>	Nominal Bearing Resistance, q <sub>n</sub>	Factored Bearing Resistance-Strength Limit, q <sub>r, strength</sub>	Factored Bearing Resistance-Extreme Limit, q <sub>r, extreme</sub>
	[ft]				[psf]	[psf]	[psf]
-0.03	9.50	46.2	27.2	67.1	19,617	8,828	19,617
0.00	9.00	45.3	27.9	65.8	19,178	8,630	19,178
0.06	8.00	43.6	29.4	63.2	18,230	8,204	18,230
0.11	7.00	41.8	30.8	60.6	17,191	7,736	17,191
0.14	6.50	40.9	31.6	59.3	16,638	7,487	16,638
0.17	6.00	40.0	32.3	58.0	16,061	7,227	16,061
0.19	5.50	39.1	33.0	56.6	15,461	6,957	15,461
0.22	5.00	38.3	33.8	55.3	14,838	6,677	14,838
0.25	4.50	37.4	34.5	54.0	14,193	6,387	14,193
0.28	4.00	36.5	35.2	52.7	13,524	6,086	13,524

Notes:

- (1) Effective footing width B' determined based on AASHTO Section 10.6.1.3
- (2) Groundwater modification based on factors C<sub>wq</sub> and C<sub>wg</sub> from AASHTO Table 10.6.3.1.2a-2
- (3) Where applicable, replace N<sub>q</sub> and N<sub>g</sub> with factors N<sub>cq</sub> and N<sub>cg</sub> to account for sloping ground in accordance with Section 10.6.3.1.2c
- (4) Shape Correction Factors s<sub>c</sub>, s<sub>g</sub>, and s<sub>q</sub> determined using equation in AASHTO Table 10.6.3.1.2a-3
- (5) Depth Correction Factor d<sub>q</sub> set to 1.0 because fill soils are less competent than bearing soils.

Project: Wheelock Avenue Bridge Replacement  
 Location: Millbury, MA  
 WSE Project No: ENG22-0478  
 Calculation: 02A - Bearing Resistance for Culvert

Weston & Sampson<sup>SM</sup>  
 55 Walkers Brook Dr., Suite 100, Reading, MA 01867 (HQ)  
 Tel: 978.532.1900

Calc By: SLW      Check by: STS  
 Date: 7/15/2024      Date: 8/14/2024

**OBJECTIVE:** Estimate the factored bearing resistance for the culvert at the above referenced site for the Strength Limit and Extreme Limit states for varying load eccentricities.

**REFERENCES:**  
 1) AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020.  
 2) Borings B-1 and B-2 (refer to report Appendix).  
 3) Das, Braja M. (2002), "Principles of Geotechnical Engineering." Pacific Grove, CA. 5th Ed.

**DESIGN BASIS AND ASSUMPTIONS:**  
 - Bearing resistance factors presented in AASHTO (2020) are used in the analysis.  
 - Shape, depth, and water factors are included in the analysis; inclination factors are ignored.  
 - Assume ground surface in front of footing is relatively flat, and therefore modifications for sloping ground are not used.  
 - Bearing resistance equation for strip footing applies  
 - Footing bears within the medium dense to very dense gravel.

**INPUTS**

**Abutment Geometry:**

Proposed Footing Embedment Depth,  $D_f$  = 3.5 ft  
 Footing Width,  $B$  = 11.7 ft  
 Footing Length,  $L$  = 40 ft  
 Depth to Groundwater,  $D_w$  = 0 ft

Basis / Reference

Conservative minimum embedment depth  
 Based on 100% design plans  
 Based on 100% design plans  
 Groundwater located above bottom of footing based on borings B-1 and B-2

**Soil Parameters:**

Overburden and bearing Soil Unit Weight,  $g$  = 125 pcf  
 Friction Angle (for bearing soils),  $f$  = 34 degrees  
 Cohesion (for bearing soils),  $c$  = 0 psf  
 Cohesion Bearing Capacity Factor,  $N_c$  = 42.2  
 Embedment Bearing Capacity Factor,  $N_q$  = 29.4  
 Unit Weight Bearing Capacity Factor,  $N_\gamma$  = 41.1

Basis / Reference

Medium dense fill  
 Assume medium dense to very dense sand or gravel or structural fill below footing elevation (based on B-1, B-2, B-2A, and B-2B). See Calc 01 and the Massachusetts State LRFD Bridge Manual for compacted fill strength.  
 Soil is assumed to be cohesionless  
 AASHTO Table 10.6.3.1.2a-1  
 AASHTO Table 10.6.3.1.2a-1  
 AASHTO Table 10.6.3.1.2a-1

**Resistance Factors:**

Strength Limit,  $\phi_{b\_strength}$  = 0.45  
 Extreme Limit,  $\phi_{b\_extreme}$  = 1.00

Basis / Reference

AASHTO Table 10.5.5.2.2-1  
 AASHTO Section 10.5.5.3.3

- Factored Bearing Resistance,  $q_r$ , estimated using equation 10.6.3.1.1-1:

$q_r = q_{nb}$

**CALCULATIONS**

**DETERMINE FACTORED BEARING RESISTANCE,  $q_r$**

- Nominal Bearing Resistance,  $q_n$ , determined using equation 10.6.3.1.2a-1

$$q_n = cN_{cm} + \gamma D_f N_{qm} C_{wq} + 0.5gB'N_{gm}C_{wg}$$

where:  
 $N_{qm} = N_q s_q i_q$   
 $N_{gm} = N_g s_g i_g$   
 $N_{cm} = N_c s_c i_c$

Box Culvert Base Width (feet)			B'/L	Groundwater Modifications (see Note 2)		Slope Modifications (See Note 3)		Shape Factors (See Note 4)			D <sub>f</sub> /B'	Depth Factor (see Note 5)
e/B	e [ft]	B' [ft]		C <sub>wq</sub>	C <sub>wg</sub>	N <sub>cq</sub>	N <sub>cg</sub>	s <sub>c</sub>	s <sub>g</sub>	s <sub>q</sub>		d <sub>q</sub>
0.00	0.00	12.00	0.300	0.5	0.5			1.209	0.880	1.202	0.292	1.000
0.00	0.00	11.00	0.275	0.5	0.5			1.192	0.890	1.185	0.318	1.000
0.00	0.00	10.00	0.250	0.5	0.5			1.174	0.900	1.169	0.350	1.000
0.00	0.00	9.00	0.225	0.5	0.5			1.157	0.910	1.152	0.389	1.000
0.00	0.00	8.00	0.200	0.5	0.5			1.139	0.920	1.135	0.438	1.000
0.00	0.00	7.00	0.175	0.5	0.5			1.122	0.930	1.118	0.500	1.000
0.00	0.00	6.00	0.150	0.5	0.5			1.105	0.940	1.101	0.583	1.000
0.00	0.00	5.00	0.125	0.5	0.5			1.087	0.950	1.084	0.700	1.000

**Project:** Wheelock Avenue Bridge Replacement  
**Location:** Millbury, MA  
**WSE Project No:** ENG22-0478  
**Calculation:** 02A - Bearing Resistance for Culvert

  
 55 Walkers Brook Dr., Suite 100, Reading, MA 01867 (HQ)  
 Tel: 978.532.1900

**Calc By:** SLW    **Check by:** STS  
**Date:** 7/15/2024    **Date:** 8/14/2024

e/B	B'	N <sub>qm</sub>	N <sub>gm</sub>	N <sub>cm</sub>	Nominal Bearing Resistance, q <sub>n</sub> [psf]	Factored Bearing Resistance- Strength Limit, q <sub>r_strength</sub> [psf]	Factored Bearing Resistance- Extreme Limit, q <sub>r_extreme</sub> [psf]
0.00	12.00	35.3	36.2	51.0	21,296	9,583	21,296
0.00	11.00	34.9	36.6	50.3	20,198	9,089	20,198
0.00	10.00	34.4	37.0	49.6	19,075	8,584	19,075
0.00	9.00	33.9	37.4	48.8	17,926	8,067	17,926
0.00	8.00	33.4	37.8	48.1	16,752	7,538	16,752
0.00	7.00	32.9	38.2	47.3	15,552	6,998	15,552
0.00	6.00	32.4	38.6	46.6	14,326	6,447	14,326
0.00	5.00	31.9	39.0	45.9	13,074	5,883	13,074

Notes:

- (1) Effective footing width B' determined based on AASHTO Section 10.6.1.3
- (2) Groundwater modification based on factors C<sub>wq</sub> and C<sub>wg</sub> from AASHTO Table 10.6.3.1.2a-2
- (3) Where applicable, replace N<sub>q</sub> and N<sub>g</sub> with factors N<sub>cq</sub> and N<sub>cg</sub> to account for sloping ground in accordance with Section 10.6.3.1.2c
- (4) Shape Correction Factors sc, sg, and sq determined using equation in AASHTO Table 10.6.3.1.2a-3
- (5) Depth Correction Factor dq set to 1.0 because fill soils are less competent than bearing soils.

**ATTACHMENT C**  
Important Information about This  
Geotechnical-Engineering Report

# Important Information about This

# Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

**The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.**

## Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

## Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer

will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

## Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

## You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*



responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

### Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site’s subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

### This Report’s Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

### This Report Could Be Misinterpreted

Other design professionals’ misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals’ plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

### Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note*

*conspicuously that you’ve included the material for information purposes only.* To avoid misunderstanding, you may also want to note that “informational purposes” means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

### Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled “limitations,” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a “phase-one” or “phase-two” environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

### Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer’s services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer’s recommendations will not of itself be sufficient to prevent moisture infiltration.* **Confront the risk of moisture infiltration** by including building-envelope or mold specialists on the design team. **Geotechnical engineers are not building-envelope or mold specialists.**



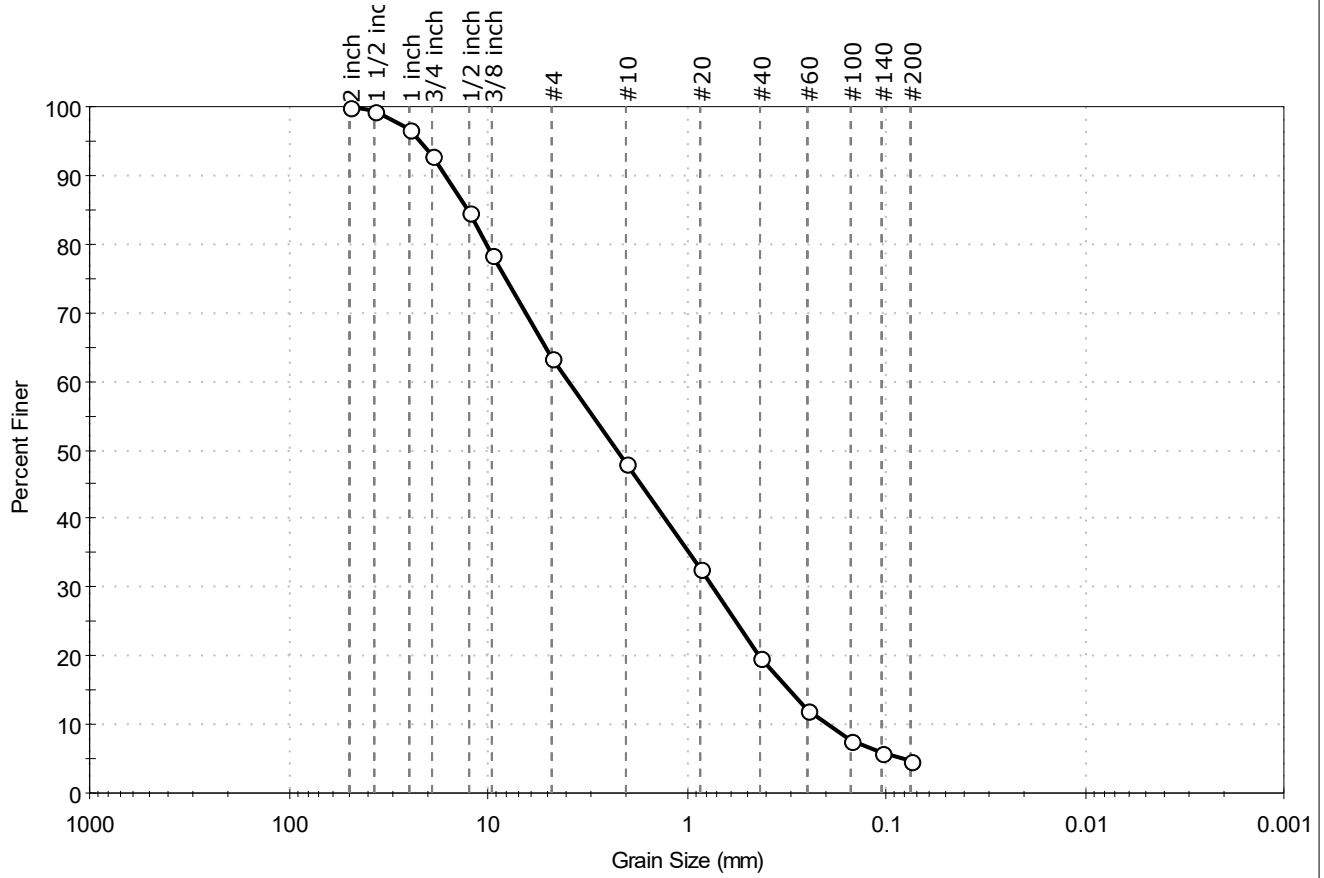
Telephone: 301/565-2733

e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)



Client:	Weston & Sampson Engineers		
Project:	Millbury - Wheelock		
Location:	Millbury, MA	Project No:	GTX-315277
Boring ID:	---	Sample Type:	bucket
Sample ID:	SED-SOUTH	Test Date:	04/15/22
Depth :	---	Checked By:	bfs
		Test Id:	663739
Test Comment:	---		
Visual Description:	Moist, dark gray sand with gravel		
Sample Comment:	---		

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	36.4	58.8	4.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
2 inch	50.00	100		
1 1/2 inch	37.50	100		
1 inch	25.00	97		
3/4 inch	19.00	93		
1/2 inch	12.50	85		
3/8 inch	9.50	78		
#4	4.75	64		
#10	2.00	48		
#20	0.85	33		
#40	0.42	20		
#60	0.25	12		
#100	0.15	8		
#140	0.11	6		
#200	0.075	4.8		

<u>Coefficients</u>	
D <sub>85</sub> = 12.7278 mm	D <sub>30</sub> = 0.7295 mm
D <sub>60</sub> = 3.8987 mm	D <sub>15</sub> = 0.3055 mm
D <sub>50</sub> = 2.2276 mm	D <sub>10</sub> = 0.1969 mm
C <sub>u</sub> = 19.800	C <sub>c</sub> = 0.693

<u>Classification</u>	
<u>ASTM</u>	Poorly graded SAND with Gravel (SP)
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-a (1))

<u>Sample/Test Description</u>	
Sand/Gravel Particle Shape : ANGULAR	
Sand/Gravel Hardness : HARD	