

**TOWN OF HANOVER**  
**COMMONWEALTH OF MASSACHUSETTS**

TOWN OF HANOVER  
DEPARTMENT OF PUBLIC WORKS

**PROJECT MANUAL**

FOR

**TRANSPORTATION IMPROVEMENT PROJECT  
WASHINGTON STREET (ROUTE 53)**

in the Town of  
Hanover

**(CONTRACT # 23-105)**

In accordance with the COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF  
TRANSPORTATION STANDARD SPECIFICATIONS for Highways and Bridges, 2022 Edition  
and the Town of Hanover Agreement included herein.

Bid Opening: Wednesday September 7, 2022 at 2:00 PM

June 2022

# TOWN OF HANOVER

## COMMONWEALTH OF MASSACHUSETTS

### WASHINGTON STREET (ROUTE 53)

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BID/CONTRACT FORMS

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TRANSPORTATION IMPROVEMENT PROJECT  
WASHINGTON STREET (ROUTE 53)  
CONTRACT NO. 23-105

DOCUMENT 00010

**ADVERTISEMENT FOR BIDS**

Sealed Bids for the Transportation Improvement Project, Washington Street (Route 53), addressed to the Town of Hanover (“the Owner”) shall be received at the Department of Public Works, 495 Hanover Street, Hanover, MA 02339, until 2:00 p.m. EDST on Wednesday September 7, 2022, at which time and place, the Bids shall be publicly opened and read aloud. This Project is funded a by MassWorks grant.

The proposed intersection improvements include narrowing approximately 1400 feet of Route 53 to provide 5.5’ Sidewalks (from STA 36+10 to 50+35); Installation of a new traffic signal on Route 53 at the North Mall Drive; Modifying the existing Route 53 Coordinated Traffic Signal System; installation of ADA compliant wheelchair ramps; and overlaying Route 53 from 38+60 to 50+50, in the Town of Hanover, Massachusetts.

The work includes unclassified excavation, pavement milling, full depth hot mix asphalt pavement, hot mix asphalt overlay, drainage system modifications, granite curb and edging, cement concrete sidewalk, highway guard, traffic signal system installation, pavement markings, signs, landscaping, and other incidental work. See Design Plans for more details on the proposed scope and limits of work.

No Pre-Bid meeting is scheduled for this project.

Note: All potential bidders on this project must be pre-qualified by Massachusetts Highway Department to perform the types of work required by this contract. Evidence of prequalification must be included with the bid submission.

No monetary deposit is required to obtain the bid documents electronically. The Contract Documents are specific to this Project. Contract Documents will be available after 2:00 p.m. local time on Wednesday August 17, 2022 on the Town of Hanover’s website. Please use the following URL to obtain access to the bid documents:

<https://www.hanover-ma.gov/public-works/pages/open-bids-and-bid-results>. All potential bidders must register by sending an email to [dderoche@rdva.com](mailto:dderoche@rdva.com) with the subject line “TIP Washington Street (Route 53) Bidder.”

Within the email please provide the following contact information:

- Company name
- Contact person’s name
- Contact person’s email address
- Contact person’s phone number

Bid period inquiries regarding the work required by the Contract Documents shall be directed by email to Vanasse and Associates, Inc., Attention: Dan DeRoche @ [dderoche@rdva.com](mailto:dderoche@rdva.com). Oral questions shall not be accepted and oral interpretations of questions shall not be given.

Addenda will be issued and distributed to all plan holders registered via email to [dderoche@rdva.com](mailto:dderoche@rdva.com). Only those bidders who have received a response from [dderoche@rdva.com](mailto:dderoche@rdva.com) will receive updates to the bid documents.

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Bids will be opened in the Office of the Department of Public Works Director on September 7, 2022, at 2:00 p.m. Each Bid must be accompanied by a bid security consisting of a BID BOND, CASH, or, CERTIFIED CHECK issued by a responsible bank or trust company in the amount of 5% of the bid price.

All Bids must be enclosed in a sealed envelope plainly marked:

Bid for Contract #23-105  
T.I.P. – Washington Street (Route 53)  
495 Hanover Street  
Hanover, MA 02339  
Attn: DPW Director

All bids for this project are subject to applicable public bidding laws of Massachusetts, including, but not limited to G.L. c.30, §39M.

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

Complete instructions for filing bids are included in the SECTION 00100, INSTRUCTIONS TO BIDDERS (which is contained in the project bid documents).

Selection of the contractor will be based upon bidder qualifications, including evidence of past performance in similar projects, and bid price. The contract will be awarded to the bidder deemed by the awarding authority to be the lowest responsible and eligible bidder.

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

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

Each Bidder shall agree to achieve final completion of the Project, including all punch list items no later than June 30, 2023.

A performance bond and payment bond both in an amount equal to 100 percent of the total amount of the contract price with a surety company qualified to do business in the Commonwealth of Massachusetts will be required for the faithful performance of the contract.

*Joseph Colangelo*

Town Manager  
Hanover, Massachusetts

END OF SECTION

# **TOWN OF HANOVER**

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### **TRANSPORTATION IMPROVEMENT PROJECT WASHINGTON STREET (ROUTE 53) CONTRACT NO. 23-105**

#### **SECTION 00100**

#### **INSTRUCTIONS TO BIDDERS**

1. Receipt and Opening of Bids
2. Location and Work to be Done
3. Preparation of Bid
4. Bid Opening Procedures
5. Modification
6. Qualification of Bidder
7. Conditions of Work
8. Addenda & Interpretations
9. Security for Faithful Performance
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29. MassWorks Grant Information

# **TOWN OF HANOVER**

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### **1. Receipt and Opening of Bids**

The Town of Hanover, Massachusetts, herein called the Owner, acting by and through its Director of the Department of Public Works, will receive sealed Bids for the project known as the Transportation Improvement Project – Washington Street (Route 53).

General bids shall be addressed as follows:

Bid for Contract #23-105  
T.I.P. – Washington Street (Route 53)  
495 Hanover Street  
Hanover, MA 02339  
Attn: DPW Director

and will be received at the Office of the Department of Public Works until 2:00 p.m. prevailing time, on September 7, 2022, at which time and place said bids will be publicly opened and read aloud.

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

### **2. Location and Work to be Done**

The proposed intersection improvements include narrowing approximately 1400 feet of Route 53 to provide 5.5' Sidewalks from STA 36+35 to 50+35; Installation of a new traffic signal on Route 53 at the North Mall Drive; Modifying the existing Route 53 Coordinated Traffic Signal System; installation of ADA compliant wheelchair ramps; and overlaying Route 53 from 38+60 to 50+35, in the Town of Hanover, Massachusetts. See Design Plans for more details on the proposed scope and limits of work.

Sequence and schedule of construction to be submitted by the Contractor for approval to the Owner and Engineer prior to construction beginning.

The location, general characteristics and principal details of the Work are indicated on the set of Contract Drawings prepared by Vanasse & Associate, Inc. and titled “Transportation Improvement Project, Washington Street (Route 53) Hanover, MA” dated June 2022.

Additional drawings showing details in accordance with which the Work is to be done shall be furnished from time to time by the Engineer, if found necessary, and shall then become a part of the Contract Drawings.

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

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

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3. Preparation of Bid

Each bid must be submitted on the prescribed forms. All blank spaces for bid prices must 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, his address, and endorsed with the name of the project as specified in Receipt and Opening of Bids, above. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in Receipt and Opening of Bids, above.

4. Bid Opening Procedure

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

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

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

Bid signatures will be checked.

Addenda will be issued and distributed to all plan holders registered via email to [dderoche@rdva.com](mailto:dderoche@rdva.com). All bidders shall include with their bids the acknowledgment of the receipt of all addenda. Space is provided in the Section 00300, FORM FOR THE BID. Bidders who have not acknowledged the receipt of all addenda shall have their bids rejected from consideration.

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

5. Modification

Bidder can withdraw their bid up until the time specified in Receipt and Opening of Bids or replace their Bid forms with submission of a new bid package up until the time specified in Receipt and Opening of Bids. It is the bidder's sole responsibility to withdraw/replace their bids and all bid security procedures shall remain in effect until the bidders physically withdraws their bid or receives written response from the Owner acknowledging the withdrawal of said bid.

6. Qualification of Bidder

All bidders on this project must be prequalified by the Massachusetts Highway Department to perform the types of work required by this contract. Bidders may be investigated by the Owner to determine if they are qualified to perform the Work. All Bidders shall be prepared to submit within five (5) days of the Owner's or the Engineer's request, written evidence of such information and data necessary to make this determination.



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The investigation of a Bidder shall seek to determine whether the organization is adequate in size to complete the work in accordance with the Contract Documents, is authorized to do business in the jurisdiction where the Project is located, has had previous experience and whether available equipment and financial resources are adequate to assure the Owner that the Work shall be completed in accordance with the terms of the Agreement. The amount of other work to which the Bidder is committed may also be considered.

In evaluating Bids, the Owner shall consider the qualifications of only those Bidders who's Bids are in compliance with the prescribed requirements. The Owner's decision or judgement on these matters will be final, conclusive, and binding.

The Owner reserves the right to reject any Bid if the evidence submitted by, or the investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract Documents and to complete the Work contemplated therein.

### 7. Conditions of Work

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

### 8. Addenda and Interpretations

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

Bid period inquiries regarding the work required by the Contract Documents shall be directed by email to Vanasse and Associates, Inc., Attention: Dan DeRoche @ [dderoche@rdva.com](mailto:dderoche@rdva.com). Oral questions shall not be accepted and oral interpretations of questions shall not be given.

Questions and answers will be posted in all addenda. Addenda will be issued and distributed to all plan holders registered via email to [dderoche@rdva.com](mailto:dderoche@rdva.com). Only those bidders who have received a response from [dderoche@rdva.com](mailto:dderoche@rdva.com) will receive updates to the bid documents.

Addenda may be required during the bidding period to modify, clarify or interpret the Bid and Contract Documents. Failure to review such Addenda shall in no way relieve any Bidder from the execution of its provisions. All Bidders are cautioned to verify the number of addenda which have been issued and to review their contents before submitting a Bid.

If the bidder has specific questions regarding the proposed design or requires clarification of any bid documents, they shall submit all questions to Vanasse & Associates, Inc. via email at [dderoche@rdva.com](mailto:dderoche@rdva.com). To ensure proper handling of all emails the Subject Line shall include the "Hanover - Contract #23-105" and the email shall clearly define the question and indicate the page(s) of the bid package and/or plans related to the question. The email shall also include the name and phone number of the sender incase

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followup correspondence is required. All bid questions shall be received no later than 5:00PM on Friday September 2, 2022.. All responses with be distributed by Addenda as described above. The final Addenda shall be posted approximately 48 hours prior to the time of the bid opening.

9.     Security for Faithful Performance

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

10.    Power of Attorney

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

11.    Laws and Regulations

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

12.    Liquidated Damages for Failure to Enter into Contract

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

13.    Obligation of Bidder

Each Bidder, by making a Bid, represents that:

1. It has read and understands the Contract Documents and that the Bid is made in accordance therewith.
2. It has visited the site and is familiar with the local conditions under which the Work has to be performed.
3. All subcontractors will be evaluated and must be acceptable to the Owner prior to them performing the work. The Bidder acknowledges and accepts the condition of the Town's right to reject any subcontractor that does not meet the Town of Hanover's approval.

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Failure to so examine the Contract Documents and Site does not relieve any Bidder from any obligation under the Bid as submitted.

The Contractor agrees to use the products and methods designated or described in the Contract.

14. Information Not Guaranteed

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

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

15. Bid Security

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

Surety companies executing bonds shall appear on the U.S. Treasurers Departments current Circular 570, as amended.

16. Right to Reject Bid

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

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

A bid which includes for any item a bid price that is abnormally low or high may be rejected as unbalanced. "pennied" and "dollared" bid items, for example, may trigger this condition.

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17. Time for Completion

The successful general bidder must agree to commence work within ten (10) days of the date of the Notice to Proceed and to fully complete the project within the time limit stated in SECTION 00500, AGREEMENT.

18. Comparison of Bids

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

19. Award of Contract

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

20. Statutes Regulating Competitive Bidding

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

21. Wage Rates

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

22. Execution of Agreement

When the Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by an unsigned copy of the Contract Agreement and all other applicable Contract Documents. Within ten (10) days, excluding Saturdays, Sundays and legal holidays, after the date of receipt of such notification, the Contractor shall execute and return all copies of the Contract Agreement and all other applicable Contract Documents to the Owner. Within fourteen (14) days thereafter, the Owner shall deliver one (1) fully signed copy to the Contractor.

23. Contractor Records

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

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24.     Insurance

The Contractor shall carry and continuously maintain until completion of the Contract, insurance as specified in SECTION 00800, SC 6.03 and SC 6.04.

25.     Massachusetts Sales Tax

Materials and equipment purchased for permanent installation in this Project shall be exempt from the Massachusetts sales tax. The exemption certificate number shall be furnished to the Contractor. Each Bidder shall take this exemption into account in calculating its Bid for the Work.

26.     Safety and Health Regulations

This project is subject to the health and safety regulations of the U.S. Department of Labor, as set forth in Title 29 CFR part 1926 and to all subsequent amendments of the Commonwealth of Massachusetts Department of Labor and Industries Division of Industrial Safety “Rules and Regulations for the Prevention of Accidents in Construction Operations, as set forth in Chapter 454 CMR 10.00 et seq. Contractors shall be familiar with the requirements of these regulations.

27.     Project Manager

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

28.     Asphalt Price Adjustment

Hot mix asphalt prices under this contract will be adjusted per MassDOT Document 00811 (see Appendix B). The base liquid asphalt price for this contract is \$800.00/ton which is as obtained from MassDOT’s June 2022 price.

29.     MassWorks Grant Information

The bidder shall be made aware that this project is funded by a MassWorks grant. Funds are distributed by the State of Massachusetts to the Town of Hanover for monthly payments to the Contractor based on pay applications submitted monthly. Payments made may take up to 2 months to process and distribute to the Contractor. The Contractor shall have no right to interest claims on payments that are processed and paid following the typical MassWorks payment schedules.

**END OF SECTION**

# TOWN OF HANOVER

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TRANSPORTATION IMPROVEMENT PROJECT  
WASHINGTON STREET (ROUTE 53)  
CONTRACT NO. 23-105

SECTION 00300

FORM FOR THE BID

TO: Town of Hanover  
Department of Public Works  
495 Hanover Street  
Hanover, MA 02339

RE: Transportation Improvement Project, Washington Street (Route 53)  
CONTRACT NO 23-105

BID OF: \_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Street Address of Bidder

\_\_\_\_\_  
City, State and Zip Code of Bidder

\_\_\_\_\_  
Telephone Number of Bidder (including area code) Fax Number of Bidder

The Undersigned declares that the only persons or parties interested in this Bid as principals are as stated: that the Bid is made without any collusion with other persons, firms or corporations; that all the Contract Documents, together with all Addenda issued prior to closing time for receipt of Bids, as prepared by Vanasse and Associates, Inc. and dated June 2022 have been carefully examined; that the Undersigned is fully informed in regard to all conditions pertaining to the Work and the place where it is to be done, and from them the Undersigned makes this Bid. The word person shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. These prices shall cover all labor, materials and expenses incurred in performing the Work required under the Contract Documents and all Addenda subject to additions or deductions according to the terms of the Contract Document and which this Bid Form is a part.

If Notice of Award accompanied by at an unsigned copy of the Agreement and all other applicable Contract Documents is delivered to the Undersigned within 30 days, excluding Saturdays, Sundays and legal holidays, after the actual date of the opening of the Bids, the Undersigned shall within ten (10) days, excluding Saturdays, Sundays and legal holidays after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to the Owner. The premiums for all bonds required shall be paid by the Contractor and shall be included in the Contract Price.

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The Undersigned further agrees that the Bid Security accompanying this Bid shall become the property of the Owner if the Bidder fails to execute the Agreement as stated above.

The Bid Security shall be sealed in a separate envelope from the Bid and then attached to the envelope containing the Bid.

The Undersigned hereby agrees that the Contract Time shall commence on the date indicated in Section 00550, "Notice to Proceed" and to achieve final completion of the Work by June 30, 2023 and in accordance with the terms as stated in the Agreement.

The undersigned acknowledges receipt of addenda numbered:

Addenda Nos. _____	Dates: _____
_____	_____
_____	_____
_____	_____

TO THE OWNER:

- A. In accordance with the above understanding, the undersigned proposes to perform the Work, furnish all materials and complete the Work in its entirety in the manner and under the conditions required at the prices listed in the Bid Tabulation included in this section (pages 00300-1 to 00300-24) for the Contract Price of:

\_\_\_\_\_ Dollars (Base Bid)  
(Bid amount in words)

(\$ \_\_\_\_\_) (Base Bid)  
Bid amount in figures

- B. The subdivision of the proposed Contract Price is listed in the Bid tabulation contained in this Section.
- C. The above bid amount is the base bid in which the Contract Award will be based on.
- D. The Undersigned agrees that if it is selected as the Contractor, it shall within ten (10) days (Saturdays, Sundays and legal holidays excluded) after presentation by the Owner, execute a Contract according to the terms of this Bid and furnish a Performance Bond and Payment Bond each of a Surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Owner and each in the sum of 100 percent of the Contract Price, the premiums for which are to be paid by the Contractor and included in the Contract Price.

The time period for holding bids, where federal approval is not required is 30 days. Saturdays, Sundays and legal holidays excluded, after the opening of the Bids and where federal approval is required, the time period for holding bids is 30 days, Saturdays, Sundays and holidays excluded, after federal approval.

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ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 101     CLEARING AND GRUBBING</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER    ACRE	<b>0.25</b>	<b>A</b>	\$ _____
<b>ITEM 120.1 - UNCLASSIFIED EXCAVATION</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER    CUBIC YARD	<b>1000</b>	<b>CY</b>	\$ _____
<b>ITEM 141.1 - TEST PIT FOR EXPLORATION</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER    CUBIC YARD	<b>80</b>	<b>CY</b>	\$ _____
<b>ITEM 142 - CLASS B TRENCH EXCAVATION</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER    CUBIC YARD	<b>20</b>	<b>CY</b>	\$ _____
<b>ITEM 144 - CLASS B ROCK EXCAVATION</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER    CUBIC YARD	<b>10</b>	<b>CY</b>	\$ _____



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ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 145 - DRAINAGE STRUCTURE ABANDONED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER EACH	1	EA	\$_____
<b>ITEM 146 - DRAINAGE STRUCTURE REMOVED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER EACH	3	EA	\$_____
<b>ITEM 150 - ORDINARY BORROW</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER CUBIC YARD	50	CY	\$_____
<b>ITEM 150.1 - SPECIAL BORROW</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER CUBIC YARD	0	CY	\$_____
<b>ITEM 151 - GRAVEL BORROW</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER CUBIC YARD	740	CY	\$_____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 151.2 - GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER     CUBIC YARD	30	CY	\$_____
<b>ITEM 153 - CONTROLLED DENSITY FILL - EXCAVATABLE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER     CUBIC YARD	30	CY	\$_____
<b>ITEM 156 - CRUSHED STONE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER     TON	20	TN	\$_____
<b>ITEM 170 - FINE GRADING AND COMPACTING - SUBGRADE AREA</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER     SQUARE YARD	2,500	SY	\$_____
<b>ITEM 191.1 - HOLLOW STEM AUGER BORINGS</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER     FOOT	90	FT	\$_____

BID TABULATION  
WASHINGTON STREET (ROUTE 53)  
HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 191.11 - CORE BORING</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	<b>20</b>	<b>FT</b>	\$ _____
<b>ITEM 193 - MOBILIZATION AND DISMANTLING OF BORING EQUIPMENT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____
<b>ITEM 201 CATCH BASIN</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>5</b>	<b>EA</b>	\$ _____
<b>ITEM 202 - MANHOLE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>3</b>	<b>EA</b>	\$ _____
<b>ITEM 204 - GUTTER INLET</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>3</b>	<b>EA</b>	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 220 - DRAIN STRUCTURE ADJUSTED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	4	EA	\$ _____
<b>ITEM 220.3 - DRAIN STRUCTURE CHANGE IN TYPE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	2	EA	\$ _____
<b>ITEM 220.5 - DRAIN STRUCTURE REMODELED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	3	EA	\$ _____
<b>ITEM 220.7 - SANITARY STRUCTURE ADJUSTED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	4	EA	\$ _____
<b>ITEM 221 - FRAME AND COVER</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	5	EA	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 222.1 - FRAME AND GRATE - MASSDOT CASCADE TYPE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER EACH <b>5</b> <b>EA</b> \$_____			
<b>ITEM 223.2 - FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER EACH <b>4</b> <b>EA</b> \$_____			
<b>ITEM 227.3 - REMOVAL OF DRAINAGE STRUCTURE SEDIMENT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER CUBIC YARD <b>20</b> <b>CY</b> \$_____			
<b>ITEM 227.31 - REMOVAL OF DRAINAGE PIPE SEDIMENT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER FOOT <b>150</b> <b>FT</b> \$_____			
<b>ITEM 227.4 - MASONRY PLUG</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER SQUARE FOOT <b>20</b> <b>SF</b> \$_____			

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 238.10 - 10 INCH DUCTILE IRON PIPE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	30	FT	\$ _____
<b>ITEM 241.12 - 12 INCH REINFORCED CONCRETE PIPE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	60	FT	\$ _____
<b>ITEM 244.12 - 12 INCH REINFORCED CONCRETE PIPE CLASS V</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	50	FT	\$ _____
<b>ITEM 358 - GATE BOX ADJUSTED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	17	EA	\$ _____
<b>ITEM 381.3 - SERVICE BOX ADJUSTED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	2	EA	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 384.2 - CURB STOP BOX ADJUSTED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER EACH <b>2</b> <b>EA</b> \$_____			
<b>ITEM 402 - DENSE GRADED CRUSHED STONE FOR SUB-BASE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER CUBIC YARD <b>90</b> <b>CY</b> \$_____			
<b>ITEM 415.1 - PAVEMENT STANDARD MILLING</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER SQUARE YARD <b>8500</b> <b>SY</b> \$_____			
<b>ITEM 431 - HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER SQUARE YARD <b>50</b> <b>SY</b> \$_____			
<b>ITEM 440 - CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER POUND <b>4,000</b> <b>LB</b> \$_____			

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 450.23 - SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER TON	840	TON	\$ _____
<b>ITEM 450.32 - SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER TON	130	TON	\$ _____
<b>ITEM 450.42 - SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER TON	200	TON	\$ _____
<b>ITEM 450.52 - SUPERPAVE LEVELING COURSE - 9.5 (SLC - 9.5)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER TON	50	TON	\$ _____
<b>ITEM 451 - HMA FOR PATCHING</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER TON	70	TON	\$ _____



HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 452 - ASPHALT EMULSION FOR TACK COAT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER GALLON	1,000	GAL	\$ _____
<b>ITEM 453 - HMA JOINT SEALANT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER FOOT	4,700	FT	\$ _____
<b>ITEM 472 - ASPHALT MIXTURES FOR TEMPORARY WORK</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER TON	50	TON	\$ _____
<b>ITEM 482.3 - SAWCUTTING ASPHALT PAVEMENT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER FOOT	4,000	FT	\$ _____
<b>ITEM 482.4 - SAWCUTTING PORTLAND CEMENT CONCRETE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER FOOT	300	FT	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 506 - GRANITE CURB TYPE VB - STRAIGHT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER FOOT	840	FT	\$_____
<b>ITEM 506.1 - GRANITE CURB TYPE VB - CURVED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER FOOT	1,020	FT	\$_____
<b>ITEM 509 - GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - STRAIGHT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER FOOT	0	FT	\$_____
<b>ITEM 509.1 - GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - CURVED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER FOOT	0	FT	\$_____
<b>ITEM 514 - GRANITE CURB INLET - STRAIGHT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER EACH	3	EA	\$_____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 580 - CURB REMOVED AND RESET</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	800	FT	\$ _____
<b>ITEM 581 - CURB INLET REMOVED AND RESET</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	3	FT	\$ _____
<b>ITEM 594 - CURB REMOVED AND DISCARDED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	250	FT	\$ _____
<b>ITEM 620.12 - GUARDRAIL, TL-2 (SINGLE FACED)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	260	FT	\$ _____
<b>ITEM 627.1 - TRAILERING ANCHORAGE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	1	EA	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 627.82 - GUARDRAIL TANGENT END TREATMENT, TL-2</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	1	EA	\$ _____
<b>ITEM 630.2 - GUARDRAIL REMOVED AND DISCARDED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	300	FT	\$ _____
<b>ITEM 657.1 - TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	1	LS	\$ _____
<b>ITEM 657.11 - TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM INSTALLED AND REMOVED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	15	EA	\$ _____
<b>ITEM 697.1 - SILT SACK</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	15	EA	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 701 - CEMENT CONCRETE SIDEWALK</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER SQUARE YARD	<b>870</b>	<b>SY</b>	\$ _____
<b>ITEM 701.1 - CEMENT CONCRETE SIDEWALK AT DRIVEWAYS</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER SQUARE YARD	<b>200</b>	<b>SY</b>	\$ _____
<b>ITEM 701.2 - CEMENT CONCRETE PEDESTRIAN CURB RAMP</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER SQUARE YARD	<b>330</b>	<b>SY</b>	\$ _____
<b>ITEM 702 - HOT MIX ASPHALT SIDEWALK OR DRIVEWAY</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER TON	<b>90</b>	<b>TON</b>	\$ _____
<b>ITEM 710.3 - BOUND - LETTERED GRANITE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>2</b>	<b>EA</b>	\$ _____

BID TABULATION  
WASHINGTON STREET (ROUTE 53)  
HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 711 - BOUND REMOVED AND RESET</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>2</b>	<b>EA</b>	\$ _____
<b>ITEM 747 - EQUIPMENT FOR ENGINEERS FIELD OFFICE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER MONTH	<b>1</b>	<b>LS</b>	\$ _____
<b>ITEM 748 - MOBILIZATION</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____
<b>ITEM 751 - LOAM FOR ROADSIDES</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER CUBIC YARD	<b>130</b>	<b>CY</b>	\$ _____
<b>ITEM 756 - NPDES STORMWATER POLLUTION PREVENTION PLAN</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____

BID TABULATION  
WASHINGTON STREET (ROUTE 53)  
HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 765 - SEEDING</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER SQUARE YARD	<b>940</b>	<b>SY</b>	\$ _____
<b>ITEM 766 - REFERTILIZATION</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER SQUARE YARD	<b>940</b>	<b>SY</b>	\$ _____
<b>ITEM 769 - PAVEMENT MILLING MULCH UNDER GUARD RAIL</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	<b>310</b>	<b>FT</b>	\$ _____
<b>ITEM 804.3 - 3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC - (UL)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	<b>940</b>	<b>FT</b>	\$ _____
<b>ITEM 811.22 - ELECTRIC MANHOLE - SD2.022</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>10</b>	<b>EA</b>	\$ _____

BID TABULATION  
WASHINGTON STREET (ROUTE 53)  
HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 811.31 - PULL BOX 12 X 12 INCHES - SD2.031</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>3</b>	<b>EA</b>	\$ _____
<b>ITEM 811.35 - PULL BOX ADJUSTED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>8</b>	<b>EA</b>	\$ _____
<b>ITEM 811.36 - ELECTRIC MANHOLE ADJUSTED</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>4</b>	<b>EA</b>	\$ _____
<b>ITEM 815.4 - TRAFFIC CONTROL SIGNAL</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____
<b>ITEM 815.98 - FOOTING COST ADJUSTMENT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	<b>20</b>	<b>FT</b>	\$ _____



BID TABULATION  
WASHINGTON STREET (ROUTE 53)  
HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 816.1 - TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 1</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____
<b>ITEM 816.2 - TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 2</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____
<b>ITEM 816.3 - TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 3</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____
<b>ITEM 816.5 - TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 5</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____
<b>ITEM 816.6 - TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 6</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	<b>1</b>	<b>LS</b>	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 816.7 - TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 7</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER LUMP SUM <b>1</b> <b>LS</b> \$_____			
<b>ITEM 832 - WARNING-REGULATORY AND ROUTE MARKER – ALUM. PANEL (TYPE A)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER SQUARE FOOT <b>73</b> <b>SF</b> \$_____			
<b>ITEM 833.7 - DELINEATION FOR GUARD RAIL TERMINI</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER EACH <b>2</b> <b>EA</b> \$_____			
<b>ITEM 847.1 - SIGN SUP (N/ GUIDE) + RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER EACH <b>12</b> <b>EA</b> \$_____			
<b>ITEM 850.41 - ROADWAY FLAGGER</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$_____)PER HOUR <b>400</b> <b>HR</b> \$_____			

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 851.1 - TRAFFIC CONES FOR TRAFFIC MANAGEMENT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER DAY	200	DAY	\$ _____
<b>ITEM 852 - SAFETY SIGNING FOR TRAFFIC MANAGEMENT</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER SQUARE FOOT	350	SF	\$ _____
<b>ITEM 853.1 - PORTABLE BREAKAWAY BARRICADE TYPE III</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	3	EA	\$ _____
<b>ITEM 853.403 TRUCK MOUNTED ATTENUATOR</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER DAY	13	DAY	\$ _____
<b>ITEM 853.8 - TEMPORARY ILLUMINATION FOR WORKZONE</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER DAY	10	DAY	\$ _____

BID TABULATION  
WASHINGTON STREET (ROUTE 53)  
HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 854.016 - TEMPORARY PAVEMENT MARKINGS – 6 INCH (PAINTED)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	<b>4,400</b>	<b>FT</b>	\$ _____
<b>ITEM 854.036 - TEMPORARY PAVEMENT MARKINGS – 6 INCH (TAPE)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	<b>600</b>	<b>FT</b>	\$ _____
<b>ITEM 854.1 - PAVEMENT MARKING REMOVAL</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER SQUARE FOOT	<b>250</b>	<b>SF</b>	\$ _____
<b>ITEM 854.5 - RAISED PAVEMENT MARKER REMOVAL</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	<b>1</b>	<b>EA</b>	\$ _____
<b>ITEM 856 - ARROW BOARD</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER DAY	<b>80</b>	<b>DAY</b>	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 856.12 - PORTABLE CHANGEABLE MESSAGE SIGN</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER DAY	60	DAY	\$ _____
<b>ITEM 859 - REFLECTORIZED DRUM</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER DAY	9,600	DAY	\$ _____
<b>ITEM 859.1 - REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHTS</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER DAY	2,400	DAY	\$ _____
<b>ITEM 864.04 - PAVEMENT ARROW AND LEGENDS REFL. WHITE (THERMOPLASTIC)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER SQUARE FOOT	350	SF	\$ _____
<b>ITEM 866.106 · 6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____) PER FOOT	3,000	FT	\$ _____

HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 866.112 · 12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	1,300	FT	\$ _____
<b>ITEM 867.106 · 6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	3,000	FT	\$ _____
<b>ITEM 867.112 · 12 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER FOOT	240	FT	\$ _____
<b>ITEM 874.2 - TRAFFIC SIGN REMOVED AND RESET</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER EACH	3	EA	\$ _____
<b>ITEM 999 - CONSTRUCTION STAKING</b>  THE SUM OF: _____ DOLLARS _____ & _____ CENTS  (\$ _____)PER LUMP SUM	1	LS	\$ _____

BID TABULATION  
WASHINGTON STREET (ROUTE 53)  
HANOVER, MASSACHUSETTS

ITEM DESCRIPTION & BID PRICE	EST. QTY.	UNIT	TOTAL COST
<b>ITEM 999.1 - POLICE SERVICES</b>  THE SUM OF: <u>One</u> DOLLARS <u>Zero</u> & CENTS (\$1.00)PER ALLOWANCE	140,000	ALLOW	\$140,000
<b>ITEM 999.9 - MATERIAL TESTING</b>  THE SUM OF: _____ DOLLARS _____ & CENTS (\$ _____)PER LUMP SUM	1	LS	\$ _____

Enter the total amount of the bid on page BD-12 of the FORM FOR THE BID

**Remainder of this page is intentionally blank.**

# TOWN OF HANOVER

## COMMONWEALTH OF MASSACHUSETTS

- E. The Undersigned hereby certifies that it can furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work and that it shall comply fully with all laws and regulations applicable to awards made subject to MGL, c. 30 § 39M.
- F. The Undersigned agrees that extra work, if any, shall be performed in accordance with Contract Agreement and the terms of the Contract and shall be paid for as outlined in the Contract Agreement.
- G. Amounts shall be shown in both words and figures, where indicated. In case of discrepancy, the amount shown in words shall govern.

The above prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance and incidentals required to complete Work.

- H. The names and residences of all persons and parties interested in the foregoing Bid as principals are as follows:

(Give first and last names in full. In the case of a corporation, reference is made to "Certificate of the Corporate Vote of Authorization").

---

Name

- I. The Undersigned understands that Owner reserves the right to reject any and all bids.
- J. The Undersigned certifies that, under the penalties of perjury, this Bid is in all respects bona fide, fair and made without collusion or fraud with any other person.
- K. The Undersigned certifies under penalty of perjury that the said undersigned is not currently debarred from doing public construction work in the Commonwealth under the provisions of MGL, c. 29 § 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.
- L. Pursuant to MGL, C. 62C § 49A, I certify under the penalties of perjury that I, to my best knowledge and belief have filed all state tax returns and paid all state taxes required under law.
- M. The Undersigned certifies, under penalties of perjury, that there have been no substantial changes in its financial position or business organization other than those changes noted within the application since the Undersigned's most recent pre-qualification statement and that the Bid is in all respects bonafide, fair and made without collusion or fraud with any other person. "Person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity which sells materials, equipment or supplies used in or for, or engages in the performance of, the same or similar construction, reconstruction, installation, demolition, maintenance or repair work or any part thereof.
- N. The Undersigned agrees and warrants that complete familiarization with the Contract Documents, including any/all Addenda and existing conditions has been achieved for the submission of this Bid and the performance of the Work of this Contract and that the Contract Documents are adequate to produce the required result.



**TOWN OF HANOVER**  
**COMMONWEALTH OF MASSACHUSETTS**

NOTE: If the Bidder is a corporation, indicate state of incorporation under signature and affix corporate seal; if a partnership, give full names and residential addresses if different from business addresses.

---

Name of Bidder

---

Signature and title of Person Signing Bid

---

Business Address

---

City, State and Zip Code

---

Telephone

Facsimile

Date:

Corporate Seal:

# TOWN OF HANOVER

## COMMONWEALTH OF MASSACHUSETTS

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

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

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

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

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

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

The selected Contractor shall furnish a performance bond and a payment bond in an amount at least equal to one hundred percent (100%) of the contract price in accordance with Section 00610 CONSTRUCTION PERFORMANCE BOND, Section 00620 CONSTRUCTION PAYMENT BOND, and as stipulated in the contract. The Performance Bond shall list the Town of Hanover and shall remain in force for a period of three (3) years from final acceptance of the Work.

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

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

---

---

---

---

---

(attach supplementary list if necessary)

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

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

Bank reference \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Bank)

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

\_\_\_\_\_  
(Telephone No.)

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

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

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

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

Respectfully submitted:

Date: \_\_\_\_\_

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

\_\_\_\_\_  
(Type Name of Bidder)

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

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

\_\_\_\_\_  
(City and State)

\_\_\_\_\_  
(Telephone Number)

END OF SECTION

## SECTION 00500

### AGREEMENT

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

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

Transportation Improvement Project  
Washington Street (Route 53)  
CONTRACT NO 23-105

hereinafter called the project, for the sum of

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

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

The CONTRACTOR further agrees to fully complete the project June 30. 2023.

The CONTRACTOR further agrees to pay as liquidated damages the sum of \$0.00 for each consecutive calendar day thereafter as provided in the Liquidated Damages Paragraph of Section 00700 GENERAL CONDITIONS.

The CONTRACTOR further agrees that all payments made from the OWNER to the CONTRACTOR shall contain a 5% retainage that shall be held until the final completion of the project.

The CONTRACTOR further agrees that Changes in the Work shall not be made without prior written approval of the OWNER. Charges or credits for the work covered by the approved change shall be determined by one of the following methods:

- (a) Unit bid prices previously approved.
- (b) An agreed lump sum.
- (c) The actual cost of:
  - (1) Labor.
  - (2) Materials entering permanently into the work.
  - (3) The ownership or rental cost of construction equipment during the time of use on the extra work.
  - (4) Power and consumable supplies for the operation of power equipment.
  - (5) Wages to be paid.

To the cost under (c) there shall be added a fixed fee to be agreed upon but not to exceed ten percent (10%) of the actual cost of work. The fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expenses.

Both parties agree that the Contract Documents consist of the following, together with this Agreement:

Invitation to Bid  
Advertisement for Bids  
Instructions to Bidders  
Form for the Bid  
Certificate of Corporate Vote of Authorization  
Certificates Required by Law  
Notice of Award  
Notice to Proceed  
Performance Bond  
Payment Bond  
Standard General Conditions of the Construction Contract  
Supplemental Conditions  
Special Conditions  
Special Conditions Permits and Licenses  
Change Order  
Certificate of Substantial Completion  
Certificate of Final Payment and Completion of Work  
Items List  
Special Provisions  
Prevailing Wages Rates  
Addenda # \_\_\_\_\_  
Contract Drawings  
Certificate of Insurance

---

(Strike out any inapplicable or fill in missing items)

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

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

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in Section 00700 GENERAL CONDITIONS, and to make payments on account thereof as provided in the Estimates and Payments Paragraph of Section 00700 GENERAL CONDITIONS.

IN WITNESS WHEREOF, the parties to these presents have executed this contract in four (4) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

AGREED:

OWNER:

Town of Hanover, Massachusetts

(Owner)

By \_\_\_\_\_

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

Approved as to Form:

By \_\_\_\_\_  
(Owner's Counsel)

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

CONTRACTOR:

\_\_\_\_\_  
(Owner)

By \_\_\_\_\_

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

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

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

\_\_\_\_\_  
(City, State & Zip)

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 CORPORATE VOTE OF AUTHORIZATION**

DATE:

PROJECT:   Transportation Improvement Project  
              Washington Street (Route 53)  
              Contract #23-105

PROJECT LOCATION:     Town of Hanover, Massachusetts

I hereby certify that at a meeting of the Board of Directors of the:

\_\_\_\_\_duly called and  
held on \_\_\_\_\_, 20\_\_\_\_, when a quorum was present and  
acting, the Board voted that \_\_\_\_\_  
of the \_\_\_\_\_

be, and is, authorized to execute and deliver for and on behalf of the Corporation a Contract with  
the Owner for the construction of the above Project, as Principal execute a Performance and  
Payment Bond concerning this, which Contract and Bond were presented to and made a part of  
the records of said meeting.

I further certify that \_\_\_\_\_  
is duly qualified and acting \_\_\_\_\_  
of the Corporation and that said vote has not been repealed, rescinded or amended.

A true copy of the record,

ATTEST:

\_\_\_\_\_  
CORPORATE SEAL:

Subscribed and Sworn to this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me:

\_\_\_\_\_  
(Notary Public)

My Commission Expires:

OWNER:

CONTRACTOR

\_\_\_\_\_

\_\_\_\_\_

BY: \_\_\_\_\_

\_\_\_\_\_

CORPORATE SEAL:

CORPORATE SEAL:

ATTEST:

ATTEST:

\_\_\_\_\_

\_\_\_\_\_

Address for giving notices:

Address for giving notices:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

As required by MGL, Chapter 44 Section 31C, this is to certify that the Owner has an appropriation which is adequate to cover the executed cost of this Contract.

Note: If the contractor is a corporation, an affidavit giving the principal the right to sign the Agreement must accompany the Agreement.

\_\_\_\_\_

Date:

\_\_\_\_\_

Signed:

\_\_\_\_\_

Title:

Approved as to Form:

\_\_\_\_\_

Signed:

\_\_\_\_\_

Legal Counsel:

\_\_\_\_\_

Title:

\_\_\_\_\_

Date:

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

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

**TAX COMPLIANCE**

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

---

**NON-COLLUSION**

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

---

**PUBLIC CONTRACTOR DEBARMENT**

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

---

**OSHA TRAINING**

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

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

**COMPLETE AND SIGN BELOW:**

\_\_\_\_\_  
Authorized Person's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name & Title of Signatory

\_\_\_\_\_  
Name of Contractor

SECTION 00510

**NOTICE OF AWARD**

TO:

PROJECT Description:      Transportation Improvement Project  
Washington Street (Route 53)  
Contract #23-105

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated \_\_\_\_\_ and Instructions for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$ \_\_\_\_\_.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance Bond, Payment Bond and Certificates of Insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this \_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.

---

BY: \_\_\_\_\_,  
Town Manager  
Town of Hanover

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

BY:

THIS \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

SECTION 00550

**NOTICE TO PROCEED**

TO:

DATE:

PROJECT: Transportation Improvement Project  
Washington Street (Route 53)  
Contract #23-105

You are hereby notified to commence **WORK** on the referenced project in accordance with the Agreement

dated \_\_\_\_\_, on or before \_\_\_\_\_.

You are to fully complete the **WORK** by June 30, 2023

Therefore, the date of completion of all **WORK** is: June 30, 2023

---

OWNER

\_\_\_\_\_, Town Manager

**ACCEPTANCE OF NOTICE**

Receipt of the above **NOTICE TO PROCEED** is hereby acknowledged by:

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

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

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

\_\_\_\_\_  
(Contractor)

**SECTION 00610**

**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_  
(Name of Contractor)

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

\_\_\_\_\_ of \_\_\_\_\_, State of \_\_\_\_\_  
(Surety) (City & State)

\_\_\_\_\_ hereinafter called the "Surety" and licensed by the State  
Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are  
held and firmly bound to the City/Town of \_\_\_\_\_, Massachusetts, hereinafter called  
"Owner", in the penal sum of

\_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which  
sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and  
successors, jointly and severally, firmly by these presents.

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

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

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

00610-1

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

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

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

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

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

**SECTION 00620**

**PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_

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

hereinafter called "Principal" and \_\_\_\_\_ of \_\_\_\_\_,  
(Surety)

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

Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the City/Town of \_\_\_\_\_, Massachusetts, hereinafter called "Owner", in the penal sum of \_\_\_\_\_ Dollars

(\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

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

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

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

00620-1



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

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

ATTEST:

		_____ Surety
_____	By	_____ (Attorney-in-Fact)
		_____
		_____ (Address-Zip Code)
_____	(SEAL)	
Witness as to Surety		
_____		
_____		
(Address-Zip Code)		

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

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



Issued and Published Jointly by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC's Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition). The full EJCDC Construction series of documents is discussed in the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

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# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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## 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 form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting 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, or both; 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, or both; 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; or (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. 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), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree 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 the 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. *Engineer*—The individual or entity named as such in the Agreement.
21. *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.
22. *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. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *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.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
27. *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.
28. *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.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
30. *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.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *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.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *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.
36. *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.
37. *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 furnished by Owner which are designated for the use of Contractor.

38. *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.
39. *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.
40. *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 thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, 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.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *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.
48. *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 the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
1. 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:*
1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
    - a. does not conform to the Contract Documents; or
    - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
    - c. 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 15.04).
- E. *Furnish, Install, Perform, Provide:*
1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean 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, shall mean 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, shall mean 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. 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 Bonds and Evidence of Insurance***

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), 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 executed 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 specifically 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 *Initial 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 for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall 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.

#### 2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items 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 items, or from those established in applicable transmittal protocols.

## ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

### 3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one 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 or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall 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.

### 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, shall mean 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, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, 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, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 Documents 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 Documents 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 shall 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 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 thereunder.
- 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 give written notice to Owner and Contractor 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 editions, 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 shall preclude 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 thirtieth 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 sixtieth day after the day of Bid opening or the thirtieth 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 shall 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 shall 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 shall 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 the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the 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. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall 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 utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
  4. acts of war or terrorism.
- D. 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.
- E. Paragraph 8.03 governs 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.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times 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.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

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

### 5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor 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; 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 7.12, 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 at law; 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 shall 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 known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
  - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); 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 upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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; or
  - 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.

#### 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 either:
  - 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; or
  - 2. is of such a nature as to require a change in the Drawings or Specifications; or
  - 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 the necessity of Owner's obtaining 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 above; 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. *Possible Price and Times Adjustments:*
  1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, 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 conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
  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; or
    - 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 as 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, or both, then any such adjustment shall 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, or both, 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.

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
  - 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
  - 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
    - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
    - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
    - d. 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 in the Contract Documents, or was not shown or indicated 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), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; 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 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. *Possible Price and Times Adjustments:*
  - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, 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. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
    - 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;
    - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
    - d. 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, or both, then any such adjustment shall 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, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

#### 5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
  - 1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
  - 2. 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 Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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; or
  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, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, 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.
- 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 or 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.H shall obligate 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 shall obligate 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 all of Contractor's obligations under the Contract. These bonds shall 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 Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, 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 shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. 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.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

#### 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. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. 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, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

- F. If either party does not purchase or maintain all of 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.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect 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 shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

#### 6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
  - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
  - 4. Foreign voluntary worker compensation (if applicable).
- B. *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:
  - 1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
  - 2. claims for damages insured by reasonably available personal injury liability coverage.
  - 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
  - 1. Products and completed operations coverage:
    - a. Such insurance shall 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, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Broad form property damage coverage.
  4. Severability of interest.
  5. Underground, explosion, and collapse coverage.
  6. Personal injury coverage.
  7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
  8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims 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 shall be written on an occurrence basis.
- E. *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. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *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 shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial

Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

- I. *General provisions:* The policies of insurance required by this Paragraph 6.03 shall:
  1. include at least the specific coverages provided in this Article.
  2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
  3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
  4. remain in effect at least until final payment (and longer if expressly required in this Article) 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 Documents.
  5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed 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.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

#### 6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. 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.

#### 6.05 *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 full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
  1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. 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 may be provided through other insurance policies acceptable to Owner and Contractor.
  3. 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.
  4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
  5. 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).
  6. extend to cover damage or loss to insured property while in transit.
  7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
  8. allow for the waiver of the insurer's subrogation rights, as set forth below.
  9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
  10. not include a co-insurance clause.
  11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
  12. include performance/hot testing and start-up.
  13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this

Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed 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.

- C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- 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 notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance*: 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 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

#### 6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers 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. 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 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 Subcontractors, all individuals or entities identified in the Supplementary Conditions as 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. None of the above waivers shall extend 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. 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:
  - 1. loss 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 perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner 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.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work 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 any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

#### **6.07    *Receipt and Application of Property Insurance Proceeds***

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 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 6.05 shall 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, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

### **ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES**

#### **7.01    *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. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

#### 7.02 *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 at all times maintain good discipline and order at the Site.
- B. 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 shall 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.

#### 7.03 *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 shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall 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 shall 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.

#### 7.04 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, 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 material or equipment, or items from other proposed suppliers under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

- a. in the exercise of reasonable judgment Engineer determines that:
    - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
    - 2) it 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) it has a proven record of performance and availability of responsive service; and
    - 4) it is not objectionable to Owner.
  - b. Contractor certifies that, if approved and incorporated into the Work:
    - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
    - 2) it 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 shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the proposed item as a substitute pursuant to Paragraph 7.05.

## 7.05 Substitutes

- A. Unless the specification or description of an item of material or equipment 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 material or equipment under the circumstances described below. To the extent possible such requests shall 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 material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.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 material or equipment that Contractor seeks to furnish or use. The application:
  - a. shall 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 that specified, and
    - 3) be suited to the same use as that 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 that specified, and
    - 2) available engineering, sales, maintenance, repair, and replacement services.
  - d. shall 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 shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity 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 five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. 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, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, 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, Supplier, or other individual or entity, whether initially or as a replacement, shall 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 fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
  - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
  - 2. shall create 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.

#### **7.07 *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 a particular 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 shall be disclosed by Owner 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.

#### 7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. 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

#### 7.09 *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.

#### 7.10 *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. Except where otherwise expressly required by applicable Laws and Regulations, 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 shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give 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 notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

#### 7.11 *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.

#### 7.12 *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. 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.
- B. 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. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when 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.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. 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.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.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).

- F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- G. Contractor's duties and responsibilities for safety and protection shall 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.

#### 7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of 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 threatened 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 thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

#### 7.16 *Shop Drawings, Samples, and Other Submittals*

- A. *Shop Drawing and Sample Submittal Requirements:*
  - 1. Before submitting a Shop Drawing or Sample, Contractor shall have:
    - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
    - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
    - c. determined and verified 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
    - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
  - 2. Each submittal shall 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 submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.
1. *Shop Drawings:*
    - a. Contractor shall submit the number of copies required in the Specifications.
    - b. Data shown on the Shop Drawings will 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.D.
  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.D.
  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. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. 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, conform to the information given in 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 shall 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.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 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, shall 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, Sample, or other submittal shall 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.D.4.

E. *Resubmittal Procedures:*

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 submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper 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.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

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. any inspection, test, or approval by others; or
  8. any correction of defective Work by Owner.
- D. 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 shall 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 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 performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury 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 shall 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.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

## 7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

## **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 utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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.

- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, 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.

#### 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 at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner 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, or both. 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 shall 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. When applicable, any such equitable adjustment in Contract Price shall 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 is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- 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. 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 to 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.

- C. 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 to Contractor.
- D. 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 shall 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 Documents (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 10.08. 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 *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 Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

#### 10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

#### 10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

#### 10.06 *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.

#### 10.07 *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.

#### 10.08 *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, shall 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 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 10.08 shall also apply to the Resident Project Representative, if any.

#### 10.09 *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 (if any) of which Engineer has been informed.

### **ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK**

#### 11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
  - 1. *Change Orders:*
    - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
    - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not 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, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
  - 2. *Work Change Directives:* 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 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: 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. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

#### 11.02 *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. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes 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 shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate 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.

#### 11.03 *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.

#### 11.04 *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 shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall 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); or
  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 11.04.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 11.04.C).
- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall 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 shall be 15 percent;
    - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five 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 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.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 five 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 shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
    - d. no fee shall 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 will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
    - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

#### 11.05 *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 shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

#### 11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. 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. The supporting data shall 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. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
  2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall 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.
  3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *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 that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

#### 11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the 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 11.02, (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 in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

#### 11.08 *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 shall be submitted 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; and
  - 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.
- 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 shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, 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 shall 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 shall 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 shall 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 shall 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 shall 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 shall 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 shall be incorporated in a Change Order 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. 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 shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall 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. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, 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, shall 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 shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall 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, who 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 shall 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 for services specifically related to the Work.
5. Supplemental costs including 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, and hand tools not owned by the workers, 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.
  - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the 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 property insurance established in accordance with Paragraph 6.05), 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 shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall 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 shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety 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. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. 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.
- 5. 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:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

## 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 on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a 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 on account of Work covered by allowances, and the Contract Price shall 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, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
  - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
  - 2. there is no corresponding adjustment with respect to any other item of Work; and
  - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

## 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 will 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 therewith 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 shall 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 shall 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 shall 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 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 shall 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 special 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, or both, 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 shall 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 rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven 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 on account of 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. 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 shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and 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.
  - 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
  - 3. 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, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, 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 on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of 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 that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
  - j. liquidated 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;
  - l. there are other items entitling 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 shall 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 shall be treated as an amount due as determined by Paragraph 15.01.C.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 seven 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 shall 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 seven 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 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 6.05 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 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall 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 disputes that Contractor believes are unsettled; 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 Application and Acceptance:***

1. 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 ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall 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. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *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.
- D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

#### 15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- 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 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 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, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then 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 other adjacent areas;
  - 2. correct such defective Work;
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, 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 therefrom.
- B. If 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 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 correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. 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.
- D. 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.
- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not 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, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall 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) ten 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) 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 seven 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 shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

#### 16.03 *Owner May Terminate For Convenience*

- A. Upon seven 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 on account of loss of anticipated overhead, profits, or revenue, 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 seven 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, seven 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; and
  - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising 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; or
  - 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 Documents requires the giving of written notice, it will be deemed to have been validly given if:
  - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
  - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

### 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 shall not constitute a waiver of that provision, nor shall 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 or completion of the Contract or termination 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 *Headings*

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



## SECTION 00800

### SUPPLEMENTAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC No. C-700, 2013 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not specifically amended or supplemented hereby remain in full force and effect.

#### **ARTICLE 1. DEFINITIONS AND TERMINOLOGY**

##### **SC-1.01.A.13**

Add the following language at the beginning of the definition entitled "Contract Documents" in the General Conditions:

The Invitation to Bid, Instructions to Bidders

##### **SC-1.01.A.28**

Add the following language to the definition entitled "Owner" in the General Conditions:

The "Owner" shall mean the Town of Hanover, Massachusetts.

##### **SC-1.01.A.40**

Delete the definition of Substantial Completion in the General Conditions in its entirety and add the following in its place:

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 Owner's use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work required by the Contract.

##### **SC-1.01.A.49**

Add the following definition to the General Conditions:

"State" shall mean the Commonwealth of Massachusetts.

#### **ARTICLE 2. PRELIMINARY MATTERS**

##### **SC-2.01.C**

Delete this paragraph

## **SC-2.01.D**

Add a new paragraph immediately after paragraph 2.01.C of the General Conditions, which is to read as follows:

Non-Resident Contractor: The CONTRACTOR, if a corporation established under laws other than the State in which the proposed construction is located, shall file with the OWNER, notice of the name of its resident attorney-in-fact, appointed as required by the laws of the State in which the proposed construction is located. The CONTRACTOR, if a resident of a State other than that in which the proposed construction is located and not a corporation, shall file, at the time of execution of the Agreement, with the OWNER a written appointment of a resident of the State in which the construction is located, having an office or place of business therein, to be his true and lawful attorney upon whom all lawful processes in any actions or proceedings against him may be served; and in such writing, which shall set forth said attorney's place of residence, shall agree that any lawful process against him which is served on said attorney shall be of the same legal force and validity as if served on him and that the authority shall continue in force so long as any liability remains outstanding against him in said State. The power of attorney shall be filed in the office of the Secretary of the State if required, and copies certified by the Secretary shall be sufficient evidence thereof. Such appointment shall continue in force until revoked by an instrument in writing, designating in a like manner some other person upon whom such processes may be served, which instrument shall be filed in the manner provided herein for the original appointment.

## **SC-2.05**

Add the following paragraphs immediately after paragraph 2.05.A.3 of the General Conditions which is to read as follows:

**2.05.A.4** Before any work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates of insurance (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with the requirements of Article 6.

**2.05.A.5** Contractor shall include and identify on the certificate of insurance, indemnification as required by Article 7.18.

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

### **SC-3.01**

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

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

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

### **SC-3.02.A.1**

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

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

### **SC-3.03.A.3**

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

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

## **ARTICLE 4. COMMENCEMENT AND PROGRESS OF THE WORK**

### **SC 4.01**

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

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

### **SC-4.03.A**

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

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

### **SC-4.04**

Add the following paragraph after paragraph 4.04.A.2 of the General Conditions:

"3. 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- 4.05.A**

Delete Paragraph 4.05.A in its entirety.

### **SC-4.05.G**

Delete Paragraph 4.05.G and insert the following in its place:

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

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

**SC-5.01**

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

“5.01.A.1 If all lands and rights-of-way are not obtained as herein contemplated before construction begins, CONTRACTOR shall begin the Work upon such land and rights-of-way as OWNER has previously acquired and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way. Should OWNER be prevented or enjoined from proceeding with the Work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation, or by reason of its inability to procure any lands or rights-of-way for the Work, CONTRACTOR shall not be entitled to make or assert claim for damage by reason of said delay, or to withdraw from the Agreement except by consent of OWNER. Time for completion of the Work will be extended as provided in Article 11, to such time as OWNER determines will compensate for the time lost by such delay.”

**SC-5.01.B**

Delete Paragraph 5.01.B in its entirety.

**SC-5.03**

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

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

**SC-5.04**

Insert the following paragraph before Paragraph 5.04.A

**“5.04 Differing Subsurface or Physical Conditions**

In accordance with Massachusetts General Laws Chapter 30, Section 39N, if, during the progress of the Work, the CONTRACTOR or the OWNER discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents either the CONTRACTOR or the OWNER may request an equitable adjustment in the Contract Price applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such request to the other party as soon as possible after such conditions are discovered. Upon receipt of such a request from the CONTRACTOR, or upon its own initiative, the OWNER will make an investigation of such physical conditions, and if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the OWNER will make an equitable adjustment in the Contract Price and the Contract shall be modified in writing accordingly.”

**SC-5.04.D.1**

Delete Paragraph 5.04.D.1 in its entirety.

Add a new paragraph immediately after paragraph 5.04.D of the General Conditions which is to read as follows:

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

**SC-5.05.A**

Insert the following new paragraph immediately after Paragraph 5.05.A.2:

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

**SC-5.05.B**

Delete the phrase “or was not shown or indicated with reasonable accuracy” following the words “Contract Documents” in the first sentence of Paragraph 5.05.B.

**SC-5.06.B**

Delete Paragraph 5.06.B in its entirety.

**SC-5.06.C**

Add the following at the end of Paragraph 5.06.C: “,or unless CONTRACTOR caused or contributed to such Hazardous Environmental Condition.”

**SC-5.06.E**

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

**SC-5.06.I**

Delete Paragraph 5.06.I in its entirety.

**SC-5.06.J**

Delete the last sentence of Paragraph 5.06.J.

**ARTICLE 6. BONDS AND INSURANCE**

**SC-6.02**

Delete Paragraph 6.02.D in its entirety.

Add a new paragraph immediately after paragraph 6.02.J of the General Conditions which is to read as follows:

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

### SC-6.03

The limits of liability for the insurance required by paragraph 6.03 of the General Conditions shall provide the following coverages for not less than the following amounts or greater where required by Laws and Regulations:

#### 6.03.A Workers' Compensation.

(1)	Worker's Compensation	\$1,000,000
(2)	Employer's Liability	\$1,000,000

6.03.B and 6.03.C Comprehensive General Liability including Operations/Premises, Contractor's Protective, Products/Completed Operations, and Personal Injury liabilities:

(1)	Bodily injury:	\$1,000,000	Each occurrence
		\$3,000,000	Annual aggregate
(2)	Property damage, including explosion, collapse and underground coverage:	\$1,000,000	Each occurrence
		\$3,000,000	Annual aggregate
	Property damage liability insurance shall provide coverage for property in the care, custody and control of the insured.		
(3)	Personal injury, with employment exclusion deleted:	\$3,000,000	Annual aggregate

The Contractual Liability required by paragraph 6.03.C of the General Conditions shall provide coverage for not less than the following amounts:

(1)	Bodily injury:	\$2,000,000	Each occurrence
		\$3,000,000	Annual aggregate
(2)	Property damage, including explosion, collapse and underground coverage:	\$1,000,000	Each occurrence
		\$3,000,000	Annual aggregate
(3)	General Aggregate	\$2,000,000	

6.03.D Comprehensive Automobile Liability including owned, hired and non-owned vehicles:

(1)	Bodily injury:	\$1,000,000	Each person
		\$1,000,000	Each accident
(2)	Property damage	\$1,000,000	Each occurrence

6.03.F Contractor's Pollution Liability Insurance:

Delete Paragraph 6.03.F in its entirety.

### SC-6.04

Delete paragraph 6.04 of the General Conditions in its entirety and insert the following in its place:

6.04.A CONTRACTOR shall purchase and maintain a separate Owner's Protective Liability policy, issued to OWNER at the expense of CONTRACTOR, including OWNER and ENGINEER as named insured. This insurance shall provide coverage for not less than the following amounts:

6.04.A.1 Bodily Injury:

Each Occurrence	\$1,000,000
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6.04.A.2 Property Damage:

Each Occurrence	\$1,000,000
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Annual Aggregate	\$1,000,000
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**SC-6.05**

Delete Paragraph 6.05.A of the General Conditions in its entirety and insert the following in its place:

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

Delete Paragraph 6.05.B of the General Conditions in its entirety and insert the following in its place:

"B. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER by certified mail and will contain waiver provisions in accordance with paragraph 6.06.B."

**SC-6.05.D**

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

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

**SC-6.06A**

Delete Paragraph 6.06A in its entirety and insert the following:

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

#### **SC-6.06.C**

Delete Paragraph 6.06.C in its entirety and replace with the following:

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

#### **SC-6.07**

Delete paragraph 6.07.A of the General Conditions in its entirety.

Delete paragraph 6.07.B of the General Conditions in its entirety.

Delete paragraph 6.07.C of the General Conditions in its entirety.

### **ARTICLE 7. CONTRACTOR'S RESPONSIBILITIES**

#### **SC-7.01**

Add the following new paragraph as follows:

“7.01.C The site superintendent may be a direct employee of the subcontractor provided that this individual has the full authority and responsibility of the general contractor’s specified superintendent. The General Contractor shall submit a letter to the Town and the Engineer stating who the supervisor is and defining his/her authority during all construction related activities.”

#### **SC-7.02.C – 7.02.G**

Insert the following new paragraphs immediately after Paragraph 7.02.B:

“C. Regular working hours are defined as Monday through Friday, excluding holidays, between the hours of 7:00 AM and 5:00 PM. Requests to work other than regular working hours shall be submitted to ENGINEER not less than 48 hours prior to any proposed change. Occasional unscheduled overtime on weekdays may be permitted provided it is approved by ENGINEER.”

“D. CONTRACTOR shall reimburse the OWNER for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated in Paragraph SC-7.02.C. At OWNER’s option, overtime costs may either be deducted from the CONTRACTOR’s monthly payment or deducted from the retainage held by OWNER until release of final payment. Overtime costs for the OWNER’s personnel shall be based on the individual’s current overtime wage rate. Overtime costs for personnel employed by the ENGINEER or OWNER’s independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the OWNER.”

“E. This agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581 87<sup>th</sup> Congress. No Contractor or Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that person’s basic rate of pay for all hours worked in excess of forty hours in such work week.”



“F. CONTRACTOR and Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project to qualified local residents with first preference being given to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefrom or released from active duty therein.

“G. CONTRACTOR shall employ only competent persons to do the work and whenever OWNER shall notify CONTRACTOR, in writing, that any person on the Work appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the consent of OWNER.”

#### **SC-7.04.A**

Insert the following at the end of the third sentence of Paragraph 7.04.A: “, and in accordance with G.L. c.30, §39M.”

Add a new paragraph SC-7.04.A.1.c immediately after paragraph 7.04A.1.b, which is to read as follows:

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

#### **SC-7.06**

Add the following to Paragraph 7.06.A:

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

#### **7.06.H.1**

Add the following paragraph immediately after paragraph 7.06.H:

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

Add the following new paragraph as follows:

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

#### **SC-7.06**

Add the following language at the beginning of paragraph 7.06.L of the General Conditions:

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

**SC-7.07.A** Delete the second sentence of Paragraph 7.07.A.

**SC-7.07.B** Delete this subparagraph.

**SC-7.09**

Add the following language at the end of paragraph 7.09.A of the General Conditions:

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

**SC-7.10C**

Delete the last sentence of Paragraph 7.10C.

**SC-7.11.B – C**

Insert the following new paragraphs immediately after Paragraph 7.11.A:

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

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

**SC-7.12.E** Delete the text in parentheses in Paragraph 7.12.E.

**SC-7.16**

Add the following new paragraph immediately after paragraph 7.16.E of the General Conditions, which is to read as follows:

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

**SC-7.17.E**

Add the following new paragraph 7.17.E, immediately after paragraph 7.17.D of the General Conditions:

“E. CONTRACTOR shall guarantee all materials and equipment furnished and Work performed for a period of one (1) year from the date of Substantial Completion. CONTRACTOR warrants and guarantees for a period of one (1) year from the date of Substantial Completion that the completed Work is free from all defects due to faulty materials or workmanship and CONTRACTOR shall promptly make such corrections as may be necessary by reason of any such defects including the repairs of any damage to other parts of the Work resulting from such defects. In the event that CONTRACTOR should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, OWNER may do so and charge

CONTRACTOR the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period."

**SC-7.18.A**

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

Change the phrase "negligent act or omission" to "negligent or willful or wrongful act or omission."

**SC-7.18.B**

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

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

**ARTICLE 8. OTHER WORK AT THE SITE**

**SC-8.02**

Delete Paragraph 8.02 in its entirety.

**SC-8.03**

Delete paragraph 8.03.D of the General Conditions in its entirety, and insert the following in its place:

"8.03.D Should CONTRACTOR cause damage to the work or property of any separate contractor at the site, or should any claim arising out of CONTRACTOR'S performance of the Work at the site be made by any separate contractor against CONTRACTOR, OWNER, ENGINEER, ENGINEER'S Consultants, or any other person, CONTRACTOR shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER, ENGINEER, and ENGINEER'S Consultants, harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals, and court and arbitration costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any separate contractor against OWNER, ENGINEER, or ENGINEER'S Consultants, to the extent based on a claim arising out of the CONTRACTOR'S performance of the Work. Should a separate contractor cause damage to the Work or property of CONTRACTOR or should the performance of Work by any separate contractor at the site give rise to any other claim, CONTRACTOR shall not institute any action, legal or equitable, against OWNER, ENGINEER, or ENGINEER'S Consultants or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from OWNER, ENGINEER, or ENGINEER'S Consultants, on such action or claim. If CONTRACTOR is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and OWNER and CONTRACTOR are unable to agree to the extent of any adjustment in Contract Times attributable thereto, CONTRACTOR may make a claim for an extension of times in accordance with Article 12.02. An extension of the Contract Times shall be CONTRACTOR'S exclusive remedy with respect to OWNER, ENGINEER, and ENGINEER'S Consultants, for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from OWNER, ENGINEER, or ENGINEER'S Consultant, for activities that are their respective responsibilities."

## **ARTICLE 9. OWNER'S RESPONSIBILITIES**

### **SC-9.02.A**

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

### **SC-9.06**

Delete paragraph 9.06 of the General Conditions in its entirety.

### **SC-9.09**

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

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

## **ARTICLE 10. ENGINEER'S STATUS DURING CONSTRUCTION**

### **SC-10.01**

Add a new paragraph 10.01.B after paragraph 10.01.A 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-10.02B**

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

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

### **SC-10.03**

Delete the last sentence of Paragraph 10.03.A

Add a new paragraph immediately after paragraph 10.03.A of the General Conditions as follows:

"10.03.B ENGINEER will furnish a Resident Project Representative and assistants to assist ENGINEER in observing the performance of the Work. The duties and responsibilities of the Resident Project Representative will be as enumerated in a document entitled "Duties, Responsibilities, and Limitations of

the Authority of Resident Project Representative" and will be made available to CONTRACTOR at the start of his work.”

**SC-10.08.B**

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

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

**SC-10.08.F**

Add a new paragraph immediately after paragraph 10.08.E of the General Conditions which is to read as follows:

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

**ARTICLE 11. AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK**

**SC-11.02**

Add a new paragraph immediately after paragraph 11.02.A of the General Conditions which is to read as follows:

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

**SC-11.02**

Add the following new paragraph immediately after paragraph 11.02.A of the General Conditions, which is to read as follows:

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

**SC-11.04**

In paragraph 11.04.C.2.a change “15 percent” to “10 percent”.

Delete paragraph 11.04.C.2.c

## **ARTICLE 12. CLAIMS**

### **SC-12.01**

Add a new paragraph immediately after paragraph 12.01.D.1 of the General Conditions to read as follows:

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

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

### **SC-13.01**

Add the following to the end of paragraph 13.01.B of the General Conditions to read as follows:

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

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

### **SC-13.01.B.5**

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

### **SC-13.03.E**

Delete Paragraph 13.03.E in its entirety.

### **SC-13.02**

Delete paragraph 13.02 of the General Conditions in its entirety.

### **SC-13.03.E**

Delete Paragraph 13.03.E in its entirety.

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

### **SC-14.02.F**

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

### **SC-14.05.C.2**

Delete Paragraph 14.05.C.2 in its entirety.

### **SC-14.06.B**

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

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

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

**SC-15.01**

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

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

Add new paragraphs immediately after paragraph 15.01.B.1 of the General Conditions to read as follows:

“15.01.B.1.a Only the following items of material and equipment will be accepted for delivery at the site or at a local bonded warehouse and included in progress estimates in advance of actual requirement, subject to all conditions stated below.

15.01.B.1.b Materials and equipment listed above will not be included in progress estimates until the requirements stated herein have been fulfilled.

15.01.B.1.c The Contractor must present an invoice to the Engineer for each item of material or equipment he is requesting payment for. The invoice must be broken down to show the costs for the actual equipment, and reasonable costs for O&M Manuals, spare parts, start-up certification, training, testing, final acceptance testing, and any other services required by Contract.

15.01.B.1.d Sufficient monies have been allocated in the payment requisition line items to cover all of the costs listed in "a" above, plus the costs of physically installing the equipment.

15.01.B.1.e The equipment has been submitted and approved for use in this Project.

15.01.B.1.f The Contractor has, at the time of delivery, given the Engineer written notice of the delivery using the form provided by the Engineer.

15.01.B.1.g The equipment is acceptably stored and protected. Storage in a bonded warehouse will require proof of bonding, and insurance coverage specifically for the item being stored.

15.01.B.1.h The manufacturer's short and/or long term storage requirements have been received by the Engineer, prior to payment.

15.01.B.1.i The Contractor has established a program to implement the manufacturer's required storage procedures. Said program to consist of at the very least a written schedule of daily, weekly, monthly, routine maintenance requirements for each piece of equipment. A copy of this schedule to be presented to the Engineer prior to each requisition submittal, signed by the Contractor, stating that the required maintenance has been performed.

15.01.B.1.j Signed, notarized Title Transfers, format to be furnished by the Engineer, must be furnished for each item of equipment.

15.01.B.1.k When the above have been complied with to the satisfaction of the Engineer, payment will be authorized for the full invoice values of the item of equipment, less normal retainage and less all costs for

O&M Manuals, spare parts, start-up certification, training, testing, final acceptance testing, and installation.”

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

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

#### **SC-15.01.B.4**

Insert the following new paragraph immediately after Paragraph 15.01.B.3:

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

#### **SC-15.01.C.1**

Delete Paragraph 15.01C.1 and insert the following:

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

#### **SC-15.01.D.1**

Delete Paragraph 15.01.D.1 and insert the following:

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

#### **SC-15.01.E.2**

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

#### **SC-15.01.E.3**

Delete this Paragraph in its entirety.

#### **SC-15.02**

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

- “B. No materials or supplies for the Work shall be purchased by CONTRACTOR or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. CONTRACTOR warrants that CONTRACTOR has good title to all materials and supplies used by CONTRACTOR in the Work, free from all liens, claims or encumbrances.”
- “C. CONTRACTOR shall indemnify and save OWNER harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. CONTRACTOR shall, at OWNERS request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If CONTRACTOR fails to do so, then OWNER may, after having served written notice on



the CONTRACTOR, either pay unpaid bills, of which OWNER has written notice, or withhold from the CONTRACTOR's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to CONTRACTOR shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon OWNER to either CONTRACTOR, or CONTRACTOR's Surety. In paying any unpaid bills of the CONTRACTOR, OWNER's payment shall be considered as payment made under the Contract by OWNER to CONTRACTOR and OWNER shall not be liable to CONTRACTOR for any such payment made in good faith."

#### **SC-15.03.C**

Delete the third sentence of Paragraph 15.03.C and insert the following:

"OWNER may review the preliminary certificate and make written objection to ENGINEER as to any provisions of the certificate or attached list."

Delete the phrase " , within 14 days after submission of the preliminary certificate to OWNER," in the fourth sentence of paragraph 15.03.C.

Delete the phrase " , within said 14 days," in the fifth sentence of Paragraph 15.03.C.

#### **SC-15.04.A**

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

Delete Paragraph 15.04.A.2 in its entirety.

#### **SC-15.06**

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

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

#### **SC-15.06.D**

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

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

## **ARTICLE 16. – SUSPENSION OF WORK AND TERMINATION**

### **SC-16.01.A**

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

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

### **SC-16.02.A.5**

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

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

### **SC-16.03.A.1**

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

### **SC-16.03.A.2**

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

### **SC-16.03.A.3**

Delete Paragraph 16.03.A.3 in its entirety.

### **SC-16.04.B**

Delete the last sentence of Paragraph 16.04.B.

## **ARTICLE 17. – FINAL RESOLUTION OF DISPUTES**

### **SC-17.01.C**

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

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

### **SC-17.02**

Add a new paragraph immediately after Paragraph 17.01 of the General Conditions which is to read as follows:

“17.02 Venue

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

## **ARTICLE 18. – MISCELLANEOUS**

### **SC-18.08**

#### **18.08 Headings:**

Delete paragraph 18.08.A and replace with the following paragraph:

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

#### **18.09 Legal Address of Contractor**

Add the following paragraph immediately after section 18.08:

“18.09.A CONTRACTOR'S business address and his office at or near the site of the Work are both hereby designated as places to which communications shall be delivered. The depositing of any letter, notice, or other communication in a postpaid wrapper directed to the CONTRACTOR'S business address in a post office box regularly maintained by the Post Office Department or the delivery at either designated address of any letter, notice, or other communication by mail or otherwise shall be deemed sufficient service thereof upon CONTRACTOR, and the date of such service shall be the date of receipt. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by CONTRACTOR and delivered to ENGINEER. Service of any notice, letter, or other communication upon the CONTRACTOR personally shall likewise be deemed sufficient service.”

### **SC-18.10**

Insert the following new paragraph:

#### **“SC-18.10 Wage Rates**

“A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of the Contract Documents. If after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administering the laws mentioned above.

“B. The schedule of wages referred to above is minimum rates only, and OWNER will not consider any claims for additional compensation made by CONTRACTOR because of payment by CONTRACTOR of any wage in excess of the applicable, required rates.”

END OF SECTION

DOCUMENT 00811  
SPECIAL PROVISIONS  
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES  
ENGLISH AND METRIC UNITS  
Revised: 07/08/2016

This provision applies to all projects using greater than 100 tons (91 megagrams) of hot mix asphalt (HMA) mixtures containing liquid asphalt cement as stipulated in the Notice to Contractors section of the bid documents.

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

**Base Price**

The Base Price of liquid asphalt on a project as listed in the Notice to Contractors section of the bid documents is a fixed price determined by the Department at the time of the bid using the same method as the determination of the Period Price detailed below. The Base Price shall be used in all bids.

**Period Price**

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

**Price Adjustment Determination, Calculation and Payment**

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

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

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

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

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

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

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

SPECIAL CONDITIONS – COMMONWEALTH OF MASSACHUSETTS

**Article 1. M.G.L. Chapter 30: 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).

**Article 2. M.G.L. Chapter 30: 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 a substantial completion, the awarding authority shall prepare and forthwith send to the contractor for acceptance a substantial completion estimate for the quantity and price of the work done and all but five per cent retainage on that work, including the quantity, price and all but five per cent retainage 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 therefore, whichever occurs first. The awarding authority shall include the amount of such interest in the substantial completion estimate.

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

to seven days' written notice to the contractor by certified mail, return receipt requested, terminate the contract and complete the incomplete or unsatisfactory work items and charge the cost of same to the contractor.

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

The awarding authority shall pay the amount due pursuant to any substantial completion or final estimate within thirty-five days after receipt of written acceptance for such estimate from the contractor and shall pay interest on the amount due pursuant to such estimate at the rate hereinabove provided from that thirty-fifth day to the date of payment. Within 15 days, 30 days in the case of the commonwealth, after receipt from the contractor, at the place designated by the awarding authority, if such place is 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 per cent 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.

**Article 3. M.G.L. Chapter 30: 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 willful 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 therefore; (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 willfully 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.

**Article 4. M.G.L. Chapter 30: 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.

**Article 5. M.G.L. Chapter 30: 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 per cent 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 per cent 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 than 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.

#### **Article 6. M.G.L. Chapter 30: 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 the 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.

**Article 7. M.G.L. Chapter 30: Section 39M.**

**Contracts for construction and materials; manner of awarding**

(a) Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, 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 ten thousand dollars, and every contract for the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency, as defined by subsection one of section forty-four A of chapter one hundred and forty-nine, estimated to cost more than \$25,000 but not more than \$100,000, shall be awarded to the lowest responsible and eligible bidder on the basis of competitive bids publicly opened and read by such awarding authority forthwith upon expiration of the time for the filing thereof; provided, however, that such awarding authority may reject any and all bids, if it is in the public interest to do so. Every bid for such contract shall be accompanied by a bid deposit in the form of a bid bond, or cash, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the awarding authority. The amount of such bid deposit shall be five per cent of the value of the bid. Any person submitting a bid under this section shall, on such bid, certify as follows:

"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."

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(Name of person signing bid)

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(Company)

This paragraph shall not apply to the award of any contract subject to the provisions of sections forty-four A to forty-four J, inclusive, of chapter one hundred and forty-nine and every such contract shall continue to be awarded as provided therein. In cases of extreme emergency caused by enemy attack, sabotage or other such hostile actions or resulting from an imminent security threat explosion, fire, flood, earthquake, hurricane, tornado or other such catastrophe, an awarding authority may, without competitive bids and notwithstanding any general or specific law, award contracts otherwise subject to this paragraph to perform work and to purchase or rent materials and equipment, all as may be necessary for temporary repair and restoration to service of any and all public work in order to preserve the health and safety of persons or property; provided, that this exception shall not apply to any permanent reconstruction, alteration, remodeling or repair of any public work.

(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 name or described materials.

(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.

(d) The provisions of this section shall not apply (1) to the extent that they prevent the approval of such specifications by any contributing federal agency, (2) to materials purchased under specifications of the state department of highways at prices established by the said department pursuant to advertisement and bidding in connection with work to be performed under the provisions of chapter eighty-one or chapter ninety, (3) to any transaction between the commonwealth and any of its political subdivisions or between the commonwealth and any public service corporation, and (4) to any contract of not more than twenty-five thousand dollars awarded by a governmental body, as defined by section two of chapter thirty B, in accordance with the provisions of section five of said chapter thirty B; and (5) to any contract solely for the purchase of material awarded by a governmental body, as defined by section 2 of chapter 30B, in accordance with section 5 of said chapter 30B.

(e) The word "material" as used in this section shall mean and include any article, assembly, system, or any component part thereof.

#### **Article 8. M.G.L. Chapter 30: 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.

**Article 9. M.G.L. Chapter 30: 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.

**Article 10. M.G.L. Chapter 30: 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.

**Article 11. M.G.L. Chapter 30: Section 39R.**

**Definitions; contract provisions; management  
and 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 its 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 of 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).

## **Article 12. M.G.L. Chapter 149: 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 male veterans as defined in clause Forty-third of section seven of chapter four, and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the commonwealth generally who have been residents of the commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, and every contract for such work shall contain a provision to this effect. Each county, town or district in the construction of public works, or persons contracting or sub-contracting for

such works, shall give preference to veterans and citizens who are residents of such county, town, authority or district. The rate per hour of the wages paid to said mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works shall not be less than the rate or rates of wages to be determined by the commissioner as hereinafter provided; provided, that the wages paid to laborers employed on said works shall not be less than those paid to laborers in the municipal service of the town or towns where said works are being constructed; provided, further, that where the same public work is to be constructed in two or more towns, the wages paid to laborers shall not be less than those paid to laborers in the municipal service of the town paying the highest rate; provided, further, that if, in any of the towns where the works are to be constructed, a wage rate or wage rates have been established in certain trades and occupations by collective agreements or understandings in the private construction industry between organized labor and employers, the rate or rates to be paid on said works shall not be less than the rates so established; provided further, that in towns where no such rate or rates have been so established, the wages paid to mechanics, teamsters, chauffeurs and laborers on public works, shall not be less than the wages paid to the employees in the same trades and occupations by private employers engaged in the construction industry. This section shall also apply to regular employees of the commonwealth or of a county, town, authority or district, when such employees are employed in the construction, addition to or alteration of public buildings for which special appropriations of more than one thousand dollars are provided. Payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans under collective bargaining agreements or understandings between organized labor and employers shall be included for the purpose of establishing minimum wage rates as herein provided.

Permanent and temporary laborers employed by the state department of highways and by the metropolitan district commission shall receive such salary or compensation as may be fixed under and in accordance with sections forty-five to fifty inclusive of chapter thirty.

**Article 13. M.G.L. Chapter 149: 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, sub-contractor 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; provided, that in contracts entered into by the department of highways for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or sub-contractor for said department, may employ laborers, workmen, mechanics, foremen and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner of labor and industries, public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void.

**Article 14. MINIMUM WAGE RATES.**

In compliance with Massachusetts laws, Chapter 149, Sections 26 to 27H inclusive, job classifications and determinations of the rate of wages applying thereto have been established by the Executive Office of Labor of the Commonwealth of Massachusetts and said job

classifications and determinations of the rates of wages applicable to this project are included in Appendix A of this Document Package.

## **Article 15. M.G.L. Chapter 82:**

### **Section 40. Definitions**

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, 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, excluding excavation by tools manipulated only by human power for gardening purposes and use of blasting for quarrying purposes.

“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.

“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.

“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.

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 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 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 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.

#### **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**

Section 40E. Any person or company found by the department of telecommunications and energy, after a hearing, to have violated any provision of sections 40A to 40E, inclusive, shall be fined \$1,000 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.

#### **Article 16. Additional Statutes Applicable to this Project are:**

- |                  |  |
|------------------|--|
| <b>c.149s44J</b> | <b>Advertising Invitations to Bid</b>  |
| <b>c.82s40</b>   | <b>Excavations; Notices, Penalties</b> |

END OF DOCUMENT

## **DOCUMENT 00858**

### **Special Conditions Permits and Licenses**

#### **1.01 DEPARTMENT OF ENVIRONMENTAL PROTECTION**

##### **A. Hanover Conservation Commission:**

This project is not required to file with the Conservation Commission and as such this project is not subject to a Conservation Commission Order of Conditions

**Document 00905**

**Change Order #**

Date of Issuance: \_\_\_\_\_

Effective Date: \_\_\_\_\_

Project: \_\_\_\_\_

Owner: \_\_\_\_\_

Owner's Contract No.: \_\_\_\_\_

Contract: \_\_\_\_\_

Date of Contract: \_\_\_\_\_

Contractor: \_\_\_\_\_

Engineer's Project No.: \_\_\_\_\_

**The Contract Documents are modified as follows upon execution of this Change Order:**

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Attachments: (List documents supporting change): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CHANGE IN CONTRACT PRICE:**

**CHANGE IN CONTRACT TIMES:**

Original Contract Price: \_\_\_\_\_

Original Contract Times: ☐ Working days ☐ Calendar days

Substantial completion (days or date): \_\_\_\_\_

Ready for final payment (days or date): \_\_\_\_\_

**[Increase]** [Decrease] from previously approved Change Orders No. \_\_\_\_\_ to No. \_\_\_\_\_:

**[Increase]** [Decrease] from previously approved Change Orders No. \_\_\_\_\_ to No. \_\_\_\_\_:

Substantial completion (days): \_\_\_\_\_

Ready for final payment (days): \_\_\_\_\_

Contract Price prior to this Change Order: \_\_\_\_\_

Contract Times prior to this Change Order:

Substantial completion (days or date): \_\_\_\_\_

Ready for final payment (days or date): \_\_\_\_\_

**[Increase]** of this Change Order:

**[Increase]** [Decrease] of this Change Order:

Substantial completion (days or date): \_\_\_\_\_

Ready for final payment (days or date): \_\_\_\_\_

Contract Price incorporating this Change Order: \_\_\_\_\_

Contract Times with all approved Change Orders:

Substantial completion (days or date): \_\_\_\_\_

Ready for final payment (days or date): \_\_\_\_\_

RECOMMENDED:

ACCEPTED:

ACCEPTED:

By: \_\_\_\_\_  
Engineer (Authorized Signature)

By: \_\_\_\_\_  
Owner (Authorized Signature)

By: \_\_\_\_\_  
Contractor (Authorized Signature)

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Approved by Funding Agency (if applicable): \_\_\_\_\_

Date: \_\_\_\_\_

**CERTIFICATE OF SUBSTANTIAL COMPLETION**

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**OWNER'S Project No:** \_\_\_\_\_

**PROJECT:** Transportation Improvement Project – Washington Street (Route 53) – Hanover, MA

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**CONTRACTOR:** \_\_\_\_\_

Contract For: Washington Street (Route 53)

Contract Date: \_\_\_\_\_

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This Certificate of Substantial Completion applies to all work under the Contract Documents or to the following specified parts thereof:

To: Town of Hanover - Department of Public Works  
495 Hanover Street  
Hanover, Massachusetts 02339

(OWNER)

And To \_\_\_\_\_  
(CONTRACTOR)

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The work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR, and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on:

\_\_\_\_\_  
(DATE OF SUBSTANTIAL COMPLETION)

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within \_\_\_\_\_ days of the above date of Substantial Completion.



The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as follows:

RESPONSIBILITIES:

OWNER: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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The following documents are attached to and made a part of this Certificate:

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This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR'S obligation to complete the Work in accordance with the Contract Documents.

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Executed by ENGINEER on \_\_\_\_\_, 2022

\_\_\_\_\_  
(Engineer)

BY: \_\_\_\_\_

CONTRACTOR accepts this Certificate of Substantial Completion on \_\_\_\_\_, 2022

\_\_\_\_\_  
(CONTRACTOR)

BY \_\_\_\_\_

Owner accepts this Certificate of Substantial Completion on \_\_\_\_\_, 2022

Town of Hanover – Town Manager  
(OWNER)

BY \_\_\_\_\_

**CERTIFICATE OF FINAL PAYMENT  
AND COMPLETION OF WORK**

Contract No.: 22-0030

Agreement Date: \_\_\_\_\_

Contract Description: \_\_\_\_\_

Completion Date per Agreement and Change Orders: \_\_\_\_\_

**FINAL CERTIFICATION OF CONTRACTOR**

(Insert Name and Complete Address of Contractor)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Agrees to accept \$ \_\_\_\_\_ (Dollar amount) as full and final payment for all work completed under this contract dated: \_\_\_\_\_

With the Town of Hanover, Massachusetts, for Contract #23-105 Transportation Improvement Project – Washington Street (Route 53) – Hanover, MA.

I certify that all construction has been carried out in substantial compliance with the Contract Documents, and that all labor, equipment, materials and Subcontracts have been or will be paid in accordance with the requirements of the General Laws of the Commonwealth of Massachusetts.

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Contractor)

\_\_\_\_\_  
(Signed by Officer of Corporation)

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

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## SPECIAL PROVISIONS

# CONSTRUCTION ITEMS LIST

DATE: 6Apr2022  
 JOB NO: 8556  
 FILE NO: 2022\_0406 Items List 8556.xlsx

PROJECT: Washington St (Rt 53)  
 LOCATION: Hanover  
 SUBJECT: PS&E Design  
 ESTIMATOR: DAD

ITEM NO.	UNIT	DESCRIPTION
101	A	CLEARING AND GRUBBING
120.1	CY	UNCLASSIFIED EXCAVATION
141.1	CY	TEST PIT FOR EXPLORATION
142	CY	CLASS B TRENCH EXCAVATION
144	CY	CLASS B ROCK EXCAVATION
145	EA	DRAINAGE STRUCTURE ABANDONED
146	EA	DRAINAGE STRUCTURE REMOVED
150	CY	ORDINARY BORROW
150.1	CY	SPECIAL BORROW
151	CY	GRAVEL BORROW
151.2	CY	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES
153	CY	CONTROLLED DENSITY FILL - EXCAVATABLE
156	TON	CRUSHED STONE
170	SY	FINE GRADING AND COMPACTING - SUBGRADE AREA
191.1	FT	HOLLOW STEM AUGER BORINGS
193	LS	MOBILIZATION AND DISMANTLING OF BORING EQUIPMENT
201	EA	CATCH BASIN
202	EA	MANHOLE
204	EA	GUTTER INLET
220	EA	DRAINAGE STRUCTURE ADJUSTED
220.3	EA	DRAINAGE STRUCTURE CHANGE IN TYPE
220.5	EA	DRAINAGE STRUCTURE REMODELED
220.7	EA	SANITARY STRUCTURE ADJUSTED
221	EA	FRAME AND COVER
222.1	EA	FRAME AND GRATE - MASSDOT CASCADE TYPE
223.2	EA	FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED
227.3	CY	REMOVAL OF DRAINAGE STRUCTURE SEDIMENT
227.31	FT	REMOVAL OF DRAINAGE PIPE SEDIMENT
227.4	SF	MASONRY PLUG
238.10	FT	10 INCH DUCTILE IRON PIPE
241.12	FT	12 INCH REINFORCED CONCRETE PIPE
244.12	FT	12 INCH REINFORCED CONCRETE PIPE CLASS V
358	EA	GATE BOX ADJUSTED
381.3	EA	SERVICE BOX ADJUSTED
384.2	EA	CURB STOP BOX ADJUSTED
402	CY	DENSE GRADED CRUSHED STONE FOR SUB-BASE
415.1	SY	PAVEMENT STANDARD MILLING
431	SY	HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE
440	LB	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL
450.23	TON	SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)
450.32	TON	SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)
450.42	TON	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5)
450.52	TON	SUPERPAVE LEVELING COURSE - 9.5 (SLC - 9.5)
451	TON	HMA FOR PATCHING
452	GAL	ASPHALT EMULSION FOR TACK COAT
453	FT	HMA JOINT SEALANT
472	TON	TEMPORARY ASPHALT PATCHING
482.3	FT	SAWCUTTING ASPHALT PAVEMENT
482.4	FT	SAWCUTTING PORTLAND CEMENT CONCRETE
506	FT	GRANITE CURB TYPE VB - STRAIGHT
506.1	FT	GRANITE CURB TYPE VB - CURVED
509	FT	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT
509.1	FT	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED

# CONSTRUCTION ITEMS LIST

DATE: 6Apr2022  
 JOB NO: 8556  
 FILE NO: 2022\_0406 Items List 8556.xlsx

PROJECT: Washington St (Rt 53)  
 LOCATION: Hanover  
 SUBJECT: PS&E Design  
 ESTIMATOR: DAD

ITEM NO.	UNIT	DESCRIPTION
514	EA	GRANITE CURB INLET - STRAIGHT
580	FT	CURB REMOVED AND RESET
581	EA	CURB INLET REMOVED AND RESET
594	FT	CURB REMOVED AND DISCARDED
620.12	FT	GUARDRAIL, TL-2 (SINGLE FACED)
627.1	EA	TRAILING ANCHORAGE
627.82	EA	GUARDRAIL TANGENT END TREATMENT, TL-2
630.2	FT	HIGHWAY GUARD REMOVED AND DISCARDED
657.1	LS	TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM
657.11	EA	TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM INSTALLED AND REMOVED
697.1	EA	SILT SACK
701	SY	CEMENT CONCRETE SIDEWALK
701.1	SY	CEMENT CONCRETE SIDEWALK AT DRIVEWAYS
701.2	SY	CEMENT CONCRETE PEDESTRIAN CURB RAMP
702	TON	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY
710.3	EA	BOUND - LETTERED GRANITE
711	EA	BOUND REMOVED AND RESET
747	LS	EQUIPMENT FOR ENGINEERS FIELD OFFICE
748	LS	MOBILIZATION
751	CY	LOAM FOR ROADSIDES
756	LS	NPDES STORMWATER POLLUTION PREVENTION PLAN
765	SY	SEEDING
766	SY	REFERTILIZATION
769	FT	PAVEMENT MILLING MULCH UNDER GUARD RAIL
804.3	FT	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)
811.22	EA	ELECTRIC HANDHOLE - SD2.022
811.31	EA	PULL BOX 12 X 12 INCHES - SD2.031
811.35	EA	PULL BOX ADJUSTED
811.36	EA	ELECTRIC MANHOLE ADJUSTED
815.98	FT	FOOTING COST ADJUSTMENT
815.4	LS	TRAFFIC SIGNAL CONTROL LOCATION NO. 4
816.01	LS	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 1
816.02	LS	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 2
816.03	LS	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 3
816.05	LS	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 5
816.06	LS	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 6
816.07	LS	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 7
832	SF	WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A)
833.7	EA	DELINEATION FOR GUARD RAIL TERMINI
847.1	EA	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL
850.41	HR	ROADWAY FLAGGER
851.1	DAY	TRAFFIC CONES FOR TRAFFIC MANAGEMENT
852	SF	SAFETY SIGNING FOR TRAFFIC MANAGEMENT
853.1	EA	PORTABLE BREAKAWAY BARRICADE TYPE III
853.403	DAY	TRUCK MOUNTED ATTENUATOR
853.8	DAY	TEMPORARY ILLUMINATION FOR WORK ZONE
854.016	FT	TEMPORARY PAVING MARKINGS - 6 INCH (PAINTED)
854.036	FT	TEMPORARY PAVING MARKINGS - 6 INCH (TAPE)
854.1	SF	PAVEMENT MARKING REMOVAL
854.5	EA	RAISED PAVEMENT MARKER REMOVAL
856	DAY	ARROW BOARD
856.12	DAY	PORTABLE CHANGEABLE MESSAGE SIGN
859	DAY	REFLECTORIZED DRUM
859.1	DAY	REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS
864.04	SF	PAVEMENT ARROWS AND LEGENDS REFLECTORIZED WHITE (THERMOPLASTIC)
866.106	FT	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)
866.112	FT	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)
867.106	FT	6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)
867.112	FT	12 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)
874.2	EA	TRAFFIC SIGN REMOVED AND RESET
999	LS	CONSTRUCTION STAKING
999.1	ALLOW	POLICE SERVICES
999.9	LS	MATERIAL TESTING

## **SPECIAL PROVISIONS**

### **SCOPE OF WORK (Supplementing Section 4.00)**

The work under this contract consists of narrowing approximately 1400 feet of Route 53 to provide 5.5' Sidewalks (from STA 36+35 to 50+35); Installation of a new traffic signal on Route 53 at the North Mall Drive; Modifying the existing Route 53 Coordinated Traffic Signal System; installation of ADA compliant wheelchair ramps; and overlaying Route 53 from 38+60 to 50+50, in the Town of Hanover, Massachusetts.

The work includes unclassified excavation, pavement milling, full depth hot mix asphalt pavement, hot mix asphalt overlay, drainage system modifications, granite curb and edging, cement concrete sidewalk, highway guard, traffic signal system installation, pavement markings, signs, landscaping, and other incidental work.

#### **ALL WORK DONE UNDER THIS CONTRACT SHALL BE IN CONFORMANCE WITH:**

- **THE MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES 2022 EDITION AND SUPPLEMENTAL SPECIFICATIONS DATED JUNE 30, 2022**
- **THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS;**
- **THE DECEMBER 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS;**
- **MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS;**
- **THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS;**
- **THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING;**
- **THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES WITH MASSACHUSETTS AMENDMENTS;**
- **THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK;**
- **ALL RULES AND REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD (521 CMR 1.00 ET. SEQ.);**

**ALL AS AMENDED, THE PLANS, AND THESE SPECIAL PROVISIONS.**

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

### **WORK SCHEDULE (Supplementing Section 8.00)**

Work on this project is restricted to, Monday through Friday, eight working hours per day with the Prime Contractor and all Sub-Contractors working on the same shift.

No work shall be done on this contract at night, on Saturdays, Sundays or legal holidays, or on the day before or the day after a long holiday weekend without prior approval by the Engineer.

No work that will disrupt travel on the existing roadways (lane closures, trenching, etc.) shall be done from 6:00 to 9:00 AM or from 3:00 to 6:00 PM.

Requests for work hour modifications shall be made in writing to the Engineer a minimum of 72 hours prior to the start of the requested modified hours. Work during modified hours shall not begin until approval(s) are obtained by the Engineer.

### **CONSTRUCTION STAKING (Supplementing Subsection 5.07)**

In the first sentence of this section replace, “The Department” with “The Contractor”.

Upon a written request by the Contractor, the Engineer will furnish information and ties for the survey baseline and benchmarks, within ten calendar days. The Contractor shall perform all survey work required to complete the work under this contract.

See Item 999 of this Special Provision for additional requirements.

If requested by the Engineer, the Contractor shall stake out PT, PC, and 50 foot station locations along all construction baselines, and reinstall damaged or lost layout as required through the duration of the contract, for use in the control of the work.

### **ORDER OF CONDITIONS – MGL Chapter 131, Section 40 (Supplementing Subsection 7.01)**

An order of conditions was not issued for this project.

### **PUBLIC SAFETY AND CONVENIENCE (Supplementing Subsection 7.09)**

The Contractor shall provide necessary access for fire apparatus and other emergency vehicles through the work zones to abutting properties at all times.

Sweeping and cleaning of surfaces beyond the limits (and within the limits) of the project to clean up material caused by spillage or vehicular tracking during the various phases of the work shall be considered as incidental to the work being performed under the contract, there will be no additional compensation. Clean up operations shall be completed within 24 hours of the date/time of the written notice by the Engineer.

### **STEEL PLATES IN CONSTRUCTION ZONES (Supplementing Subsection 7.09 Public Safety and Convenience)**

At the end of each working day where trenches in areas of public travel are covered with steel plates, each edge of such plates shall either be beveled or protected by a ramp with a slope of 2 feet horizontally to 1 inch vertically. Temporary patching material for the ramps shall meet the requirements of Section 472 of the Standard Specifications and Item 472 Asphalt Mixtures for Temporary Work. The cost of necessary patching materials, and their maintenance and removal, will be considered incidental to the contract, with no additional compensation therefore.

### **NOTICE TO OWNERS OF UTILITIES (Supplementing Subsection 7.13)**

Written notice shall be given by the Contractor to all public service corporations or other officials owning or having charge of publicly or privately owned utilities in the vicinity of the project of the Contractor's intention to commence operations affecting such utilities at least two weeks in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

The contract plans indicate the approximate location of known utilities in the vicinity of the project. The accuracy and completeness of this information is not guaranteed.

Before commencing work on service connections, the Contractor shall be responsible for contacting the Electric Company servicing the area to obtain construction requirements, standards, and to give adequate notice of commencement of work. The Contractor's attention is further directed to the requirements of Work in the Immediate Vicinity of Certain Underground Structures and Utility Poles herein included in these Special Provisions.

Please see the list of utility contacts included in the Appendix. Below please find municipal and engineering contacts, the completeness of this list is not guaranteed:

**Town of Hanover**

Department of Public Works  
40 Pond Street  
Hanover, MA 02339  
781-826-3189

Police Department  
129 Rockland Street  
Hanover, MA 02339  
781-826-3231

Fire Department  
Hanover Fire Department  
32 Center Street  
Hanover, MA 02339  
781-826-3151

**Massachusetts Department of Transportation  
Highway Division – District 5**

Nicole Berthiaume  
District 5 Permits Engineer  
[nicole.m.berthiaume@state.ma.us](mailto:nicole.m.berthiaume@state.ma.us)  
P: 508-884-4306

**Vanasse & Associates, Inc.**

Daniel A. DeRoche, Jr., P.E.  
35 New England Business Center Drive,  
Suite 140  
Andover, MA 01810  
[dderoche@rdva.com](mailto:dderoche@rdva.com)  
C: 978-618-2308

The Contractor shall make its own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, and other utilities will occur as a result of its operations.

The Contractor shall notify "Mass. DIG SAFE" and procure a DIG SAFE number of each location prior to disturbing ground in any way.

**"DIG-SAFE" Call Center: Telephone 1-888-344-7233**

**PROTECTION OF UTILITIES AND PROPERTY (Supplementing Subsection 7.13)**

The Contractor, in constructing or installing facilities alongside or near sanitary sewers, storm drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls, vaults, or other structures shall, at its expense, sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them, so that the services of these structures shall be maintained. The Contractor shall provide measures to temporarily support existing utilities, if required. The Contractor shall also be responsible for the repair or replacement of such structures, at his own expense, due to any damage caused by his acts or neglect, and shall leave them in the same condition as they existed prior to commencement of the work. In case of damage to utilities, the Contractor shall promptly notify the utility owner and shall, if requested



by the Engineer, furnish labor and equipment to work temporarily under the utility owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the Department or by the utility owner which suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation therefore.

If, as the work progresses, it is found that any of the utility structures are so placed as to render it impracticable, in the judgment of the Engineer, to do the work called for under this contract, the Contractor shall protect and maintain the services in such utilities and structures and the Engineer will, as soon thereafter as reasonable, cause the position of the utilities to be changed or take such other actions deemed suitable and proper.

If live service connections are to be interrupted by excavations of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall be plugged off or otherwise made secure.

Private property irrigation systems shall be maintained where practical. The Contractor shall coordinate the proper shutdown and removal or reconfiguration of sections of the system that are found to be in conflict with the proposed work. Damage caused by the excavation due to the Contractor's failure to coordinate with the property owner shall be repaired/replaced at the Contractor's expense.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in protecting or repairing property as specified in this section, shall be considered incidental to the contract and no additional compensation will be allowed therefore.

#### **WORK IN THE IMMEDIATE VICINITY OF CERTAIN UNDERGROUND STRUCTURES AND UTILITY POLES**

For overhead connections, the Electric Company servicing the area will make the connection from the top of the riser on the utility pole to the power source. The Contractor shall supply all labor, materials, and equipment to install the service connection, complete in place, and in accordance with the Electric Company procedures, from the controller to and including the riser, with enough wire coiled above the riser to permit the Electric Company servicing the area to make the final connection.

For underground connections, the Electric Company servicing the area will perform the actual wiring of the service connection from its power source to the sweep at the local controller, but all steel sweeps, ducts, entrance holes into manholes, patching and all other necessary labor, materials, and equipment required to install the electric service, complete in place, shall be furnished by the Contractor.

The Contractor shall pay the Electric Company servicing the area for their services rendered for the connection of overhead and underground service connections.

Before starting work at existing manholes, the Contractor shall test for gas and blow out the manholes.

#### **PROVISIONS FOR TRAVEL AND PROSECUTION OF THE WORK (Supplementing Subsection 8.03)**

Before starting any work under this contract, the Contractor shall prepare, and submit to the Engineer for approval, a plan (based on the contract Temporary Traffic Control Plans) that indicates the traffic routing proposed by the Contractor during the various stages and time periods of the work and the temporary barricades, signs, drums, and other traffic control devices to be employed during each stage and time period of the work to maintain traffic and access to abutting properties.

Particular care shall be taken to establish and maintain methods and procedures that will not create unnecessary or unusual hazards to public safety. Traffic control devices required only during working hour operations shall be removed at the end of each working day.

Signs having messages that are irrelevant to normal traffic conditions shall be removed or properly covered at the end of each work period. Signs shall be kept clean at all times and legends shall be distinctive and unmarred.

#### **TEMPORARY ACCESS TO AREA MERCHANTS AND BUSINESSES** **(Supplementing Subsections 8.06)**

The work is in a predominantly retail and commercial business section of the town and access to all businesses must be maintained at all times.

The Contractor shall provide safe and ready means of ingress and egress to all stores and shops, public and private, and professional offices and any other businesses or residences in the project area, both day and night, for the duration of the project.

Should temporary closures be required to complete the work, the Contractor shall coordinate such closures, in advance, with the property owner and Engineer. The details of all such coordination shall be provided to the Engineer prior to impacting access.

#### **WORK DONE BY OTHERS**

Relocation and/or resetting to new grades of all private utilities, including utility poles, made necessary by the construction of this project, will be accomplished by the respective utility companies and coordinated by the Contractor and Engineer.

Scheduling delays related to the relocation or adjustment of private utilities that were coordinated by the Contractor and/or Engineer shall not be grounds for any additional compensation as part of a claim for delay. The Contractor shall plan their work schedule around the coordination(s) made with the private utility owners and adjust their schedule as needed when the schedule of the private utility company's changes, all without an additional compensation.

#### **MATERIAL REMOVED AND STACKED**

The Contractor shall carefully remove, transport, and stack these materials on boards at the nearest MassDOT Highway Division maintenance facility or as directed by the Engineer.

#### **DISPOSAL OF SURPLUS MATERIALS**

All existing and other materials not required or needed for use on the project, not needed for further use as determined by the Engineer, 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 considered incidental to the contract and no additional compensation will be allowed therefore.

## **DISPOSAL OF EXCAVATION MATERIAL**

Surplus materials obtained from any type of excavation, and not needed for further use as determined by the Engineer, shall become the property of the Contractor and shall be disposed of by the Contractor outside the project location subject to the regulations and requirements of local authorities governing the disposal of such materials, at no additional compensation.

## **CONCRETE FOUNDATIONS**

Concrete foundations of items to be removed, if not interfering with the proposed construction, may be abandoned in place with approval of the Engineer. Foundations left in place under the roadway surface shall be removed to a depth of 3 feet below finished grade, or to the depth required by the Engineer. Foundations outside the roadway surface shall be removed to a depth of 1 foot below finished grade, or to the depth required by the Engineer.

## **DRAINAGE**

The Contractor shall maintain the drainage system in the project areas to provide continual drainage of the travelways and construction area.

Drainage castings in new pavement areas shall not be installed to finished grade until less than 3 weeks from the installation of the pavement surface course. If a specific casting(s) must be installed more than 3 weeks from the installation of the pavement surface course it shall be temporarily installed at base or binder course grade, as directed by the Engineer, and reset to proposed finished surface grade prior to placement of the pavement surface course. The resetting of these castings shall be considered incidental to the contract.

All pipes and structures installed as part of this contract shall be left in a clean and operable condition at the completion of the work. In addition, all drainage structures within the limits of work shall be cleaned prior to the conclusion of the project, unless otherwise directed by the Engineer. Cleaning existing structures will be completed under Item 227.3 Removal of Drainage Structure Sediment. All existing pipes to be abandoned and other pipes so designated on the Plans shall be plugged with brick masonry not less than 8 inches in thickness in conformance with the Standard Specifications, Section 201.62.

No separate payment will be made for the maintenance of the existing drainage system or for plugging of pipes, but all costs in connection therewith shall be incidental to the contract and no additional compensation shall be allowed therefore.

## **UTILITY STRUCTURE ADJUSTMENT**

Clay brick conforming to Subsection M4.05.2 of the Standard Specifications shall be used to make grade adjustments of drainage, sewer, and water structure frames.

## **CONNECTION TO EXISTING DRAINAGE STRUCTURES**

Where new pipe is shown on the drawings to be connected into an existing drainage structure to remain, the existing structure shall be first cleaned to remove all mud, debris, and other material. The existing structure wall shall be carefully and neatly cut to provide the minimum size opening required for the insertion of the new pipe. The proposed pipe end shall be set or cut off flush with the inside face of the existing structure wall and the remaining space around the pipe completely filled with cement grout for the full thickness of the structure wall.

Existing shaped inverts shall be reconstructed as necessary to provide a smooth and uniform flow channel from the new pipe through the existing structure.

No separate payment will be made for the cost of connecting new pipes into existing structures or necessary alterations of existing structures, but all costs in connection therewith shall be considered incidental to the contract and no additional compensation shall be allowed therefore.

## **SAWCUTS**

Existing pavements to remain shall be sawcut at all openings for utility work, for new or reset curb and at all joints with proposed full-depth hot mix asphalt pavement, as shown on the plans and as directed by the Engineer. See Item 482.3 and 482.4 for additional information.

## **FINE TUNING, ADJUSTMENT, AND TESTING PERIOD SEE ITEM 816**

## **GUARANTEE AFTER FINAL ACCEPTANCE SEE ITEM 816**

## **QUALIFIED ELECTRICIANS SEE ITEM 816**

## **MAINTENANCE OF TRAFFIC SIGNALS SEE ITEM 816**

## **PROPERTY BOUNDS**

The Contractor shall exercise due care when working around all property bounds that are to remain. Should any damage to a bound result from the actions of the Contractor, the Contractor shall immediately notify the Engineer. The bound shall be replaced and/or realigned by a Professional Land Surveyor registered in Massachusetts, supplied by the Contractor at no cost to the Owner.

## **AS-BUILT DRAWINGS**

The Contractor shall prepare as-built plans showing all surface features within the project area, installed utilities (including signal conduit) and drain rim/invert grades. The plans shall be provided in hardcopy and electronic (AutoCad and PDF) forms. Data obtain from the contractor during construction and by field survey shall be used to create the as-built plans.

Electronic files of the design plans can be provided to the Contractor upon request.

If required, traffic signal as-built documents will be provided by the Engineer, based on those as-built drawings submitted by the Contractor.

## **PERSONAL PROTECTIVE SAFETY EQUIPMENT FOR CONTRACTOR PERSONNEL**

The Contractor is responsible to ensure that all personnel, including all Sub-Contractors, working on the project are issued and are wearing all necessary personal protective safety equipment in accordance with OSHA requirements/regulations while working within the project limits. This equipment shall include, at a minimum, a hardhat and safety vest, regardless of the type of work being performed. Other safety equipment shall be employed as required to perform the work in which they are engaged and in accordance with all local, state and federal requirements in effect. Provisions for safety equipment shall be considered incidental to the contract and no additional compensation will be allowed therefore.

The Contractor shall also ensure that all personnel follow current local, state and federal guidelines related to COVID-19.

## **PAVEMENT MILLED SURFACES**

The Contractor shall install hot mix asphalt ramps at all cold plane joints and around all utility structures to protect vehicles from potential damage. The installation of these ramps shall be completed in conjunction with the pavement milling operation. Should the materials placed become dislodged or not provide adequate protection, in the opinion of the Engineer, the Contractor shall immediately correct all deficiencies as directed by the Engineer. The cost of necessary patching materials, and their maintenance and removal, will be considered incidental to the contract, with no additional compensation therefore.

**ITEM 120.1****UNCLASSIFIED EXCAVATION****CUBIC YARD**

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

The work shall include the excavation of material of every description regardless of the type encountered, except materials under the items of Pavement Milling, Class B Trench Excavation and Class B Rock Excavation and except those materials for which excavation is included with the work specified to be performed under other items of this contract.

Existing topsoil, which in the judgment of the Engineer is suitable for reuse as Loam Borrow, may be stripped and stockpiled. Areas outside the limits of grading used for stockpiling excavated or borrow materials shall be regraded to the original grade after the stockpile is removal and seeded or covered with wood mulch, as directed by the Engineer.

No separate payment will be made for the off-site disposal of all existing material unsuitable for reuse in the proposed work, but all costs in connection therewith shall be considered incidental to the contract and no additional compensation shall be allowed therefore.

If the Contractor elects to use available existing topsoil as a source of loam borrow material, no separate payment will be made for stockpiling and rehandling or the restoration of the stockpile area to existing conditions, but all costs in connection therewith shall be considered incidental to the contract and no additional compensation shall be allowed therefore.

**ITEM 141.1****TEST PIT FOT EXPLORATION****CUBIC YARD**

Work under this item shall conform to the relevant provisions of Sections 140 and 190 of the Standard Specifications and the following:

Test pits shall be used to locate underground structures and utilities, and to determine soil conditions. Test pits shall be excavated only at locations and depths directed by the Engineer. Test pits excavated for the Contractor's convenience, but not directed by the Engineer, shall be completed at the Contractor's expense.

The cost for any material required to restore the site to its original condition will be considered incidental and no additional compensation shall be allowed therefore.

**ITEM 153****CONTROLLED DENSITY FILL-EXCAVATABLE****CUBIC YARD**

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

**Description**

This material shall be used to backfill drainage pipe and traffic signal conduit trenches in the roadway surface, and as required by the Engineer.

**Materials**

Control density fill – excavatable (CDF) shall conform to the requirements of Section M4.08.0 for Type 2E. CDF shall be batched at a concrete plant, shall be flowable, require no vibration, and the finished product must be excavatable without the use of power tools. The material shall flow under and around the pipe, conduit, or structure sufficiently to hold it in place before backfilling. CDF shall be discharged from the mixer in a controlled manner by chute, or other means acceptable to the Engineer, into the excavation area to be filled.

**Method of Measurement**

Controlled density fill – excavatable will be measured for payment by the cubic yard, complete in place. Volumetric measurement will be from the top of pipe or conduit bedding to the bottom of the gravel base layer, and to the trench width specified in the details shown on the Plans, or as required by the Engineer.

**Basis of Payment**

Controlled density fill – excavatable will be paid for at the unit bid price per cubic yard, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.



**ITEM 154**

**SAND BORROW**

**CUBIC YARD**

**ITEM 156**

**CRUSHED STONE**

**TON**

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

Use of these materials shall be considered incidental to other bid items and no separate compensation shall be made for the use of these materials.

**ITEM 170****FINE GRADING AND COMPACTING****SQUARE YARD**

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

The work shall include the fine grading and compacting of all proposed pavement subgrades for vehicle and pedestrian ways only. Subgrades under proposed roadways and sidewalks shall be considered under this item.

The grading of any other type of area, including but not limited to, loamed areas, mulched area, and rock slopes shall not be considered under the fine grading and compacting item.

The cost for grading of any areas other than under a vehicle or pedestrian way as defined above shall be considered incidental to those items and no additional compensation shall be allowed therefore.

Subgrades shall be proof-rolled with specialized equipment designed for the express purpose of imparting a specific load requirement to the proposed subgrade and graded to within the tolerances specified in the standard specifications.

<b><u>ITEM 191</u></b>	<b><u>DRIVE SAMPLE BORING</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 191.10</u></b>	<b><u>HOLLOW STEM AUGER BORINGS</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 191.11</u></b>	<b><u>CORE BORING</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 193</u></b>	<b><u>MOBILIZATION AND DISMANTLING OF BORING EQUIPMENT</u></b>	<b><u>LUMP SUM</u></b>

The work under these items shall conform to the relevant provisions of Section 190 of the Standard Specifications and the following:

The work under these items shall include mobilization and set-up of boring equipment, the drilling of hollow stem auger borings, drive sample borings, and rock core borings, the retrieval of soil samples, the visual classification of the soil, the recording of boring logs and samples, and the dismantling and transporting of the equipment to and from each site.

### **General**

Hollow stem auger borings shall be advanced to a depth of 20' for mast arms and 30' for span poles at the locations of the proposed traffic signal foundations as shown on the plans and as directed by the Engineer. The Engineer shall be notified a minimum of seventy-two hours before borings are taken.

Two types of samples will be required in vertical soil borings:

1. *Standard Sample.* A standard penetration test using a split spoon sampler shall be made at the ground surface and at every change in soil stratum, but the sampling intervals shall not exceed 5 feet in a continuous stratum. The auger hole shall terminate at the required bottom elevation and a split spoon sample shall be taken at the bottom of the hole.
2. *Supplemental Sample.* A volume sample shall be taken at 5-foot intervals in order to classify the subsurface soils with respect to grain size and visual classification as required. Each sample shall consist of the remainder of the spoon sample and shall be contained in quart jars appropriately labeled.

The purpose of this method along with its sampling procedure is to determine the visual properties, arrangement, and thickness of the various soil strata as they exist in the ground. The elevations/depths at which any change in stratification occurs shall be located and recorded on the log by the driller. Detection of stratum changes should be made by careful observation of the soil as it exists in the augured hole and by the rate of penetration of the auger during drilling.

The auger casing I.D. shall be a minimum of 2-3/4 inches for all holes in which split spoon samples are required. The O.D. shall be a maximum of 7 inches to limit the size of the resulting hole.

### **Supplemental Samples**

The quart jar samples shall have positive identification of the contents by typewritten glued-on label.

The following information shall be shown:

1. Name and address of Test Boring Contractor
2. Date sample was taken
3. Location and name of project
4. Location of borehole by station and offset or identifying number of borehole, if so identified on the plan
5. Depth below ground surface at which sample was obtained and recorded blow counts of 6 inches of penetration of the sampler

Upon completion of all borings, the Contractor shall submit a PDF copy of the typewritten boring logs to the Engineer and deliver the jarred samples to Vanasse & Associates, Inc. (VAI), Andover, Massachusetts.

### **Obstructions**

Obstructions, other than ledge, shall be considered in accordance with Section 190.60E of the Standard Specifications. The actual location of the additional boring will be specified by the Engineer. When ledge is encountered a rock core boring shall be made in accordance with Section 190.63 of the Standard Specifications.

### **Rock Core**

If rock is encountered at an elevation above the specified highest bottom elevation, then a rock core boring shall be made in accordance with Section 190.63 of the Standard Specifications. The core hole shall be large enough to accommodate the required auger casing so that sampling may be continued past the rock obstruction. The minimum cored depth shall be 10 feet.

### **Practical Refusal**

Practical refusal of the sample spoon or “refusal” is as defined by Section 190.60F of the Standard Specifications.

Due to the size of the resulting auger hole, it is particularly important that upon completion, all borings shall be backfilled with clean, well-graded sand and tamped to fill all voids created during the augering procedure.

### **Advancing The Boring For Soil Sampling**

As the boring is advanced, care shall be taken to note and record the depth where wet soil is encountered if this should occur.

If groundwater is encountered, then the water level in the hollow stem shall be maintained at the top of the casing at all times during the sampling operation to avoid unequal hydrostatic pressure that could result in blow-in of fine-granular soils and inaccurate blow counts.

In each boring, the driller shall record the water level prior to backfilling and whenever possible, prior to the start of each day's work.

Each boring shall be advanced by using a hollow stem auger with cutting head and center rod and plug assembly. The hollow stem auger will advance and case the hole simultaneously to the required sampling levels. The center rod and plug assembly is held in place by the cap and inside drill rod connecting the auger and its assembly to the rotating spindle on the drilling machine to prevent soil from entering the mouth of the auger. Upon reaching the sampling level, the plug is to be retreated by withdrawing the center rod to permit lowering of the sampler through the auger.

The sample shall be obtained by driving the sampler 18 inches into the undisturbed material below the bottom of the auger. The sampling and handling procedure shall be as specified under Section 190.61 of the Standard Specifications.

After the sampling operations are completed and the sampler has been retracted, the plug is re-inserted and held in place by the center rod; another auger section is connected to the first, together with one additional center rod section to secure the plug to the cap and the hole is advanced.

This procedure shall be repeated until the required bottom elevation is reached. The auger shall be stopped at any depth level to allow normal sampling practices upon request by the Engineer.

If, in the judgment of the Engineer, the borehole cannot be advanced by the hollow stem auger method due to the material encountered (with the exception of bedrock) and every attempt has been made by the driller to complete the boring using the conventionally cased, drive sample, wash boring method as specified in Section 190 of the Standard Specifications, then the borehole shall be cored.

Upon completion of the boring, the Contractor shall backfill the hole and restore the pre-existing surface condition; replacing sod or HMA patching of the area, as directed by the Engineer.

<b><u>ITEM 201</u></b>	<b><u>CATCH BASIN</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 202</u></b>	<b><u>MANHOLE</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 204</u></b>	<b><u>GUTTER INLET</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 220</u></b>	<b><u>DRAINAGE STRUCTURE ADJUSTED</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 220.3</u></b>	<b><u>DRAINAGE STRUCTURE CHANGE IN TYPE</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 221</u></b>	<b><u>FRAME AND COVER</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 222.1</u></b>	<b><u>FRAME AND GRATE - MASSDOT CASCADE TYPE</u></b>	<b><u>EACH</u></b>

The work under these items shall conform to the relevant provisions of Section 201 and 220 of the Standard Specifications and the following:

All catch basins and gutter inlets within the project paving limits and within the State Highway Layout shall be outfitted with Hook Lock cascade grates. Refer to October 2017 Construction Standard drawing numbers E 201.6.0, E 201.7.0, E 201.7.1, E 201.9.0, and E 201.9.1. Also see guidance in Engineering Directive E-09-003, dated June 18, 2009.

Bolt-down manhole cover assemblies (cover and frame) shall be installed in place of standard manhole cover assemblies on MassDOT roadways with a posted speed limit or posted advisory speed of 45 MPH or higher as part of all construction or maintenance operations that require new manholes or adjustment of existing manholes. MassDOT bolt-down manhole cover assemblies shall consist of covers and frames that conform to the size, weight, material and load-carrying requirements in MassDOT Construction Standard Details E 202.6.0, E 202.7.0 and E 202.8.0, and are on the relevant MassDOT Qualified Construction Materials list. Some dimensions of bolt-down manhole covers and frames may vary slightly from those shown on the standard details to account for necessary bolt holes and fastening components.

The cement concrete collar shall be placed a minimum of 3 inches below finished grade thereby allowing for at least 3 inches of hot mix asphalt above the collar.

Existing frames and grates from structures shown on the Plans to be abandoned, removed, or changed in type, shall be removed and discarded. Existing frames and covers from structures shown on the Plans to be removed or abandoned may be removed and reset elsewhere within the project unless, in the judgment of the Engineer, they are unsuitable for reuse. All existing frames and grates, and unsuitable or surplus frames and covers, shall become the property of the Contractor and shall be disposed of off the site. New frames, grates, and covers shall be furnished and installed for new structures and change in type structures.

Cascade-type grates shall be installed at all locations where bicycle traffic is allowed unless municipal grates are proposed on the plans or elsewhere in this special provision.

#### **Method of Measurement**

*Replace the first paragraph of Subsection 201.80 with the following:*

All drain structures will be measured for payment as complete units, regardless of depth. The cost for all drain structures will be included in the unit bid price. The unit bid price shall include all labor, equipment, supplies,

and incidentals required to complete the installation of drain structures of all types (including crushed stone if used).

**ITEM 376.2****HYDRANT - REMOVED AND RESET****EACH**

The work under these items shall conform to the relevant provisions of Section 300 of the Standard Specifications and the following:

The work shall include the furnishing and installation of all materials required to relocate the existing water pipes and adjust gates where shown on the plans and at any locations where the existing pipes are found to conflict with proposed drainage construction and to remove and reset existing hydrants.

**Approval of Materials**

The Contractor shall submit the names of the material suppliers to the Engineer for approval prior to ordering any materials.

**Pipe and Fittings**

Pipe shall be ductile iron, Class 52, conforming to ANSI A21.50 and ANSI A21.51.

Fittings shall be ductile iron, Class 250 minimum, conforming to applicable ANSI, NEWWA, and AWWA specifications.

Pipe and fittings shall have a cement mortar lining and bituminous seal coat on the inside and a coal tar enamel coat on the outside in accordance with ANSI A21.4 (AWWA C104) and ANSI A21.6 (AWWA C106), as amended, except that the cement mortar lining shall be 1/8-inch in thickness for pipe 2 inches to 12 inches in diameter.

Pipe shall be standard mechanical joint pipe.

Rubber gaskets for mechanical joints shall conform to ANSI A21.11.

Pipe shall be supplied in lengths not exceeding 20 feet. Each pipe and fitting shall have the initials of the manufacturer's name and the year cast stamped or cast into the metal.

Tie rods shall be 3/4-inch diameter.

**Pipe Installation**

The Contractor shall make all necessary arrangements with the Town of Hanover Water and Fire Departments for the necessary shutdowns of service.

The Water Department may establish the time of shutdown to be within the normal daily low demand period.

Care shall be taken in loading, transporting, and unloading to prevent injury to the pipes or coatings. Pipe and fittings shall not be dropped. All pipe or fittings shall be examined before laying and no piece shall be installed which is found to be defective. Any damage to the pipe coatings shall be repaired as directed by the Engineer. Any pipe found to be defective, before or after laying, shall be satisfactorily removed and replaced with sound pipe at no additional cost to the Owner.

All pipe and fittings shall be installed in conformance with AWWA Standard Specifications C600, except as otherwise provided herein. All pipe and fittings shall be sound and clean before laying and shall be laid on a



shaped bedding providing uniform, firm support over the entire length of each section barrel. **BLOCKING WILL NOT BE PERMITTED.** The select bedding material shall be placed and tamped along the sides of the pipe to complete the bedding.

Pipe shall be laid with good alignment and at a uniform 5-foot depth to top of pipe below proposed grade except where extra depth is required to clear other utilities and to connect to existing pipes, valves, or fittings. Joint deflection shall not exceed that recommended by the manufacturer. Additional fittings shall be furnished and installed as required to cross existing utilities. Solid sleeves shall be used only where approved by the Engineer.

When pipe laying is stopped for *any* length of time, including short periods, the open ends of the pipe and fittings shall be closed with a watertight plug or cap.

Necessary pipe cutting shall be accomplished by power saw and shall leave a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be used with a push-on bell shall be beveled to conform to the manufactured spigot end. Cement lining shall be undamaged.

Mechanical joints shall be installed in accordance with the "Notes of Method of Installation" of ANSI A21.11 and the instructions of the manufacturer. The Contractor shall thoroughly clean the joint surfaces and rubber gasket with soapy water before tightening the bolts. Bolts shall be tightened to the specified torques. Under no condition shall extension wrenches, pipe over handle, or ordinary ratchet wrenches be used to secure greater leverage.

### **Hydrants**

Hydrants shall be set at the locations shown on the drawings, or as directed by the Engineer, and bedded on a firm foundation. A drainage pit 2 feet, 6 inches in diameter shall be filled with ¾-inch crushed stone and satisfactorily compacted. Additional stone shall be brought up and around 6 inches over the drain ports. Each hydrant shall be set in true vertical alignment and properly braced. A concrete thrust block shall be placed between the back of the hydrant inlet and undisturbed soil at the end of the trench. Felt roofing paper shall be placed around the hydrant elbow before placing concrete. Care shall be taken to ensure that concrete does not plug the drain ports. Hydrant paint shall be touched up as required after installation.

Existing hydrants proposed to be removed and reset may be replaced with new hydrants provided by the local municipality. Costs to install the new hydrant shall be included in the item for Hydrant - Removed and Reset and no additional compensation shall be allowed therefore.

### **Concrete Thrust Blocks**

Concrete thrust blocks shall be installed at all tees, bends, plugs, caps, tapping sleeves, and other locations as directed by the Engineer in accordance with the dimensions and details shown on the plans.

The back of thrust blocks shall be placed against undisturbed earth and the sides shall be formed. Felt roofing paper shall be placed to protect pipe joints. Concrete shall not be placed over bolts or nuts, or in a manner which prevents the removal of joints.

Concrete shall be 3000 PSI, 1-1/2 inch, 470 cement concrete masonry or better.

## **Testing**

The Contractor shall provide all necessary equipment and conduct hydrostatic pressure and leakage tests on the new water system installed under the contract in conformance with AWWA 600, the regulations of the Massachusetts State Board of Health and the following:

The water system shall be subjected to a hydrostatic pressure of 200 psi and this pressure shall be maintained for at least one hour. The leakage test shall be conducted at a pressure of 150 psi and this pressure shall be maintained for at least two hours.

Permitted leakage shall conform to AWWA C600. Leaks exceeding this standard shall be located and all defective pipe, fittings, pipe joints, valves, and other material removed and replaced with new material to correct the leak, as directed by the Engineer, at no additional cost to the Owner.

All testing shall be done in a manner which prevents the entrance of contaminated water or pollutants into the existing water system.

## **Disinfection**

After completion of testing, and any necessary leak repairs, the new water system shall be chlorinated in conformance with AWWA C601. The procedure and location of chlorination and sampling points shall be approved by the Engineer before beginning disinfection.

Immediately prior to disinfection, the system shall be flushed at the maximum velocity that can be developed, but not less than 2.5 feet per second. All flushing shall be done in the presence of the Engineer and wastewater shall be directed into the drainage system.

Chlorine shall be introduced into the system in a dosage which provides a minimum concentration of fifty parts per million of available chlorine. The chlorine solution shall remain in the system for at least twenty-four hours and the residual chlorine concentration in any portion of the system after this period shall not be less than twenty-five parts per million.

During disinfection, all valves and hydrants shall be operated to ensure that all appurtenances are disinfected.

Following disinfection, the chlorine solution shall be flushed from the system and the system refilled. The Municipality will take samples and tests for bacteriologic quality and the absence of coliform organisms. The Contractor will be required to rechlorinate, if necessary, and the lines shall not be placed in service until the requirements of the Municipality and State Board of Health are met.

## **Measurement**

Hydrant and Hydrant removed and reset shall be measured by the each upon completion of all work. Partial payments will not be considered.

6-Inch Ductile Iron Water Pipe shall be measured by the foot complete in place. Measurements shall be rounded up to the nearest half foot.

Ductile Iron Fittings shall be measured by the pound. Measurements shall be made based on listed weights provided in the approved shop drawings.

## **Payment**

Hydrant and Hydrant removed and reset shall be included at the unit bid prices per each, which price shall include all labor, material, equipment, and incidental costs required to complete the work.

No separate payment will be made for excavation, concrete, gravel borrow, and crushed stone bedding and backfill, insulation, testing, and disinfection, but all costs in connection therewith shall be included in the unit contract price.

No separate payment will be made for the removal, transporting, and stacking of existing salvage materials, but all costs in connection therewith shall be considered incidental to the contract and no additional compensation will be allowed therefore.

6-Inch Ductile Iron Water Pipe shall be included at the unit bid price per each, which price shall include all labor, material, equipment, and incidental costs required to complete the work.

Ductile Iron Fittings shall be included at the unit bid price per pound, which price shall include all labor, material, equipment, and incidental costs required to complete the work.

**ITEM 472****ASPHALT MIXTURES FOR TEMPORARY WORK****TON**

The work under this item shall conform to the relevant provisions of Sections 450, 460 and 472 of the Standard Specifications and the following:

The work shall include the furnishing and placement of various hot mix asphalt mixtures to provide temporary pavements and temporary access to and egress from the properties abutting the work area, for temporary patching and for temporary berms.

**Hot mix asphalt mixtures under this item shall be placed only where and as directed by the Engineer**

The Contractor is advised that this material will have to be placed primarily by hand methods.

Removal of hot mix asphalt placed for the maintenance and protection of vehicular and pedestrian traffic will be considered incidental to the contract and no additional compensation shall be allowed therefore.

<b><u>ITEM 482.3</u></b>	<b><u>SAWCUTTING ASPHALT PAVEMENT</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 482.4</u></b>	<b><u>SAWCUTTING PORTLAND CEMENT CONCRETE</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 482.5</u></b>	<b><u>SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING</u></b>	<b><u>FOOT</u></b>

The work under this item shall conform to the relevant provisions of Section 482 of the Supplemental Specifications and Interim Supplemental Specifications and the following:

The work under Item 482.5 shall include the sawcutting of HMA pavements and concrete base course, if encountered, as shown on the plans or directed by the engineer.

The work under Item 482.4 shall include the sawcutting of concrete sidewalks, medians and wheelchair ramps, as shown on the plans or directed by the engineer.

The work under Item 482.3 shall include the sawcutting of HMA medians, as shown on the plans or directed by the engineer.

Areas sawcut that were for the Contractor's convenience, not shown on the plans, and/or not directed by the engineer in writing, shall not be considered for payment under this item and shall be considered incidental work under other items.

Cut edges not properly protected and damaged during construction activity shall be recut at the Contractor's expense and no additional compensation shall be made.

Payment for sawcutting for box widening shall be included under Item 482.5.

Please note, in accordance with the standard specifications sawcutting for the installation of traffic signal conduit, drainage/water work, and new or reset curb shall not be paid for under this item. The sawcutting for such tasks shall be included within the costs for their respective payment items.

<b><u>ITEM 580</u></b>	<b><u>CURB REMOVED AND RESET</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 581</u></b>	<b><u>CURB INLET REMOVED AND RESET</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 594</u></b>	<b><u>CURB REMOVED AND DISCARDED</u></b>	<b><u>EACH</u></b>

Work under these items shall conform to the relevant provisions of Section 500 of the Standard Specifications and the following:

Existing granite curb and curb inlets shall be cleaned by sandblasting to remove any paint, joint mortar, asphalt, or other undesirable material adhered to the granite before resetting, as directed by the Engineer.

The Contractor is advised that granite curb and curb inlets removed may be reset elsewhere at a different location within the contract limits and all costs incurred for handling and transporting existing curb and edging shall be included in the unit bid prices.

Work under Item 594 shall include the removal and disposal of all types of vertical granite curb and includes curb inlets and curb corners.

No separate payment will be made for storage, transporting, and handling of existing granite curb, curb inlets, and edging to be reused; the removal and disposal of material unsuitable for reuse; concrete and other incidental work, but all costs in connection therewith shall be included in the unit bid price.

<b><u>ITEM 620.12</u></b>	<b><u>GUARDRAIL, TL-2 (SINGLE FACED)</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 627.1</u></b>	<b><u>TRAILING ANCHORAGE</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 627.82</u></b>	<b><u>GUARDRAIL TANGENT END TREATMENT, TL-2</u></b>	<b><u>EACH</u></b>

The work under these items shall conform to the relevant provisions of Sections 600 and 630 of the Standard Specifications and the following:

Proposed guardrail shall only be installed in 12.5' increments. If the design plans indicate a length that is not an increment of 12.5' the length of guardrail shall be increase to prevent short section of guardrail from being required. The location of the additional length of guardrail shall be reviewed and approved by the Engineer prior to installation.

The Contractor shall be required to ensure the safety of the public at all times whether or not specifically directed to by the Engineer or contract. Payment for securing the safety of the public shall be considered incidental to the contract, and no additional compensation shall be allowed therefore.

Payment for the work shall be included in the unit bid prices, which prices shall include all labor, material, equipment, and incidental costs required to complete the work.

**ITEM 630.2****HIGHWAY GUARD REMOVED AND DISCARDED****FOOT**

The work under this item shall conform to the relevant provisions of Sections 600 and 630 of the Standard Specifications and the following:

The work shall consist of the removal and off-site disposal of all types of guardrail and associated components including but not limited to: individual posts, buried ends, terminal ends, anchors, and cable designated to be removed in the plans, detail sheets, or as directed by the Engineer.

All guardrail that is removed, with the exception of median double faced guardrail, shall be replaced within 24 hours or secured at the Contractor's expense with temporary precast concrete median barrier unless specifically waived in writing in advance or specified otherwise in this contract.

The Contractor shall be required to ensure the safety of the public at all times whether or not specifically directed to by the Engineer or contract. Payment for securing the safety of the public shall be considered incidental to the contract, and no additional compensation shall be allowed therefore.

Highway guard removed and discarded will be measured for payment by the linear foot in its original position, parallel to and along the face of the rail, including end treatments.

Highway guard removed and discarded will be paid for at the unit bid price per foot, which price shall include all labor, materials, equipment, incidental costs required to complete the work.

No separate payment will be made for material or labor required to backfill and compact holes created by removal of the guardrail components or for restoration of the area, but all costs in connection therewith shall be included in the unit price bid.



**ITEM 657.1****TEMPORARY PEDESTRIAN MANAGEMENT  
GUIDANCE SYSTEM****LUMP SUM**

The work under this item shall consist of installing a system to guide pedestrians around various sections of closed sidewalk where no current barriers to access exist and that are on the same side of the roadway. Under this item, the Contractor shall maintain pedestrian accommodations consistent with those afforded under existing conditions for the duration of the project.

Elements of the system may include barricade, temporary concrete barrier, temporary concrete barrier with pedestrian rail, temporary curb ramps and associated modifications and appurtenances and signage. The guidance system is to prevent pedestrians from entering the work area, protect pedestrians from vehicles entering a shoulder area temporarily designated for pedestrian use around the work site, and prevent pedestrians from leaving the temporary path and entering the vehicle lane.

Prior to deploying the Temporary Pedestrian Management Guidance System, the Contractor shall prepare a sketch plan of the system for the work site showing the barrier system, the width of the path of travel, the locations and types of signs and the locations of temporary pedestrian curb ramps. This will be reviewed and approved by the Engineer prior to its set up. Any material that is damaged during the deployment period and throughout the project shall be replaced at the direction of the Engineer at no additional cost.

Layout must meet the requirements of the ADA and the Massachusetts AAB as well as the rules and regulations for traffic control devices and the 2009 Manual on Uniform Traffic Control Devices (MUTCD). All material which is used adjacent to traffic must meet the requirements of NCHRP350 or MASH. The guidance system must have a continuous bottom rail or edge no more than two (2) inches above the ground to accommodate cane users, have a smooth and continuous top edge no less than 32 inches above the ground to facilitate "hand trailing" and not obstruct or project into the pedestrian path of travel. All elements of the pedestrian guidance system should be nearly vertical and generally within the same plane.

Details included on the Temporary Traffic Management plans depict some elements of a pedestrian management guidance system and should be considered as examples of types of elements which may be used to construct, and not as recommended, required, or the only elements which are acceptable. All pieces bought or constructed by the Contractor which meet ADA and Massachusetts AAB requirements are acceptable.

Temporary pedestrian management guidance system will be included in the unit bid price, which price shall include all labor, materials, equipment, and incidental costs required to obtain an approval of the system (for all locations) and procure the materials on-site.

**ITEM 657.11****TEMPORARY PEDESTRIAN MANAGEMENT  
GUIDANCE SYSTEM INSTALLED AND REMOVED****EA**

The work under this item shall consist of installing and removing the pedestrian guidance system placed at specific work locations as required by the Engineer.

It is the intent of this item to reuse the placed pedestrian guidance system in many locations. The Contractor shall maintain the integrity of the guidance system throughout the project duration. Special care shall be taken by the Contractor in removing and resetting of the guidance system to not damage any piece of the system. The system shall remain in working order throughout the construction period. There shall be no compensation made for any element of the system damaged during removal, temporary storage or resetting.

Temporary pedestrian management guidance system installed and removed will be included in the unit bid price per each installation/removal, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

**ITEM 697.1****SILT SACK****EACH**

The work under this item shall include furnishing, installation, maintenance, and removal of siltation protection devices in all catch basins and gutter inlets within and immediately downgradient of the limits of work in accordance with the details included on the plans and the manufacturer's instructions.

Each device shall consist of a Siltsack® sediment control device as manufactured by ACF Environmental, or approved equivalent. The device shall be manufactured to fit the opening of the catch basin or gutter inlet and shall have the following features: two dump straps attached at the bottom to facilitate emptying of the device; lifting loops as an integral part of the system to be used to lift it from the basin; and a restraint cord approximately halfway up the sack to keep the sides away from the catch basin walls. Each device shall be inspected weekly and after every storm event and shall be emptied, cleaned and placed back into the basin when determined to be full in accordance with the manufacturer's instructions.

Material collected in silt sacks is considered solid waste and must be disposed of in accordance with the provisions of Item 187.3.

Silt sacks will be paid for as part of the contract lump sum price, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

**Method of Measurement**

Each silt sack, complete in place, will be considered one unit each.

**Basis of Payment**

Silt Sack will be paid for at the unit bid price, which price shall include all labor, materials, and equipment, necessary to install, conduct periodic maintenance, and remove said silt sack. No separate payment will be made for maintenance, including cost(s) for delivery of removed sediments and disposal at an approved landfill, disposal facility or recycling facility, the costs for approvals, permits, or testing, but all costs in connection therewith shall be included in the unit bid price.

**ITEM 701.2****CEMENT CONCRETE WHEELCHAIR RAMP****SQUARE YARD**

The work under this item shall conform to the relevant provisions of Section 701 of the Standard Specifications and the following:

Cement concrete wheelchair ramps shall be constructed at locations shown on the Plans and in conformance with current MassDOT Construction Standards and the following:

- A. Contractors shall establish grade elevations at all wheelchair ramp locations, and shall set transition lengths according to the appropriate table in the Construction Standards (or to the details shown on the plans).
- B. All wheelchair ramp joints and transition sections which define grade changes shall be formed, staked, and checked prior to placing cement concrete. All grade changes are to be made at joints.
- C. Detectable warning panels shall be installed at all wheelchair ramp locations and median cut-throughs in accordance with ADA requirements, the Construction Standards, and the details shown on the plans. Detectable warning panels at locations 1 through 5 shall be brick red in color and at location 7 shall be yellow in color.

It is recommended that the form work for all wheelchair ramps be reviewed with the Engineer prior to placement of the cement concrete. This review is intended to identify ADA non-compliance before the installation so that corrections can be made. The Engineer's pre-installation review shall not be construed as an acceptance of the work. The Contractor is responsible to meet all ADA standards.

<b><u>ITEM 710.3</u></b>	<b><u>BOUND – LETTERED GRANITE</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 710.4</u></b>	<b><u>BOUND - PLAIN GRANITE</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 711</u></b>	<b><u>BOUND REMOVED AND RESET</u></b>	<b><u>EACH</u></b>

The work under these items shall conform to the relevant provisions of Section 710 of the Standard Specifications and the following:

The work shall include the furnishing and installation of granite bounds in conformance with 1995 Construction Standard 506.1.0, and the removal and resetting of existing bounds affected by construction. Lettered granite bounds (with the legend MHB) shall be installed within the State Highway portion of the proposed right of way. Plain granite bounds shall be installed within the Town portion of the proposed right of way.

All layouts for replacement bounds shall be made or directed by a Professional Land Surveyor registered in Massachusetts. The layout method shall be the responsibility of the Land Surveyor, subject to the Engineer's approval. A detailed listing and plan/sketch, included with a certified letter, of the location of all bounds set in conjunction with the project shall be submitted to the Engineer upon the completion of all stone bound installations for submission to MassDOT.

Existing bounds to be removed and reset in the same location shall be offset staked prior to removal.

Any existing bound damaged by the Contractor's operations or lack of protection provisions shall be replaced with a new bound at the Contractor's expense.

**ITEM 734****SIGN REMOVED AND RESET****EACH**

The work under this item shall conform to the relevant provisions of Section 800 of the Standard Specifications and the following:

The Contractor shall carefully remove and reset at new locations all existing signs, attachment hardware, and sign support posts not included under other sign items as shown on the drawings and as directed by the Engineer.

Signs, attachment hardware, and sign support posts shall be satisfactorily stored and protected until reset in the proposed work.

Signs, attachment hardware, and sign support posts lost, damaged or otherwise made unsuitable for reuse while being removed, transported, stored, or reset shall be replaced with new materials at no additional cost to the Owner. New attachment hardware shall be furnished and installed as necessary to replace any missing or unusable existing hardware.

Included under this item are all special and/or private signs which are not included under or described in any other sign "removed and reset" items.

**Method of Measurement**

Signs removed and reset will be measured, complete in place, one unit for each complete sign group removed and reset regardless of how many posts and or individual signs are in the group.

**Basis of Payment**

Signs Removed and Reset will be paid for at the unit bid price, which price shall include all costs for labor, materials, and equipment required to complete the work.

**ITEM 747****EQUIPMENT FOR ENGINEERS FIELD OFFICE****LUMP SUM**

Work under this item shall conform to the relevant provisions of Section 740 of the Standard Specifications and the following:

The following shall be provided by the Contractor within 30 days of the Notice of Award, but not more than 5 days after the Contractor has mobilized to the site:

The Engineer shall supply his own field office space. Contractor will supply the following equipment to the Engineer for his sole use throughout the duration of the project. All equipment supplied shall remain the property of the Engineer upon the completion of the project.

**Office Equipment and Supplies:**

- Twenty Four (24) – Blue Ballpoint Pens
- Twelve (12) – Red Ballpoint Pens
- Twelve (12) – Yellow Highlighter Markers
- Six (6) – Black Chisel Tip Permanent Markers

**Provide access to:**

- Portable Toilet facilities at the job site and first aid kit shall be provided in the amount and with contents as specified in current requirements of the Massachusetts Department of Labor and Industries regulations and available to the Engineer for use while on-site.

**Field Mobile Equipment:**

- Two (2) sets of safety equipment (white vented hard hat and Radians SV55-2ZGD Type R Class 2 Heavy Duty Two-Tone Engineer Safety Vest (or approved equal)) (Note: Safety equipment shall not bear the logo of any contractor or supplier)
- Six (6) – transit field book (4.5"x7.25") (as manufactured by Sokkia or equal)
- Two (2) cases of white and one (1) case of pink marking paint
- One (1) Two-foot smart level with dual display
- One (1) Measuring Wheel (English Units) (min 12" dia)
- One (1) 200 Foot Measuring Tape (metallic)
- Two (2) SIMNIAM Car Trunk Organizer Large 95L
- One (1) Apple MagSafe Charger
- One (1) Apple 35W Dual USB-C Port Compact Power Adapter
- One (1) AirPods Pro
- One (1) Apple Pencil (2<sup>nd</sup> generation)
- One (1) Apple USB-C Charge Cable (2 m)
- One (1) Apple USB-C to Lightning Cable (2 m)

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Item 747, shall be paid at the contract lump sum price, which payment shall be considered as full compensation for incidental work required to obtain and deliver the required equipment. Full payment shall be processed upon delivery of all equipmen, to the Resident Engineer.

This item addresses the implementation of a Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP).

Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more are required to apply to the U.S. Environmental Protection Agency (EPA) for coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. On February 16, 2012 (77 FR 12286), EPA issued the final NPDES CGP for construction activity.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the U.S. EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a seven (7) day review period commencing from the date on which EPA enters the NOI into their database. The Contractor is advised that, based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Storm Water Pollution Prevention Plan (SWPPP) for review. Work may not commence on the project until final authorization has been granted by EPA and the Massachusetts Department of Environmental Protection (if applicable, see below). Any additional time required by EPA or DEP for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the SWPPP for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

Separate NOIs must be submitted by all required Permittees, including but not limited to, the Owner (typically MassDOT), and the Operator (the Contractor). In cases where the Municipality or other party would either be classified as an Owner, Operator, and/or have control over the plans and specifications or day-to-day site operations, said Municipality or party must also submit a NOI. The Contractor is responsible to ensure that all required Permittees have submitted an NOI and shall provide proof of same to the Engineer prior to the start of any work.

The General Permit also requires the preparation and implementation of a SWPPP in accordance with the aforementioned statutes and regulations. The SWPPP shall include the NPDES General Permit conditions and required information, MassDOT Performance Standards and detailed descriptions of erosion and sedimentation controls to be implemented during construction. It is the responsibility of the Contractor to prepare the SWPPP to meet the requirements of the most recently issued CGP and, if applicable, the DEP requirements. The Contractor shall submit three (3) copies of the draft SWPPP to the Engineer for review and approval at least two weeks prior to any site activities. It is the responsibility of the Contractor to be familiar with the NPDES General Permit conditions and the conditions of any Wetlands Protection Act Order of Conditions or Determination, DEP Water Quality Certification, Army Corps of Engineers Section 404 Permit and all other environmental permits and regulations applicable to this project. The Contractor shall include in the SWPPP the methods and means necessary to comply with applicable conditions of said permits and regulations.

It is the responsibility of the Contractor to complete the SWPPP in accordance with the NPDES General Permit and DEP requirements, provide all information required, and obtain all certifications as required by the NPDES General Permit. Any amendments to the SWPPP required by site conditions, schedule changes, revised or additional work, construction methodologies, regulations and the like are the responsibility of the Contractor. Amendments will require the approval of the Engineer prior to implementation.



Included in the General Permit conditions is the requirement for inspection of all erosion controls and site conditions on a weekly basis as well as after each incidence of rainfall exceeding 0.5 inches in twenty-four hours. The Contractor shall choose a qualified individual who shall be on-site during construction to perform these inspections. The Engineer must approve the Contractor's inspector. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector. Written weekly inspection forms, storm event inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer within two (2) business days of completion. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Contractor is responsible for preparation of the SWPPP, all required certifications, inspections, forms, reports and any and all corrective actions necessary to comply with the provisions of the General Permit. Work associated with performance of inspections of all erosion controls and site conditions is considered incidental to this item. The Standard Specifications require adequate erosion control for the duration of the contract. Inspection of these controls is considered incidental to the applicable items. Additional erosion controls beyond those specified in bid items elsewhere in this contract which are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods, and prosecution of the work shall be considered incidental to this item.

The CGP requires the submission of a Notice of Termination (NOT) from all Permittees (Operators, Owners, etc.) when final stabilization has been achieved. Approval of final stabilization by the Engineer and confirmation of submission of all NOTs by the Contractor will be required prior to submission of the Engineer's Final Estimate.

#### Basis of Payment

NPDES stormwater pollution prevention plan will be paid for at the unit bid price per lump sum, which price shall include all work detailed above, including, but not limited to, SWPPP preparation, required SWPPP amendments (including revisions/addenda pre, during and post- construction), NOI and NOT submissions, certifications, DEP filing fee (if required), inspections, preparation of weekly, monthly, and other required reports, distribution of copies, and all other requirements as described in this special provision. Upon final acceptance of the SWPPP, a payment equal to 50% of the contract lump sum price shall be paid. The remaining 50% of the lump sum shall be paid in 10% increments distributed equally throughout the remaining period of the contract, not including extensions of time.

**ITEM 804.3****3 INCH ELECTRICAL CONDUIT  
TYPE NM - PLASTIC - (UL)****FOOT**

The work under this item shall conform to the relevant provisions of Section 800 of the Standard Specifications and the following:

The work shall include the furnishing and installation of 3-inch non-metallic conduit and metallic warning tape for traffic signal systems in accordance with the plans and as directed by the Engineer.

The conduit material shall be Schedule 80 polyvinyl chloride (PVC) plastic conduit.

**Conduit Crossing Roadways**

Trenches in existing asphalt pavements not subject to full depth reconstruction shall be sawcut to a width of 30-inches. The existing pavement shall be sawcut through their full depth and pavement removed.

The conduit installation shall be backfilled with controlled density fill - excavatable. If the trench excavation or backfill operations have widened the top of the trench to the extent that a minimum of 12 inches of undisturbed soil is not available to support the HMA cap, the pavement shall be sawcut again and removed to provide the minimum 12-inch width.

No separate payment will be made for sawcutting, excavation, and backfill but all costs in connection therewith shall be included in the contract price.

**Method of Measurement**

Conduit installation will be measured, complete in place, and measured as closely along the direct path of the installation as possible, and from the center of handhole to the center of signal pole foundation (or other termination structure). Adjustments will not be made for specific curves of conduit sweeps and other fittings used.

**Basis of Payment**

Conduit will be paid for at the Contract unit price per foot, as specified in the Supplemental Specifications per each type.

**ITEM 815.98****FOOTING COST ADJUSTMENT****FOOT**

The contract price for traffic signals includes the cost of the mast arm footing based on an assumed “wet sand (dense)” soil type.

The actual existing soil type will be determined by the Engineer from soil borings taken under this contract. If the Engineer determines that the soil classification is other than “wet sand (dense)” and requires the use of a deeper foundation, the Contractor shall install the foundation to the dimensions shown on the Overhead Signal Structure & Foundation Standard Drawings and will be paid for the difference in depth at the unit bid price for Item 815.98. Conversely, if the Engineer’s soil classification requires the use of a shallower foundation, the Owner will be credited for the difference in depth at the unit bid price for Item 815.98.

The Contractor, at the time of the bid, shall provide a unit price to be used for additional payment or credit in the event the foundation depth is changed from that required for “wet sand (dense)” soil conditions.

The difference in depth calculation will be based on the dimensions shown on sheet 5 of 7 of the Overhead Signal Structure & Foundation Standard Drawings.

<b><u>ITEM 815.4</u></b>	<b><u>TRAFFIC SIGNAL CONTROL LOCATION 4</u></b>	<b><u>LUMP SUM</u></b>
<b><u>ITEM 816.01</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION LOCATION 1</u></b>	<b><u>LUMP SUM</u></b>
<b><u>ITEM 816.02</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION LOCATION 2</u></b>	<b><u>LUMP SUM</u></b>
<b><u>ITEM 816.03</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION LOCATION 3</u></b>	<b><u>LUMP SUM</u></b>
<b><u>ITEM 816.05</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION LOCATION 5</u></b>	<b><u>LUMP SUM</u></b>
<b><u>ITEM 816.06</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION LOCATION 6</u></b>	<b><u>LUMP SUM</u></b>
<b><u>ITEM 816.07</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION LOCATION 7</u></b>	<b><u>LUMP SUM</u></b>

Location 1 is the intersection of Route 53 (Washington Street) at Route 123 (Webster Street).

Location 2 is the intersection of Route 53 (Washington Street) at Route 3 NB Ramps.

Location 3 is the intersection of Route 53 (Washington Street) at Route 3 SB Ramps/Mall Connector. This location shall include the removal and disposal of the existing sign Mast Arm at STA 39+30RT and the abandonment of the foundation.

Location 4 is the intersection of Route 53 (Washington Street) at Hanover Mall North Drive.

Location 5 is the intersection of Route 53 (Washington Street) at Central Mall Driveway.

Location 6 is the intersection of Route 53 (Washington Street) at Mill Street/Frank's Lane.

Location 7 is the intersection of Route 53 (Washington Street) at Pond Street/Old Washington Street.

All work under these items shall conform to the relevant provisions of Section 800 of the Standard Specification, the 2009 Manual on Uniform Traffic Control Devices (MUTCD), and the following. These provisions are presented under major subheadings as follows:

- Item 1. General Requirements
- Item 2. Local Intersection Controller/MMU/GPS-TBC w/programming
- Item 3. On-Street Master w/Programming (Not Required)
- Item 4. Optical Preemption w/Programming
- Item 5. Hardwire Preemption w/Programming (Not Required)
- Item 6. Railroad Preemption w/Programming (Not Required)
- Item 7. Wire Loop Detectors w/Programming (Not Required)
- Item 8. Video Detection System w/Programming
- Item 9. Radar Detection w/Programming (Not Required)
- Item 10. Signal Heads – Vehicle
- Item 11. Signal Heads – Pedestrian and Push-Buttons
- Item 12. Posts, Bases and Foundations
- Item 13. Mast Arm Structures and Foundations
- Item 14. Strain Poles and Foundations (Not Required)
- Item 15. System Interconnect and Communication (Not Required)
- Item 16. Central Equipment, Programming and Graphics (Not Required)
- Item 17. Field Service Equipment, Programming and Graphics (Not Required)
- Item 18. Training (Not Required)
- Item 19. Warranty and Service
- Item 20. Compensation

The work includes furnishing all labor and materials to install the local cabinet and foundation, mast arms, anchor bolts and foundations, signal posts and foundations; signal heads; vehicle detectors; pedestrian heads; pedestrian pushbuttons; pull boxes; all cable and wiring; ground rods, equipment grounding and bonding; service connection; and all other equipment, materials, above named and reprogram signal timing and adding coordination data to the traffic signal controller and incidental costs necessary to provide a complete, fully operational traffic control signal system as specified herein and as shown on the plans at the above locations.

## **ITEM 1 - General Requirements**

Before beginning ANY traffic signal work, the individual or contracting organization responsible for any portion of the traffic signal construction shall demonstrate to the Engineer personal possession in the field of all of the following documents:

Massachusetts Standard Specifications for Highways and Bridges 2022 Edition  
2009 Manual on Uniform Traffic Control Devices with all Amendments  
1968 Standard Drawings for Traffic Signals and Highway Lighting  
1990 Standard Drawings for Signs and Supports  
All contract drawings showing traffic signal details or traffic signal design  
All contract special provisions

A list of the major traffic signal items required is included on the Plans.

Within thirty days following execution of the contract, the Contractor shall submit shop drawings for signal supports, a list of equipment, and manufacturer's equipment specifications to the Engineer in accordance with the relevant provisions.

No work shall be commenced by the Contractor until approval of the shop drawings and the manufacturer's data has been received in writing from the Engineer. Approval of these drawings will be general in character and shall not relieve the Contractor from the responsibility of, or the necessity of, furnishing materials and workmanship conforming to the plans and specifications.

The Contractor shall deliver to the Engineer a Certificate of Compliance with the manufacturer for *all* materials purchased from the manufacturer.

Signal operation shall continue at existing locations until switch over.

### **Flashing Operation**

Changes from flashing to stop-and-go operation and from stop-and-go to flashing operation shall occur as set forth in the MUTCD.

The cost of electrical energy consumed by the operation of traffic signals during the construction, fine tuning, and testing of the signals shall be borne by the Contractor.

## **FINE TUNING, ADJUSTMENT, AND TESTING PERIOD**

After the Contractor has finished installing the signal equipment at the intersection and after the Contractor has set the signal equipment to operate as specified in the contract documents, the fine tuning, adjusting and testing period shall begin. The Contractor shall advise the Engineer and MassDOT in writing of the date of the beginning of the fine-tuning and testing period.

During this period, the Contractor, under the direction of the Engineer will make necessary adjustments and tests to ensure safe and efficient operation of the equipment. This period shall not be less than 30 days. The contract completion date shall take this testing period into consideration. No request for final acceptance will be considered until successful completion of the testing period.

## **FINAL INSPECTION AND ACCEPTANCE**

Upon successful completion of the 30 day testing period wherein the traffic signal system has operated for 30 days without failure, the Contractor shall notify the Department. The Engineer will make a final inspection of the installation in the presence of the Department and the Contractor. An inspection check will be made to ensure that all equipment, materials, installations and operations are in accordance with the construction contract, plans and specifications. Items to be checked will include, but not be limited to, traffic signal systems operation, cabinet equipment, documents (wiring diagrams, as-built plans, instruction manuals, parts list, warranties, grounding resistivity test report, etc.), signs, and pavement markings, and street hardware (posts, bases, housings, brackets, etc.).

The Engineer will notify the Contractor in writing of any items in which the inspection reveals that the work is incomplete, defective, or does not otherwise meet the project specifications. The Contractor shall perform the corrective actions necessary to achieve final acceptance by the Department. These corrective actions shall be done by and at the expense of the contractor and within 15 days of the date of the inspection report, unless otherwise approved in writing by the Department.

## **GUARANTEE AFTER FINAL ACCEPTANCE**

The Contractor shall diagnose (troubleshoot) the system and, at their own expense, replace any part of the traffic signal control equipment found to be defective in workmanship, material, or manner of functioning within six months from the date of final acceptance of all the installations under this contract. This requirement does not affect the one-year warranty period on equipment specified in Subsection 815.20 of the Standard Specifications.

Upon the date of acceptance of the project by MassDOT, the Contractor shall turn over all guarantees and warranties to MassDOT.

## **QUALIFIED ELECTRICIANS**

Within ten days after opening of bids, the lower bidder shall submit a list of the Journeyman Electricians (Massachusetts License) who will perform the electrical work in this contract.

Also, the low bidder shall submit copies of each Journeyman Electrician's current Massachusetts License.

## **MAINTENANCE OF TRAFFIC SIGNALS**

The Contractor shall provide all labor, equipment, and material required for the total maintenance of all existing and proposed temporary and permanent traffic signal control equipment within the project limits, including damage by automobile accidents, unless otherwise specified under Subsection 7.17 "Traffic Accommodation" of the Standard Specifications, as amended, in which case Subsection 7.17 will govern. These provisions will apply to all signalized locations included as part of the contract from the date of written notice given to the Engineer that the Contractor will work on or adjacent to an existing signal until the date when the District Highway Director shall recommend acceptance of the completed project. This written notice must be given before the Contractor may proceed with any work on a specified traffic signal system. For the purpose of these paragraphs, the phrase "Traffic Signal Control Equipment" is intended to include, but is not limited to, controllers, detectors, signal housings, pedestrian equipment, supporting structures, cabinets, wires, conduit, and all other ancillary electrical equipment used for traffic control.

The cost of maintenance of signals shall be deemed to be included in the lump sum unit price and no additional payments will be made, except as provided under Subsection 7.17.

The Contractor shall make his/her own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, and other utilities will occur as a result of his/her operations.

The Contractor shall notify “Mass. DIG SAFE” and procure a DIG SAFE number of each location prior to disturbing ground in any way.

**“DIG-SAFE” Call Center: Telephone 1-888-344-7233**

#### **MATERIAL REMOVED AND STACKED**

The Contractor shall carefully remove, transport, and stack these materials on boards at the nearest MassDOT maintenance facility or municipal facility or as directed by the Engineer.



## **ITEM 2. - Local Intersection Controller/MMU/GPS-TBC with Programming**

The local intersection controller shall be an Advanced Transportation Controller (ATC) with time-based coordination capability manufactured by a MassDOT approved manufacturer. In addition, the controllers shall be closed-loop system ready for future use.

The local intersection controller shall be capable of controlling a fully actuated two- to eight-phase intersection and shall meet or exceed NEMA TS 2 standards for fully actuated traffic control units. The local controller shall have internal communication capability with direct access to the data memory. The local system controller shall be capable of processing controller, intersection and system detection data and provide all necessary intersection control functions. The required local controller timebase coordination and preemption functions shall be internal in the timing unit.

The local system intersection controller shall include all of the following internal functions: 1) software compatible with the control and data protocol of an MassDOT approved manufactured on-street master, central-office computer and field laptop computer; 2) local time base scheduler including automatic accommodation for daylight savings time; 3) local coordination control; 4) local preemption control with at least four programmable internal preemption sequences; 5) data uploading and downloading capability; 6) process system and local intersection detector activity and accumulate samples of vehicle counts, occupancy, speed, stops, and delay; 7) perform extensive failure evaluation of the controller, detectors, and communications; 8) provide local control of remotely selected NEMA and special functions; and 9) perform local report generation with printer capability if a printer is attached, including intersection status and performance; 10) Automax/max extend capable of being programmed to automatically add a max extend value to the max timer, up to a settable limit called Automax, when the associated phase max's out twice in a row. Conversely, a max extend value would be subtracted upon two gap outs in a row, down to the programmed max value, including max plans if used.

Each local system intersection controller shall include an RS-232C interface or any other physical type interface with RS-232C logic and electrical characteristics shall be provided in or with the local controller to allow for local printing of reports and for interconnecting to a remote master controller through the modem.

To minimize training and simplify local programming, all local parameter access shall utilize prompting and English language displays, and all codes needed by the user, if any, shall be on the front panel or on the display screen to avoid the need for memorization or the presence of a manual.

### **Malfunction Management Unit (MMU)**

The MMU shall have communication capability which will allow the MMU to communicate with a remote computer via the local controller unit. Liquid crystal displays shall be used to display all MMU channels in addition to fault display indications.

The MMU shall meet the requirements to be used with a NEMA TS-2 Type 1 traffic signal controller. The MMU shall provide a means of displaying the real time status of operating parameters such as the time and date, compatibility card programming, functional inputs, and the status of MMU switch settings.

The MMU shall provide a settable internal ninety-nine-year clock. This clock shall automatically adjust for daylight savings time. This requirement shall be accomplished by a user programmable function.

The MMU shall store events in a nonvolatile memory and these events shall be retained through indefinite power interruption on event log. A minimum of 100 events shall be logged by time and date of event occurrence. The memory storage algorithm shall be a first-in/first-out system (this type of rolling memory

assures that the most recent events are retained). As a minimum, the event log shall contain the following information:

- A. Failure type (date/time stamp)
- B. Display indications at time of failure
- C. Manual reset (date/time stamp)
- D. Manual switch changes (date/time stamp)
- E. Last time/date stamp
- F. Last print out

The MMU shall be furnished and wired such that data is transmitted directly to the controller for remote system access. The data exchange shall provide the ability to, via the controller unit, remotely upload the MMU event log, MMU switch settings, and compatibility card programming information.

### **Suppression Package**

Each intersection controller cabinet shall contain a full suppression package on all inputs and outputs except signal feeds.

### **GPS Receiver**

Each local intersection shall include a GPS-controlled time clock.

The GPS receiver and antenna module with WAAS shall have an integrated antenna in a rugged, weatherproof housing.

The 12-channel receiver shall provide for continuous tracking of all visible satellites.

The GPS receiver shall be manufactured by Garmin.

<b>Electrical</b>		<b>Interfaces</b>	
Input Voltage: GPS 17 HVS	8 to 40 Vdc unregulated	Serial interface: Port 1:	True RS-232 output, asynchronous serial input compatible with RS-232 or TTL voltage levels, RS-232 polarity Asynchronous serial input only, compatible with RS-232 or TTL voltage levels, RS-232 polarity.
Input current: GPS 17 HVS	60 mA @ 8 Vdc; 40 mA @12 Vdc; 15 mA @ 40 vdc	Port 2:	
Sensitivity:	-165 dBW minimum	Baud rates:	300/600/1200/2400/4800/9600/19200/38400
<b>GPS Performance</b>		Serial format:	
Receiver:	WAAS enabled; 12 parallel channel GPS receiver continuously tracks and uses up to 12 satellites to compute and update your position	Port 1:	Selectable between NEMA 0183 v2.00, NMEA 0183 v3.00, and Garmin binary formats; NMEA 0183 v2.0 (ASCII); approved output sentences; GPALM, GPGGA, GPGLL, GPGSA, GPGSV, GPRMC, GPVTG; Proprietary sentences; PGRMB, PGRME, PGRMF, PGRMM, PGRMT, PGRMV
Acquisition times:* Reacquisition: Warm: Cold: AutoLocate:* SkySearch:	Less than 2 seconds Approximately 15 seconds Approximately 45 Seconds	Port 2	RTCM input only; RTCM SC-104 differential input message types 1, 2, 3, 7 and 9
Update Rate:	5 minutes 5 minutes	PPS output	1 Hz pulse, programmable width, 1 microsecond accuracy
GPS accuracy: Position Velocity:	1 to 900 seconds between updates; programmable in 1 second increments	Power control:	OFF – open ON – pull down to less than 0.3 Vdc
DGPS (USCG) accuracy:	<15 meters, 95% typical**	<b>Environmental</b>	
Position:	0.1 knot RMS steady state	Temperature:	
Velocity:		Operating:	-30° to 80° C\
		Storage:	-40° to 80° C
DGPS (WAAS) accuracy	3-5 meters, 95% typical	<b>Physical</b>	
Position:	0.1 knot RMS steady state	Size:	
Velocity:		GPS 17:	3.58” (91 mm) diameter, 3.6” (91.4 mm) high
Dynamics:	<3 meters, 95% typical 0.1 knot RMS steady state	Weight:	
Map datums:		GPS 17:	7.1 oz. (201 g) without cable; 16.8 oz. (476 g) with 30 foot cable
	999 knots, 6g’s	Cable:	Foil-shielded 8 conductor 28 AWG RJ-45 JST ZHR-8 connector housing with 8 JST SZH-002T-PO.5 pin socket contacts
	108 predefined, 1 user	GPS 17:	

New cabinets shall have a full suppression package on all cabinet inputs and outputs.

New cabinets shall be made of aluminum and painted aluminum.

## **Grounding and Bonding**

All traffic signal equipment shall be electrically bonded to the two (2) required ground rods. (electric service entrances, cabinet and equipment contained therein, pedestal poles, mast arms and strain poles, pullbox frames and covers).

## **Testing of Grounding System**

The Contractor shall perform testing of the equipment grounding system in the presence of the Engineer in accordance with the Standard Specifications.

## **Fine Tuning, Adjustment, and Testing Period**

After the Contractor has finished installing the controller and all other associated signal equipment and after the Contractor has set the signal equipment to operate as specified in the Contract Documents, the fine tuning, adjustment and testing period shall begin. During this period, the Contractor, under the direction of the Engineer, will make necessary adjustments and tests to ensure safe and efficient operation of the equipment. Final acceptance will not be made until the system has operated satisfactorily, as designed for a period of *not less than* 30 days from a date designated by the Engineer.

## **ITEM 4. - Optical Preemption with Programming**

### **Operation**

An optical preemption system shall be included. The town standard Opticom StrobeCom Priority Control System manufactured by Global Traffic Technologies Tomar shall be furnished and installed in the same cabinet as the controller.

When optical energy impulses are received at the intersection, control of the signals shall transfer from the local controller to the controller's internal preemption logic which shall cause the signal controller to show a selected display identical to one of the color interval displays normally available as specified, which will assist the vehicle through the intersection without cross street conflict. After the vehicle has passed through the intersection, control of the signals shall then return to normal operation which shall restore the appropriate timings that were in effect prior to preemption.

The following description of work specifies the responsibilities involved in the installation of optical preemption.

The Contractor is required to supply all material and labor, as shown on the plans for the complete installation of optical preemption equipment at all specified locations in this project. Intersection preemption equipment required includes optical detectors, cable, interfacing equipment to the local controller, making electrical connections and all required incidentals.

The following are the operational requirements of the optical preemption system.

- Emergency Vehicle Design Speed for all preemption controlled approaches shall be \_\_\_ mph.
- Operating sequence as specified shall be initiated when the optical detector receives optical energy of the required repetition rate from an emitter.
- Detector shall transform the optical energy signals into electrical signals and transmit the electrical signals to the local controller for processing.
- Controller shall not respond to optical energy signals from an authorized vehicle if it is already processing optical energy signals from another authorized vehicle.

The optical detector cable shall meet the specifications of the system manufacturer.

The Contractor shall arrange for a trained representative of the manufacturer of the optical energy preemption equipment to perform the following field supervision and turn-on services:

- The representative shall select the proper quantity and method of installing all components to comply with the operational requirements shown in the preemption schedule included in these special provisions.
- The representative shall instruct Contractor and owner personnel in the procedures of installation.
- The representative shall be available to assist, supervise, and check all wiring to ensure proper operation.
- The representative shall perform a final check to include initial adjustment of range and timing to acceptable standards within the capabilities of each intersection.

- The representative shall initiate documentation for as-built drawings.
- The representative shall demonstrate the system and instruct the drivers of fire fighting vehicles in the operation of the system.
- The representative shall instruct maintenance personnel in routine maintenance and minor troubleshooting of the system.
- Any operation problems occurring within the next thirty days shall be corrected by the Contractor or by a Field Service representative if the Contractor cannot do so. This requirement is not intended to modify the Contractor's twelve-month guarantee obligation, as set forth in an earlier portion of these Special Provisions.

The cost of these field supervision and turn-on services shall be included in the lump sum unit price, and no additional payment shall be made therefore.

Preemption System Design and Documentation shall include the following:

- Provide the installing agency with location for detector installation.
- Provide the controller manufacturer, engineer, and owner with electrical diagrams.

The installer shall install the equipment consistent with the preemption equipment, the manufacturer's recommended installation procedures and electrical diagrams in a neat and workmanlike manner.

The preemption equipment manufacturer shall be responsible for operational checkouts of the specified preemption functions prior to final acceptance and approval by the Engineer.

Operating checkout includes the following:

- Verifying that the priority system timing and range are properly set.
- Preemption equipment warranties are put into effect.

### **Tomar StrobeCom System Specification Model 3140 Optical Preemption and Communication System**

#### **1. System Description**

- 1.1. The system shall utilize infrared optical communications technology to process valid optical signals emitted from authorized vehicles, and place calls to traffic controller preempt inputs to effect preemption ("green lights") of normal traffic control signals.
- 1.2. Components of the system shall consist of infrared optical emitters mounted on authorized vehicles, infrared receivers mounted in the intersections and interfaced to traffic controllers via the optical signal processor.
- 1.3. Optical emitters shall emit infrared optical signals on both the industry standard high-priority frequency 14.035 Hz (Emergency band), or the industry standard low-priority frequency 9.639Hz (Transit band) by user selection.

- 1.4. Receivers shall consist of infrared optical detectors, mounted to view the approaches to intersections, a optical signal processor installed in the traffic control cabinet and wired to the preempt call inputs of the traffic controller, and detector cable connecting the optical detectors to the optical signal processor.
- 1.5. As emitter equipped vehicles approach receiver equipped intersections, the optical detectors shall convert the incoming optical signal into an electronic signal. The optical signal processor shall receive the electronic signal, delivered by the detector cable, determine the priority of the vehicle, arbitrate priority between any simultaneously approaching vehicles, place appropriate calls to controller inputs, and log vehicle detection events.
- 1.6. Optical signal processors shall be capable of the following actions, configurable on a per-band basis:
  - 1.6.1. Local preempt – If enabled, the optical signal processor shall place a call on the appropriate controller input in response to vehicle detection. (Default shall be enabled)
  - 1.6.2. Logging – If enabled, the optical signal processor shall be capable of writing a log record in non-volatile memory consisting of the following information: (Default shall be enabled)
    - 1.6.2.1. Signal band
    - 1.6.2.2. Direction
    - 1.6.2.3. Call duration
    - 1.6.2.4. Final greens at end of call
    - 1.6.2.5. Duration of final greens
    - 1.6.2.6. Event start time and end time in real time
  - 1.6.3. Real-time announcement of vehicle detection – If enabled, the optical signal processor shall send a short message via, RS-232 port upon the start vehicle detection processing. The message shall consist of the following information: (Default shall be disabled)
    - 1.6.3.1. Signal band
    - 1.6.3.2. Direction
  - 1.6.4. End of event echo – If enabled, the optical signal processor shall echo the complete log record for a vehicle detection event immediately after the end of the event. The information included shall be those items enumerated in 1.6.2 above. (Default shall be disabled)
- 1.7. System receivers shall always give precedence to emergency band vehicles over transit band vehicles.
- 1.8. System receivers shall be capable of detecting emitter-equipped vehicles at a range of up to 2,500 feet (762 meters), under clear atmospheric conditions.
- 1.9. System receivers shall interface with all NEMA TS-1 and TS-2 and Type 170 & 2070 traffic controllers equipped with programmable preemption routines, with no compromise to normal traffic controller functions.

## 2. System Components

### 2.1. Optical Emitter

- 2.1.1. Optical emitters shall generate the industry standard Hi and Lo priority optical signals required to activate the receiver equipment in the intersection.

2.1.2. Optical emitter power supplies shall be powered by the vehicle's electrical system. The emitter power supply input voltage shall range from 10 to 30VDC.

2.1.3. Optical emitters shall perform three functions:

2.1.3.1. The first function shall be to transmit the industry standard frequency for Emergency band signals, (14.035 +/- 0.003Hz) or for Transit Band signals (9.639 +/- 0.003 Hz).

2.1.3.2. The third function shall be to effect range adjustment of the system using any manufacturer approved optical emitter positioned at the desired distance, while the optical signal processor range adjustment features are activated in the traffic cabinet. The range of each system intersection approach shall be adjustable between 200 feet (61m) and 2500 feet (762m).

2.1.3.3. Optical emitters shall conduct self-diagnostics and display emitter status via a single indicator light located on the control switch.

2.1.4. Optical emitters shall operate over a temperature range of -67 °F (-55 °C) to +165 °F (+74 °C). The optical emitter shall operate over a range of 5% to 95% relative humidity.

2.1.5. The optical emitter shall have an automatic disable option, which shall be wired to a user provided switch to disable the emitter automatically when the vehicle is in park, or neutral.

## 2.2. Optical Detector

2.2.1. Infrared optical detectors shall be manufactured from black glass-filled, UV stabilized polycarbonate suitable for all weather use. The detector electronics shall be potted and waterproof.

2.2.2. Infrared optical detectors shall sense and transform optical energy from optical emitters into electrical signals to be received by the optical signal processor.

2.2.3. Infrared optical detectors shall sense optical emitter signals over an adjustable range of 2500 feet (762m) in optimum atmospheric conditions.

2.2.4. Infrared optical detectors shall transmit electrical signals to the optical signal processor via up to 1000 feet of optical detector cable.

2.2.5. Infrared optical detectors shall have an internal terminal strip with wiring label for convenient positive connection to the detector cable.

2.2.6. Infrared optical detectors shall have at least a nominal conical 13-degree field of view centered about the view-port normal axis. Long and short (wide angle) scopes shall be available from the manufacturer suit the different view angle applications in a given intersection. .

2.2.7. Infrared optical detectors shall operate over a range of 12 to 30 VDC and current of up to 50ma maximum.

2.2.8. Infrared optical detectors shall be of single channel, single direction configuration only, with a ½ inch or ¾ inch FNPT mounting connection. Hardware shall be available from the



manufacturer to allow mounting the optical detector to mast arm, span wire, and various other possible intersection mounting configurations.

- 2.2.9 The manufacturer shall have as an optional detector, a detector that shall have self-test circuitry that Operates on a periodically pre-timed schedule, which automatically shall test proper operation of system detectors with no effort by the system user. 2.2.9.1 A small infrared (IR) diode shall be embedded in the detectors photocell to inject an optical signal into the detectors electronic circuitry. Periodically, a special code shall be emitted by the IR diode, pick up by the detector photocell and circuitry and then sent to the Optical Signal Processor. If the OSP does not see this special signal at the appropriate scheduled time it shall create a log entry in memory indicating the possible failure of the detector. The user can check the OSP log at any time to view the status of attached detectors at any time. Detector failure warning will be displayed on the face of the OSP card by a flashing red LED on the appropriate channel enable/disable function switch. The self-test signal shall not interfere with normal preemption operation at system intersections.

### 2.3. Optical Detector Cable

- 2.3.1. General - Three conductor shielded control cable, with foil shield overall and ground wire. Meets the requirements of IPCEA-S-61-402/NEMA WC5, Section 7.4, 600-Volt Control Cable, rated for 75 degrees Celsius, Type B, and the following:

#### 2.3.1.1. Conductors

- 2.3.1.1.1. Quantity – 3
- 2.3.1.1.2. Gauge - AWG #20 (7 x 28) stranding
- 2.3.1.1.3. Conductor Material - Individually tinned copper strands
- 2.3.1.1.4. Insulation - PVC, (80 C), (600V), (25mil) minimum average thickness
- 2.3.1.1.5. Color - 1 Blue, 1 Orange, and 1 Yellow

#### 2.3.1.2. Shield

- 2.3.1.2.1. aluminized polyester film or approved equal, applied with a nominal 20% overlap to provide 100% shield coverage

#### 2.3.1.3. Drain Wire

- 2.3.1.3.1. Gauge - AWG #20 (7 x 28) stranding
- 2.3.1.3.2. Material - Individually tinned copper strands
- 2.3.1.3.3. Non-insulated and in contact with the shield conductive surface

#### 2.3.1.4. Electrical Characteristics

- 2.3.1.4.1. Drain and conductor DC resistance shall not exceed 11.0 ohms per thousand feet
- 2.3.1.4.2. Capacitance from 1 conductor to the other 2 conductors and shield shall not exceed 48 pf/ft at 1000 Hz.

#### 2.3.1.5. Jacket

- 2.3.1.5.1. Minimum average wall thickness - .045"
- 2.3.1.5.2. Temperature rating - 80C

- 2.3.1.5.3. Voltage Rating - 600V
- 2.3.1.5.4. Material – black PVC
- 2.3.1.5.5. Nominal O.D. over jacket - .35” maximum

2.3.2. Optical detector cable shall be of durable construction to allow the following types of installation:

- 2.3.2.1. Direct-burial
- 2.3.2.2. Conduit and mast arm pull
- 2.3.2.3. Exposed (overhead, as with span wire.)

## 2.4. Optical signal processor

2.4.1. Optical signal processors shall be installed in the traffic controller cabinet to receive the electrical signals from optical detectors. The optical signal processor shall interface directly with California/New York Type 170/179 and newer 2070 series controllers with compatible software, and NEMA TS-1 and TS-2 with suitable system interface equipment and software.

2.4.2. Optical signal processors shall be powered from 120 VAC (95VAC to 135VAC), 60Hz mains and have an on board regulated power supply that supports up to 10 optical detectors.

2.4.3 Communications module, which shall arbitrate priority between the signal processor modules, logs events, and provide RS-232 communication with the outside world for system configuration during installation, and real time communication with the traffic controller or central system during operation.

2.4.4 Optical signal processors shall be modular, plug and play in construction and come standard with the following:

2.4.4.1 Up to four individual signal processor modules, each capable of receiving up to 10 emergency and transit band emitter signals simultaneously.

2.4.4.2 An AC line-locked clock module that provides a battery backed up on board source for time and date stamp information during event logging. The real-time clock shall be read and set via the RS-232 port. Battery backup shall be rechargeable and provide a 1-week backup life with system power off.

2.4.4.3 Non-volatile memory shall be available for storage of configuration parameters and event. Logs. Retention time for the non-volatile memory shall be a minimum of 10 days with OSP power off.

2.4.5. Optical signal processor front panel shall have the following features:

2.4.5.1. Power on/off switch with corresponding red LED indicator.

2.4.5.2. LED indicators for emergency and transit band reception status for each of four channels.

2.4.5.3. Test switches for activating internal diagnostics.

- 2.4.5.4. Optical signal processors shall have a range arm switch for enabling the setting of detection range without software interface with the RS-232 port. All available channels and bands shall be able to be armed simultaneously for range setting.
- 2.4.5.5. Optical signal processors shall have an RS-232 communications port.
- 2.4.6. Programming the optical signal processor and retrieving data stored in it via the RS-232 port shall be accomplished using an IBM PC-compatible computer either locally or remotely via a modem.
- 2.4.7. Optical signal processors shall be capable of receiving emergency and in transit band standard.
- 2.4.8. Optical signal processors shall log and store in non-volatile memory, 1300 log events minimum. When the log is full, the oldest entry shall drop off to allow the newest entry to be logged.
- 2.4.9. Optical signal processors shall have a Max Call Timer, Call Extension Timer, and a Call Delay Timer in the software program for both Emergency and Transit Band.
- 2.4.10. The optical signal processor shall be capable of receiving a special self-test signal from system detectors which are fitted with a self-test circuit on a scheduled basis. When detector self-test occurs in system detectors a special signal shall be sent to the OSP. If the OSP does not receive the proper signal from each of the active attached detectors of the intersection at the appropriate time, it shall create a log entry in memory indicating possible detector failure for the appropriate channel. The user may check current detector self-test status for all detectors at any time. The self-test signal shall not interfere with normal preemption operation of the system. The OSP shall indicate a detector self-test failure both in the OSP data log, and by flashing the red enable/disable switch LED for that channel on the OSP front panel for on site visual indication that the detector has failed self-test.
- 2.4.11 Transit band vehicles shall have a set of green timers available for uniquely handling transit vehicle signal phase timing.

## 2.5. System Software

- 2.5.1. Optical signal processor configuration software shall be provided on CD-ROM. It shall run on IBM compatible computers with Windows 95, 98 NT 4.0, and Windows 2000 software.
- 2.5.2. The software shall provide windows and menus for setting vehicle range individually for emergency and transit vehicle bands, intersection and channel names, timing parameters, desired green signal indications during priority control operation, and for viewing and downloading logged information.

## 3. Environmental Specifications

- 3.1. All equipment supplied as part of the optical preemption traffic control system intended for use in the controller cabinet shall meet the electrical and environmental specifications spelled out in the NEMA Standards Publications TS2-1992 Part 2 where applicable:
  - 3.1.1. Line voltage variations per NEMA TS2-2.1.2
  - 3.1.2. Primary power interruptions per NEMA TS2-2.1.04.A.1

- 3.1.3. Power Source frequency per NEMA TS2-2.1.3
- 3.1.4. Power source noise transients per NEMA TS2-2.16.1
- 3.1.5. Power Source high-energy transients per NEMA TS2-2.1.6.2
- 3.1.6. Non-destructive transient immunity per NEMA TS2-2.1.8
- 3.1.7. Input-output noise immunity per NEMA TS2-2.1.7
- 3.1.8. Temperature range per NEMA TS2-2.1.5.1
- 3.1.9. Humidity per NEMA TS2-2.1.5.2
- 3.1.10. Shock test per NEMA TS2-3.13.9
- 3.1.11. Vibration per NEMA TS1-3.13.8

#### 4. Qualifications

- 4.1. The manufacturer or their qualified agents shall supply a list of at least five preemption system users having experience with the various types of preemption system components available from the manufacturer for a minimum of three years.
- 4.2. Manufacturers shall be able to demonstrate the ability to provide on going technical and product warranty support.
- 4.3. A tour of the manufacturer's production facilities shall be made available for a maximum of two inspectors from the purchasing agency upon request. Travel and lodging costs for such an inspection shall be the purchasing agency's responsibility.
- 4.4. Manufacturers shall have an independent quality control department that has complete authority to monitor product integrity and is answerable only to a senior officer of the manufacturing organization.

#### 5. Responsibilities

- 5.1. Manufacturers or the manufacturer's representative shall provide responsive service before, during and after the installation of the priority control system. The manufacturer or the manufacturer's representatives shall provide training to the system installer and maintenance department of the purchasing agency. Training shall consist of proper installation and operating procedures for the system hardware and software.
- 5.2. The manufacturer or the manufacturer's representative shall, at the request of the purchasing agency, assist with field surveys of the traffic system intersections to insure that all traffic control system equipment shall interface with the manufacturers preemption system components. The necessary number of preemption channels and the appropriate location of the optical detectors, for optimum system operation shall be determined at this inspection.
- 5.3. Manufacturers or the manufacturer's representative shall assist the installer or the purchasing agency's traffic department to insure that all traffic controllers are properly programmed for preemption system interface. Preemption system maintenance and operational manuals shall be provided to the purchasing agency and system installer.
- 5.4. The manufacturer or the manufacturer's representative shall provide an Emergency Vehicle Driver Training Course to all qualified personnel who will use the preemption system, at the request of the purchasing agency. At least one copy of the materials used for the Driver Training course shall be provided to the purchasing agency for future review.

- 5.5. The manufacturer shall warrant, provided the preemption system components have been properly installed, operated, and maintained, that matched system components that fail due to material flaws or workmanship shall be replaced or repaired under manufacturers published warranty provisions. The protection period against system component failure shall have a total duration of not less than 10 full years according to provisions set forth in the manufacturers published warranty.
- 5.6. The manufacturer shall provide, upon request, a certificate of product liability insurance for \$5,000,000.
- 5.7. The manufacturer of the preemption system shall certify upon request of the purchasing agency that each of the components in their system are designed, manufactured, and tested as a system of matched components of the latest design features and model, and shall meet or exceed the requirements of the specification.
- 5.8. All emitters and optical signal processors must be field programmable by the user, using the manufacturers system software via computer.
- 5.9. Pricing bid by vendors at time of bid opening must be good for a period of three (3) years. Vendors may increase their sell price to the City by 5% for equipment purchased after 18 months from the bid date.

## **ITEM 8 -Video Detection System with Programming**

This Supplemental Specification provides for the construction of video detection .

### **VIDEO IMAGE PROCESSING SYSTEM**

#### **INTENT:**

The intent of the following specification is to describe the **minimum** requirements for providing a complete Video Detection System. The system shall be capable of providing presence vehicle detection and traffic data collection at selected intersections. The video system shall be expandable without removing or replacing existing units.

#### **OVERVIEW:**

Acceptable systems include that of any manufacturer, provided such equipment meets **all** qualifying specifications identified herein. Using standard image sensor optics and in the absence of occlusion, the system shall be able to detect vehicle presence with 98% accuracy under normal conditions (days and nights), and 96% accuracy under adverse conditions (fog, rain, snow).

All items and materials furnished shall be new, unused, current production models installed and operational in a user environment and shall be items currently in distribution. The detection and data collection algorithms shall have a proven record of field use, with a minimum of three (3) years of service.

### **VIDEO VEHICLE DETECTION SYSTEM**

#### **GENERAL:**

These technical specifications describe the minimum physical and functional properties of a video detection system. The system shall be capable of monitoring all licensed vehicles on the roadway, providing video detection for areas outlined in the construction drawings. The entire video detection system shall consist of the following:

- Video Image Processing unit(s).
- Video system communications module.
- Video camera(s) with IR filter, enclosure and sunshield.
- Camera lens.
- Surge suppressor.
- All other necessary equipment for operation.

#### **1.0 HARDWARE**

- 1.0 The Video Image Processor (VIP) shall be modular by design and housed in either a self-contained stand-alone unit or fit directly into NEMA TS1 & TS2 type racks.
- 1.1 The system shall control from 1 to 6 VIP boards allowing for 1 to 12 image sensors.
- 1.2 The system shall be designed to operate reliably in the adverse environment of roadside cabinets and shall meet or exceed all NEMA TS1 and TS2, as well as Type 170/179 environmental specifications.

- 1.3 Ambient operating temperature shall be from –35 to +75 degrees Centigrade at 0 to 95% relative humidity non-condensing.
- 1.4 The system shall be powered by 12-40 VDC and draw less than 2 amperes.
- 1.5 The system shall utilize cabinet 24 VDC for rack mount installations or external 24 VDC for stand-alone shelf installations.
- 1.6 Surge ratings shall be set forth in the NEMA TS1 and TS2 specifications.
- 1.7 Serial communications shall be through an RS232 serial port. This port can be used for communications to a modem or laptop to upload/download detector configurations, count data and software upgrades. RS485 on the rear edge connector shall facilitate communications to other VIP boards.
- 1.8 Each VIP board shall have 4 opto-isolated open collector outputs. Twenty (20) additional outputs shall be available via the expansion port. The VIP shall have 20 presence detection zones and 4 data detection zones per camera. Data zones shall collect and store vehicle counts, volume, speed, gap time, headway, occupancy, and classification. Data shall be time-stamped (6713 intervals) and stored onboard (non-volatile memory) in intervals from 1-60 minutes.
- 1.9 Data alarms are generated for: queue, inverse direction, speed drop, no video, and errors.
- 1.10 Must be able to provide single or double loop emulation.
- 1.11 Presence hold time must have parameters that range from 10 to 600 seconds.
- 1.12 Each VIP board shall allow for 20 digital inputs via the I/O Expansion port.
- 1.13 Each VIP board shall have error detection. An output contact will open if the video signal is bad or the VIP board is not functioning properly. A user defined quality level will automatically put the VIP into a recall state in cases of severe degraded visibility (i.e., fog, blizzard, etc.). Normal detection resumes when visibility improves above the user defined quality level.
- 1.14 Operator selectable recall shall be available via the VIP front panel. Holding the recall switch on for 5 seconds shall activate this function.
- 1.15 A video select button on the VIP front panel will switch between camera images of the VIP.
- 1.16 The VIP board shall have 2 video inputs (RS-170 NTSC or CCIR composite video) and two video outputs (one on the front panel and one on the edge connector). The video inputs shall be through the VIP board's edge connector. Video inputs shall alternatively be available through BNC connectors on the front of the VIP board as an option.
- 1.17 The VIP board shall have a reset button on the front panel to reset video detectors to “learn” the roadway image. During “relearn”, selectable recall can be enabled or disabled for immediate operation. Learning time of video detectors shall be less than 5 minutes.

- 1.18 External surge suppression, independent of the VIP board shall separate the VIP from the image sensor.
- 1.19 The VIP board shall have separate light emitting diodes (LEDs) that indicate:

<b>POWER</b>	Red to verify power supply.
<b>I/O COMM</b>	Red to indicate communications to expansion boards.
<b>VIDEO 1 &amp; 2</b>	Red to verify the presence of video input 75 Ohm.
<b>TX &amp; RX</b>	Red to indicate communications via the serial port.
<b>OUT1- OUT4</b>	Green if the corresponding detection group is active.

The VIP board shall also have 2 separate buttons for:

#### **VIDEO SELECT**

<b>RECALL</b>	Manually places call on detectors.
<b>RESET</b>	Manually reset detectors to “learn” new background.

- 1.20 The video detection system shall be capable of being programmed locally with a handheld keypad. Keypad and monitor must be separate units. A PC mouse will not be allowed. The monitor is to have a 9 inch, black and white screen.
- 1.21 The VIP board shall have a video out female RCA style connector, DB9 female Service port and DB9 I/O Expansion port
- 1.22 The VIP Expansion board shall also have separate LEDs that indicate:

<b>POWER</b>	Red to verify power supply.
<b>COMM</b>	Red to indicate communications to VIP board.
<b>I/O1- I/O4</b>	Green if the corresponding detection group is active.

The VIP Expansion board shall have 8 dip switches that define inputs and outputs used (range: 1-12 or 13-24).

- 1.23 Event Log Database

The VIP module shall have an onboard database capable of time stamping and storing 500 events. The Event Log Database can be viewed or downloaded to a selected spread sheet. Erasure of the Event Log Database shall not alter programmed configurations. As a minimum, the VIP shall log and time stamp the following events;

Firmware upgrade.

- Loss of video signal.
- Resumption of video signal.
- Configuration change.
- Bad video quality.
- Loss of power to VIP module.
- Resumption of power to VIP module.
- Speed alarm.



- Inverse direction.
- Recall activated.

### **Video System Communications Module**

- 1.24 The Communication board shall be modular by design and housed in either a self-contained stand-alone unit or fit directly into NEMA TS1 & TS2 type racks as well as Type 170/2070 input files.
- 1.25 The Communication board shall control from 1 to 6 VIP boards allowing for 1 to 12 image sensors.
- 1.26 The system shall be designed to operate reliably in the adverse environment of roadside cabinets and shall meet or exceed all NEMA TS1 and TS2, as well as Type 170/2070 environmental specifications.
- 1.27 Ambient operating temperature shall be from –34 to +74 degrees Centigrade at 0 to 95% relative humidity non-condensing.
- 1.28 The system shall be powered by 12-40 VDC and draw less than 2 amperes.
- 1.29 Serial and Ethernet (TCP/IP) communications shall be through respectively an RS232 serial port (F DB9 connector) and Ethernet port (RJ-45 connection). These ports can be used for communications to a laptop or modem to upload/download detector configurations, traffic data, technical events, send software upgrades and do remote setup of detectors. RS485 on the rear edge connector shall facilitate communications to VIP boards.
- 1.30 Surge ratings shall be set forth in the NEMA TS1 and TS2 specifications.
- 1.31 The Communication board shall have separate light emitting diodes (LEDs) that indicate:
- |                  |  |
|------------------|--|
| <b>POWER</b>     | Red LED to verify power supply.  |
| <b>LAN</b>       | Red LED to indicate data activity over Ethernet communication.   |
| <b>VIDEO OUT</b> | Female RCA style connector.  |
| <b>RESET</b>     | Manual reset to re-initialize communications.  |
| <b>SERVICE</b>   | DB9 female Service port for setup of communication board and also used for serial/dial-up communication. |
- 1.32 All communication equipment shall be 100% compatible with existing video detection systems currently used, without any hardware or software changes.

## **2.0 FUNCTIONAL CAPABILITIES**

- 2.1 Real Time Detection
- 2.2 Each VIP board shall be capable of processing two (2) separate video signals (two (2) separate cameras) per VIP board. The video signal shall be analyzed in real time (30 times per second).

- 2.3 The system shall be expandable up to 12 cameras that may be connected to different VIP units and programmed independently.
- 2.4 The system shall be capable of displaying detectors on the video image with associated outputs. Outputs/Inputs status will be indicated on the screen. Parameters will also include the ability to view raw video without any verbiage and/or detectors for surveillance purposes.
- 2.5 Each VIP board will detect within the view of the connected camera the presence of vehicles in user defined zones. Detectors available shall be presence, count, queue, delay, extension, or pulse mode of either arrival or departure of vehicles. - Delay and extension shall be defined between 0.1 – 99.9 seconds and pulse mode between 0 – 200ms in 33ms increments if NTSC is used. Each VIP board shall also detect and collect traffic data of passing vehicles in user-defined zones within the view of the connected camera.

Collected traffic data by direction shall include:

- Volume (absolute numbers) per length class and per lane.
  - Average speed (km/h or mph) per length class and per lane.
  - Average gap time (1/10 sec) per length class and per lane.
  - Average headway (m or feet) per lane.
  - Occupancy (%) per lane
  - Concentration (vehicles/km or mile) per lane.
  - Average length (m or feet) per lane.
  - Confidence level (0-10) per lane.
- 2.6 The VIP board shall be programmed without the use of a supervisor computer. A standard CCTV monitor and handheld keypad plugged into the VIP serial port will facilitate detector programming. The handheld keypad shall include the following keys and respective functionalities:

Keys	Functionality
Enter Key	<ul style="list-style-type: none"> <li>● To enter a menu, a submenu or an item within a submenu.</li> <li>● To select a value for a parameter and exit the topic.</li> </ul>
Escape Key	<ul style="list-style-type: none"> <li>● To exit the menu or submenu.</li> <li>● To exit the main menu and save the settings in the current configuration.</li> </ul>
Arrow Keys	<ul style="list-style-type: none"> <li>● To scroll through a menu.</li> <li>● To scroll through the values of a parameter.</li> <li>● To select a submenu.</li> <li>● To make a presence zone direction sensitive.</li> </ul>
F1 Next Key	● To proceed to the next detection zone.
F2 Prev Key	● To move to the previous detection zone.
F3 Add Key	● To add a detection zone.
F4 Del Key	● To delete a detection zone.
Dir Key	● To make a data zone direction sensitive.
Help Key	● To display help text for an item.
Output Number Key	● To assign an output number to a detection zone.
Operate Key*	● To put the board in operation mode.
Edit Key	<ul style="list-style-type: none"> <li>● To change settings while starting from default values for all parameters.</li> </ul>
Modify Key*	
	<ul style="list-style-type: none"> <li>● To change settings while starting from the last saved settings for all parameters.</li> </ul>

\* The functionality of this key is only for the video system communications modules

- 2.7 The VIP board shall store up to 8 detector configurations (4 per video input). It shall be possible to switch between detector configurations manually, automatically by time of day or remote input.
- 2.8 Via the serial port, detector configurations can be uploaded to a laptop and stored on disk.
- 2.9 Detectors may be linked to 24 outputs and 20 inputs using Boolean Logic features: AND, OR, NOT. It will be possible to generate conditional outputs based upon inputs from a controller.
- 2.10 It shall be possible to make a detector directional sensitive. Options will include an omni-directional detector or a detector that only senses movement: from right to left, left to right, up to down or down to up as you look at the monitor.
- 2.11 All detectors and parameters can be changed without interrupting detection. For example: when one detector is modified, all existing detectors continue to operate, including the one that is being modified. When the new position is confirmed, the new detector will enter a learning phase. Once the new detector is in function, it will take over the job of the old one. In this way, the detector is always fully operational with no interruption on any detector, even during modification. Learning phases for new detectors shall not exceed 10 seconds.
- 2.12 Four data detection zones per camera on a two camera VIP board may be used for collection of vehicle count, speed, classification, occupancy, density, headway, and gap time. These detectors will detect and store traffic data at user-defined intervals of 1, 2, 3, 5, 6, 10, 15, 30

& 60 minutes. It shall be possible for each VIP board to store up to 6713 intervals of data in non-volatile memory.

- 2.13 Six detectors per camera may be used as queue detectors. Using on screen calibration, queue detectors will detect queue delays and display the queue length in feet or meters. A queue may also generate an output alarm from the VIP board.
- 2.14 Associated software shall be used with a PC to download count data and export to a spreadsheet. The software shall also be used to upload/download detector configurations, traffic data, technical events and update software versions of the VIP board.
- 2.15 All software upgrades to associated software and VIP board software shall be provided at no cost for the expected life of the VIP board (see section 10)
- 2.16 The VIP board shall have an internal clock with daylight saving time system, which can be enabled or disabled.
- 2.17 The VIP board shall provide overlaid tool tips for each individual menu- and submenu-items.
- 2.18 The VIP board shall have an optional password implementation. Different user-levels shall be available each having different rights.  
All equipment must be capable of having a minimum of 10 users that can be defined for each user-level.
- 2.19 The VIP board shall be able to delay or extend a detector zone output in combination with an input from the controller.
- 2.20 The VIP board shall detect wrong-way drivers and shall provide an alarm/event via communication board and/or output.
- 2.21 The VIP board shall provide an alarm and/or output when the user selected queue detection threshold of occupancy is exceeded for more than a user selected time threshold.
- 2.22 The VIP board shall distinguish five classes of detected vehicles based upon user selectable vehicle length thresholds.
- 2.23 The VIP shall be able to emulate loop emulation with user selectable loop dimensions.
- 2.24 The VIP shall have a Detection Hold Time function. The timing parameters shall be 10 – 600 seconds.
- 2.25 The VIP board shall provide advanced settings to optimize detection to avoid cross-lane traffic occlusion. Directional detectors shall be able to be programmed for Low, Medium or High depending on the severity of the occlusion.
- 2.26 The VIP shall be programmable for Wrong Way Suppression Delay. The timing parameters shall be 1 – 30 seconds.

- 2.27 The VIP board shall utilize advanced shadow rejection algorithms. It shall be possible to place detection zones over lane markings without affecting the shadow rejection accuracy from adjacent vehicle (moving) shadows.
- 2.28 The VIP board shall utilize an advanced Tree Shadow Suppression algorithm to suppress false detection of moving shadows (non-vehicular, i.e. trees) within a detection zone. It shall be possible to enable or disable this feature.
- 2.29 The VIP board shall provide integrated image quality diagnostics eliminating the need for users to manually place quality detection zones on the image. Advanced diagnostic information shall display both the quality of the video images (Qim) as well as the quality of detection (Qdet). The Qim and Qdet together will be averaged to provide an overall quality (Q). Each quality diagnostic (Qim, Qdet & Q) will be based on a 1 (poor quality) to 10 (excellent quality) scale.
- 2.30 The VIP board shall provide the capability to enter a “recall” state if the quality threshold falls inside a user-defined range. The range shall be defined by the Quality Level (1-10) and a timeout range of 1 to 99 minutes. For example, if the quality drops to level 5 for 2 minutes, the VIP shall enter a “recall” mode. Once the quality rises above level 5 for 2 minutes, the VIP resumes normal operation. The VIP shall also provide a contact closure output during this condition.

#### **VIDEO SYSTEM COMMUNICATION MODULE:**

- 2.31 The Video System Communication board shall control from 1 to 6 VIP boards allowing for 1 to 12 image sensors.
- 2.32 The Video System Communication board shall provide a serial or Ethernet interface and communication to provide traffic data and allow remote configuration from the Traffic Operations Center.
- 2.33 The LAN port shall meet IEEE 802.3 with a RJ-45 connector and meet the following specification:
- Data rates for Ethernet via LAN port: 10Mbit/s  
TCP/IP based protocol
- 2.34 The serial communications port shall meet EIA-232-E and meet the following specifications:
- Dial-up data rates for RS232 via Serial port: maximum 57600 bps
  - Direct data rates for RS232 via Serial port: maximum 115200 bps
  - Mode of operation: asynchronous, serial, 8 bit word, 1 stop bit,  
duplex or half-duplex
  - Parity: none
  - Handshake: RTS - CTS, DCD
  - Configuration: DTE
- 2.35 The communication shall support all functions of the video detection system.

- 2.36 All data transmissions shall be protected by CRC (cyclic redundancy checking) or an equivalent error detection method.
- 2.37 The communication board shall be programmed without the use of a supervisor computer. A standard CCTV monitor and keypad plugged into the communication serial port will facilitate board programming.
- 2.38 The communication shall support streaming video over Ethernet and serial communication.
  - Streaming video frame rate:
    - Over Ethernet: 10 frames/second
    - Over serial communication: guarantee of 1 frame every 2 seconds.
- 2.39 Password protected remote setup (configuration upload/download, setup of detectors and detector parameters, setup of communication board parameters, firmware updates for Communication and VIP module) and monitoring of every connected VIP module shall be possible.
- 2.40 Dialup shall be possible through PSTN modems.
- 2.41 The Communication board shall log data and events provided by the VIP module(s) and transmit data and events to the HOST computer.
- 2.42 RS485 communication to every VIP module shall be established via the Edge connector.
- 2.43 The Communication board shall be able to store on board pre-post video sequences of alarm triggered upon traffic user defined events. When connected to a HOST computer, the JPEG video sequences shall automatically be downloaded to the HOST computer.
- 2.44 The Communication board shall be able to accept PAL or NTSC video format.
- 2.45 A (via Ethernet) connection with a standard Internet browser shall be possible to communicate with the Communication board for remote set-up, monitoring and real-time data of the VIP modules.
- 2.46 Password protection shall be provided on the Communication board for remote operations.

### 3.0 IMAGE SENSOR- CAMERA

- 3.1 The unit shall be a high resolution, 1/3" image format CCD camera, designed for professional video surveillance systems. Cameras shall be available commercially. **No sole source cameras will be allowed.** Incorporating the latest in CCD technology, the video camera shall provide detailed video without lag, image retention, or geometric distortion. System must also be capable of working with either a color or black and camera.

Temperature range	-20 to + 55 degrees C
Humidity	0% to 95% relative, non-condensing
Dimensions	47mm X 47mm X 83mm
Weight	7.1oz.
Camera mounting slots	1/4-20, top and bottom

Connectors	BNC for video out		
Lens mount	CS Power-in / pressure screw Lens / 6-pin miniature "DIN" style		
Finish	Off-white semi-gloss polyurethane		
Construction	All metal housing		
Rated input voltage	24 VAC, 60 Hertz		
Voltage range	21 to 30 VAC		
Nominal power	4 Watts		
Imager	Interline transfer CCD 1/3" format		
Imager spectral response	100% @ 550nm:		
	30% @ 400nm and 800nm		
Sync system	EIA RS-170		
Active picture elements	768 H X 494 V		
Horizontal resolution	580 TVL		
Sensitivity (2856 K)		<b>Usable Picture</b>	<b>Full Video</b>
Scene Illumination	fc	0.01	0.048
	lx	0.1200	0.480
Imager Illumination	fc	0.0024	0.01
	lx	0.0024 0.10	
* F 1.2 lens @ 89% highlight			
Signal to noise ratio	48 dB minimum		
	58 dB typical		
AGC	21 dB, (max)		
Electronic Shutter	1/60 to 1/600000 sec. (EIA)		
Aperture Correction	Horizontal and vertical symmetrical		
Video out	1.0 volts peak-to-peak +/- 0.1		
	volt @ 75 Ohms		
Programmable Controls	Video level, shutter, AGC, BLC, Auto Black		

## 4.0 IMAGE SENSOR- LENS

4.1 The camera lens shall be a motorized vari-focal 6.5-65mm with auto iris.

- Image format 1/3 inch
- Focal length 10X zoom (6.5-65mm)
- Iris range f 1.4 – Approx. 360  
(With ND Spot Filter)
- Focus range 9.85mm (in air)
- Back focus distance 10.05mm (0.4in.) in air
- Weight 285g.
- Lens mount CS
- Iris control 4 pin DC control
- Focus control Motorized
- Zoom Motorized

## 5.0 IMAGE SENSOR- HOUSING

- 5.1 The environmental housing shall be an aluminum enclosure designed for outdoor CCD camera installations.

Temperature range	-40 to +50 degrees C
Dimensions	449mm x 97mm x 112mm
Weight	1.4kg
Housing mounting	Three 1/4-20 tapped holes
Camera mounting	Removable cradle assembly
Cable entry	Three liquid-tight fittings that will accept cable diameters of: One fitting - 2 to 7 mm Two fittings - 3 to 10 mm
Finish	Off-white semi-gloss polyurethane
Construction	Extruded aluminum housing, Aluminum rear-end cap, Aluminum front cap with glass face plate, and Aluminum cradle. A sunshield shall be included
Window	3 mm thick glass that includes a Thermostatically controlled window Heater/defogger strip
Rated input voltage	115 VAC 60 Hertz
Voltage range	108 VAC to 132 VAC
Output voltage	24 VAC 60 Hertz
Nominal power	30 Watts
Enclosure protection	Waterproof and dust-tight in a NEMA-4, IP65, enclosure Type 3

## 6.0 SURGE PROTECTION

- 6.1 A video surge suppressor(s) shall be available for installation inside the traffic signal controller cabinet. The suppressor shall provide coaxial cable connection points to an EDCO CX06-BNCY or approved equal transient suppresser for each image sensor.

Peak Surge Current (8 x 20 us)	20KA
Technology	Hybrid, Solid State
Attenuation	0.1db @ 10Mhz
Response Time	<1 nanosecond
• Protection	Line to Ground
Shield to Ground	(isolated shield modules)
• Clamp Voltage	6 volts
• Connectors	BNC
• Impedance	75 Ohms
• Temperature	-40 to +85 degrees C
• Humidity	0-95% non-condensing
• Dimensions	4.5" x 1.5" x 1.25"
• UL Listed	UL 497B

## 7.0 IMAGE SENSOR- MOUNTING BRACKETS

- 7.1 Mast arm installations shall be mounted at a sufficient height to prevent occlusion from cross traffic between the stop bar and the mast arm on which the camera is installed. A 74" maximum length of internally reinforced, aluminum tube shall be attached to the mast arm



bracket for camera mounting above the mast arm. Camera shall be mounted to the top of the tube with the camera manufacturers recommended bracket. Camera bracket shall provide adjustments for both vertical and horizontal positioning for the camera. Camera attachments shall be designed to securely fasten the camera to prevent the extension tube from falling into the path of vehicles and/or becoming loose. Mounting bracket must fasten to the Mast arm using a 64" or 82" aircraft cable. Miscellaneous hardware shall be stainless steel or galvanized steel. The cameras and associated pole/arm attachment unit shall be designed to withstand a wind load of 90 MPH with a 30-second gust factor.

## **8.0 IMAGE SENSOR- CABLE (COAXIAL & POWER)**

- 8.1 Coaxial & Power cable (Siamese) shall be installed in conduits or overhead as indicated in the plans. Coaxial cable shall be suitable for exterior use and in direct sunlight. Power cable will have a minimum of five (5) conductors.
- 8.2 A junction box on the camera bracket arm shall provide access to video and power cable terminations. No soldering shall be required in the field. Coaxial cable will terminate with a "barrel" style BNC connector and power shall be terminated via a small terminal strip or via "wire nuts."
- 8.3 Coaxial cable will be terminated in the surge suppressor before being connected to the VIP boards.
- 8.3 Power cable will be terminated into a fuse panel provided by the manufacturer and connected to 120 VAC in the controller cabinet.
- 8.4 Description of cable: Composite, 6 Conductors 2 elements: 18awg 5 conductors 7/26 bare copper, .016" polyethylene, 20awg 1 conductor, solid bare copper, .056" foam polyethylene jacket black, overall .030" PVC jacket black.
- 8.5

### **ELEMENT 1**

### **ELEMENT 2**

CONDUCTORS/PAIR COUNT:	5 CONDUCTORS	1 CONDUCTOR
GAUGE & STRANDING:	18AWG 7/26 BC	20AWG SOLID BC
PRIMARY INSULATION TYPE:	POLYETHYLENE	FOAM PE
INSULATION THICKNESS:	.016"	.056"
COLOR CODE:	WHITE,RED,BLUE,BLACK,BROWN.	NATURAL
SHEILD:	N/A	N/A
TAPE:	N/A	N/A
DRAIN WIRE:	N/A	N/A
BRAID:	N/A	95% BC
CAPACITANCE:	N/A	N/A
PRINT LEGEND:	N/A	N/A
JACKET TYPE:	N/A	POLYETHYLENE
JACKET COLOR:	N/A	BLACK
JACKET THICKNESS:	N/A	.035"
NOMINAL OD:	N/A	.242"

## **8.6**

### **OVERALL ASSEMBLY OF WIRE**

JACKET THICKNESS: .030"

JACKET COLOR:	BLACK
JACKET MATERIAL:	PVC
RIPCORDER:	YES
NOMINAL OD:	.512"
VOLTAGE RATING:	600V
TEMP. RATING:	75C
UL TYPE OR STYLE:	N/A
PRINT LEGEND:	TBD
PACKAGING:	TBA
COPPER WEIGHT:	39.87 LBS/MFT
SHIPPING WEIGHT:	100 LBS/MFT

## **9.0 INSTALLATION**

- 9.1 The product supplier of the video detection system shall supervise the installation and the testing of the video equipment. A factory certified representative from the manufacturer shall be on-site during installation. The factory representative shall install, make fully operational, and test the system as indicated on the intersection drawings and this specification.

## **10.0 WARRANTY**

- 10.1 The video detection system shall be warranted against manufacturing defects in materials and workmanship for a period of two years from date of installation. The video detection supplier shall provide all documentation necessary to maintain and operate the VIP system.
- 10.2 Life expectancy of the video cameras and VIP boards shall be a minimum of five (5) years.

## **ITEM 10. - Signal Heads - Vehicle**

Signal heads shall have yellow housing with black doors, yellow tunnel visors and louvered backplates with 3" retroreflective strips. All signal head indications shall be state approved LED.

### **Red, Yellow and Green LED Vehicle Signal Modules**

All Red, Yellow and Green signal housings with the exception of optically programmed and fiberoptic housings shall conform to the following:

All Red and Green LED signal modules shall conform to "Interim LED Purchase Specification of the Institute of Transportation Engineers, Vehicle Traffic Control Signal Heads - Part 2: Light Emitting Diode (LED) Vehicle Traffic Signal Modules", July, 1998 or most current version, Institute of Transportation Engineers (ITE), 525 School Street, Southwest, Suite 410, Washington, DC 20024-2797, Telephone: (202) 554-8050, Fax (202) 863-5486.

Yellow LED signal modules shall conform to the above specifications with the exception that yellow modules shall meet intensities of the above referenced specification at initial turn-on. After the required 60-minute burn-in period, these values may be less than required by the ITE Interim Specification.

All signal modules shall conform to the following: (In the case of a conflict, the following special provision shall overrule.)

An independent laboratory shall certify that the LED signal module complies with Section 6 Quality Assurance of the above stated ITE LED Purchase Specification.

LED signal modules must be type-tested and approved by the Department according to the requirements of Subsection 815.21 of the Standard Specifications for Highways and Bridges.

On the backside of the LED signal module there shall be a permanently marked "up" arrow to aid in the proper orientation of the module during installation.

The manufacturer's name, trademark, serial number, and other necessary identification shall be permanently marked on the backside of the LED signal module.

### **Physical and Mechanical Requirement**

LED signal modules shall fit without modifications into existing traffic signal housings conforming to "Vehicle Traffic Control Signal Heads" (VTCSH) published in the Equipment and Materials Standards of the Institute of Transportation Engineers. The LED signal module shall be a single, self-contained device, not requiring on-site assembly for installation. The LED signal assembly construction shall conform to the applicable ASTM specifications for the materials used to fabricate the module.

Each red LED signal module shall be comprised of a smooth surfaced Red, UV stabilized polycarbonate outer shell, multiple LED light sources, a power supply and a polycarbonate back cover assembled in a gasketed or silicon sealed unit.

Each yellow LED signal module shall be comprised of a smooth surfaced Yellow, or transparent, UV stabilized polycarbonate outer shell, multiple LED light sources, a power supply and a polycarbonate back cover assembled in a gasketed or silicon sealed unit.

Each green LED signal module shall be comprised of a smooth surfaced Green, or transparent, UV stabilized polycarbonate outer shell, multiple LED light sources, a power supply and a polycarbonate back cover assembled in a gasketed or silicon sealed unit.

### **Optical and Light Output Requirements**

The minimum luminous intensity values and light output shall be maintained within the rated input voltage of 117 Volts AC. Red and Green LED signal modules shall not be allowed to fall short of the minimum intensity values at any of the 44 measuring points of the standard when the lamp is turned on cold for measurements and after a thirty-minute warm-up time period at 100 percent duty cycle. Yellow LED signal modules shall not be allowed to fall short of the minimum intensity values at any of the 44 measuring points of the standard at turn-on only.

### **Electrical**

The maximum wattage for red and green 12 inch ball shall be 20 Watts and 10 Watts for the 12 inch red and green arrows. The maximum wattage for the 12 inch yellow balls shall be 24 Watts and 12 Watts for the 12 inch yellow arrows.

The LED sources shall not be powered above 70 percent of the manufacturer's specified rated load. This shall be clearly shown in layman's terms through calculations, schematics, catalog cuts, etc.

Red LED sources shall be AlInGaP (Aluminum Indium Gallium Phosphide) type shown clearly in a catalog cut or similar literature.

Yellow LED sources shall be AlInGaP (Aluminum Indium Gallium Phosphide) type shown clearly in a catalog cut or similar literature.

Green LED sources shall be InGaP (Indium Gallium Nitride) type shown clearly in a catalog cut or similar literature.

### **Warranty**

The LED signal module will be replaced or repaired by the manufacturer if it exhibits a failure due to workmanship or material defects within the first sixty months of field operation.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits either a greater than 40 percent light output degradation or a fall below the minimum intensity levels within the first thirty-six months of field operation.

## **ITEM 11. - Signals Heads – Pedestrian and Push-Buttons**

### **Proposed Purchase Specification for LED Pedestrian Countdown Modules 16in x 18in PED Countdown**

Pedestrian signal heads shall be the LED-type displaying the graphical hand or person and countdown display with yellow housing and tunnel visor in accordance with the plans.

#### **1.0 PURPOSE**

The purpose of this specification is to provide the minimum performance requirements for the LED “walking person” and “hand” icon pedestrian signal modules with countdown (hereafter called module or modules). This specification is only for the nominal overall message-bearing surface of 406 x 457 mm (16 x 18 in). This specification is not intended to impose restrictions upon specific designs and materials that conform to the purpose and the intent of this specification. This specification refers to definitions and practices described in “Pedestrian Traffic Control Signal Indications” published in the *Equipment and Materials Standards of the Institute of Transportation Engineers*, (referred to in this document as “PTCSI”) and in the Applicable Sections of Manual on Uniform Traffic Control Devices (MUTCD) 2003 Section 4E. This purchasing specification applies to modules purchased after the effective date of these specifications.

#### **2.0 PHYSICAL AND MECHANICAL REQUIREMENTS**

##### **2.1 General**

Modules designed as retrofit replacements for existing pedestrian signal indication lamps shall not require special tools for installation. Retrofit replacement modules shall fit into existing pedestrian signal housings built for the PTCSI sizes stated in Section 1 of the “walking person” and “hand” icon pedestrian signal indication Standard without modification to the housing.

Installation of a retrofit replacement module into an existing pedestrian signal housing shall only require the removal of the existing optical unit components, i.e., lens, lamp module, gaskets, and reflector; shall be weather tight and fit securely in the housing; and shall connect directly to existing electrical wiring.

##### **2.2 The Module under physical and mechanical requirements**

- 2.2.1** The retrofit module shall be capable of replacing the optical component of the pedestrian indication.
- 2.2.2** The LED module shall have a visual appearance similar to that of an incandescent lamp (ie: Smooth and non-pixelated).
- 2.2.3** The module lens shall not be a replaceable part. Screwed on lenses are not allowed. Only modules with internal mask shall be utilized. No external silk-screen shall be permitted.
- 2.2.4** The dividers inside the module that make up the icons and digits shall be black so as to eliminate sun phantom effect. When not illuminated with the sun shining into the module, the WALKING PERSON and UPRaised HAND and COUNTDOWN DIGITS shall not be readily visible.

- 2.2.5** The countdown digits of the pedestrian signal module shall be located adjacent to the associated UPRAISED HAND (symbolizing DON'T WALK). When displaying a number "1" for both digits, the number "1" shall use the two segments furthest to the right. The digits shall remain on during the entire count down cycle. Flashing digits are not allowed.
- 2.2.6** The display of the number of remaining seconds shall begin only at the beginning of the pedestrian change interval. After the countdown displays zero, the display shall remain dark until the beginning of the next countdown.
- 2.2.7** The walking person, hand icons and countdown digits (16"x18" size only) shall be incandescent looking. The configurations of the walking person icon, hand icon and numbers icons are illustrated in Figures 1, 2 (per PTCSI Part 2 Specification) and Figure 3 respectively.



Figure 1

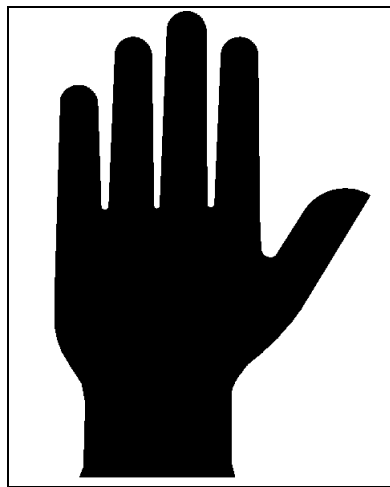


Figure 2

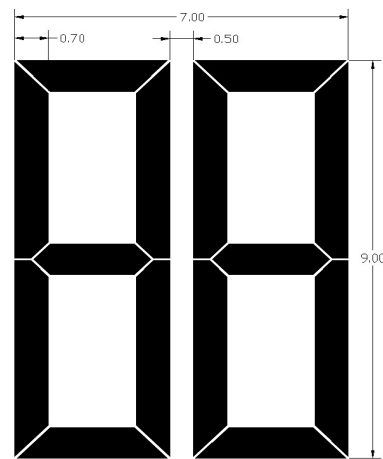


Figure 3

### Dimensions for Figures 1, 2 and 3

For each nominal message bearing surface (module) size, use the corresponding minimum H (height) and W (width) measurements:

Module Size	Icon Height	Icon Width	Countdown Height	Countdown Width	Countdown Segment Width
406 x 457 mm (16 x 18 in)	297 mm 11 in	178 mm 7 in	229 mm 9 in	178 mm 7 in	17.78 mm 0.7 in

Note: The units shall not have any external attachments, dip switches, toggle switches or options that will allow the mode to be changed from counting the clearance cycle, to the full walk/don't walk cycle or any other modification to the icons or digits.

## 2.3 Environmental Requirements

- 2.3.1.** All exposed components of a module shall be suitable for prolonged exposure to the environment, without appreciable degradation that would interfere with function or appearance. As a minimum, selected materials shall be rated for service for a period of a minimum of 60 months in a south-facing Arizona Desert installation.

- 2.3.2. The module shall be rated for use in the ambient operating temperature range, measured at the exposed rear of the module, of -40°C to +74°C. (-40°F to +165°F)
- 2.3.3. A module shall be protected against dust and moisture intrusion, including rain and blowing rain. Shall be sealed and meet MIL-STD-810F Procedure I, Rain & Blowing Rain specifications.
- 2.3.4. The module lens shall not crack, craze or yellow due to solar UV irradiation typical for a south-facing Arizona Desert installation after a minimum of 60 months in service.

## **2.4 Construction**

- 2.4.1. To prevent water seepage between the back cover and the electrical wires, or between the copper and insulation of the wires, the electrical wires shall not penetrate the LED module housing. Connection shall be made by use of an overmolded connector.
- 2.4.2. The module shall be a single, self-contained device, not requiring on-site assembly for installation into an existing pedestrian signal housing. The power supply shall be designed to fit and mount inside the pedestrian signal module.
- 2.4.3. The assembly and manufacturing process for the module shall be designed to assure all internal LED and electronic components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

## **2.5 Materials**

- 2.5.1. Materials used for the lens and LED module construction shall conform to ASTM specifications where applicable.
- 2.5.2. Enclosures containing the power supply and electronic components of the LED module shall be made of UL94 flame retardant materials. The lens of the LED module is excluded from this requirement.
- 2.5.3. The front window shall be a transparent polycarbonate material with internal masking to prevent the icons and digits from being visible when not in operation. External masking or silk-screen technology shall not be permitted. When not illuminated, the Walking Person, Hand and Countdown Digits shall not be readily visible.

## **2.6 Module Identification**

- 2.6.1 Each module shall be identified on the backside with the manufacturer's name, model, serial number and operating characteristics of each symbol. The operating characteristics identified shall include the nominal operating voltage and stabilized power consumption, in watts and Volt-Amperes.
- 2.6.2 Modules conforming to this specification (WALKING PERSON, UPRAISED HAND only), may have the following statement on an attached label: "Manufactured in Conformance with the ITE Pedestrian Traffic Control Signal Indications - Part 2: Light Emitting Diode (LED) Pedestrian Signal Modules".

### 3.0 PHOTOMETRIC REQUIREMENTS

#### 3.1 Luminance, Uniformity & Distribution

**3.1.1** For a minimum period of 60 months, the maintained minimum luminance values for the modules under the operating conditions defined in Sections 2.3.1 and 4.2.1, when measured normal to the plane of the icon surface, shall not be less than:

- Walking person: 2,200 cd/m<sup>2</sup>;
- Hand: 1,400 cd/m<sup>2</sup>.
- Countdown digits: 1,400 cd/m<sup>2</sup>;

The luminance of the emitting surface, measured at angles from the normal of the surface, may decrease linearly to a value of 50% of the values listed above at an angle of 15 degrees.

The light output requirements in this specification apply to pedestrian signal heads without any visors, hooded or louvered (egg-crate).

**3.1.2** The LED module shall have a visual appearance similar to that of an incandescent lamp (ie: Smooth and non-pixelated).

**3.1.3** Maximum permissible luminance: When operated within the temperature range specified in Section 2.3.2, the actual luminance for a module shall not exceed three times the required peak value of the minimum maintained luminance.

**3.1.4** Luminance uniformity: The uniformity of the signal output across the emitting section of the module lens (i.e. the hand, person or countdown icon) shall not exceed a ratio of 5 to 1 between the maximum and minimum luminance values (cd/m<sup>2</sup>).

#### 3.2 Chromaticity

**3.2.1** The standard colors for the LED Pedestrian Signal Module shall be White for the walking person and Portland Orange for the hand icon and the countdown digits. The colors for these icons shall conform to the following color regions, based on the 1931 CIE chromaticity diagram:

**Walking Person —White:**

Blue boundary:  $x = 0.280$ .

1<sup>st</sup> Green boundary:  $0.280 \leq x < 0.400$   
 $y = 0.7917 \cdot x + 0.0983$ .

2<sup>nd</sup> Green boundary:  $0.400 \leq x < 0.450$   
 $y = 0.4600 \cdot x + 0.2310$ .

Yellow boundary:  $x = 0.450$

1<sup>st</sup> Purple boundary:  $0.450 \leq x < 0.400$   
 $y = 0.4600 \cdot x + 0.1810$ .



2<sup>nd</sup> Purple boundary:  $0.400 \leq x < 0.280$   
 $y = 0.7917 \cdot x + 0.0483$ .

White		
Point	x	y
1	0.280	0.320
2	0.400	0.415
3	0.450	0.438
4	0.450	0.388
5	0.400	0.365
6	0.280	0.270

#### **Hand and Countdown Digits—Portland Orange:**

Yellow boundary:  $y = 0.390$   
 White boundary:  $0.600 \leq x \leq 0.659$   
 $y = 0.990 - x$   
 Red boundary:  $y = 0.331$ .

Portland Orange		
Point	X	Y
1	0.609	0.390
2	0.600	0.390
3	0.659	0.331
4	0.669	0.331

### **3.2.2 Color Uniformity:**

**Walking Person—White:**  $\sqrt{(\Delta x^2) + (\Delta y^2)} \leq 0.04$

where  $\Delta x$  and  $\Delta y$  are the differences in the chromaticity coordinates of the measured colors to the coordinates of the average color, using the CIE 1931 Chromaticity Diagram and a 2 degree Standard Observer.

#### **Hand and Countdown Digits—Portland Orange:**

The dominant wavelength for any individual color measurement of a portion of the emitting surface of a module shall be within  $\pm 3\text{nm}$  of the dominant wavelength for the average color measurement of the emitting surface as a whole.

## **4.0 ELECTRICAL**

### **4.1 General**

All wiring and terminal blocks shall meet the requirements of Section 13.02 of the VTCSH Standard. Maximum of three secured, color coded, 1 meter (39 in) long 600 V, 16 AWG minimum, jacketed wires, conforming to the National Electrical Code, rated for service at  $+105^\circ\text{C}$ , are to be provided for electrical connection. The conductors shall be color coded with orange for the hand, blue for the walking person and white as the common lead.

## **4.2 Voltage**

- 4.2.1** LED modules shall operate from a  $60 \pm 3$  Hertz ac line power over a voltage range from 80 to 135 VAC RMS.
- 4.2.2** Nominal operating voltage for all measurements shall be  $120 \pm 3$  VAC RMS.
- 4.2.3** Fluctuations in line voltage over the range of 80 to 135 VAC RMS shall not affect luminous intensity by more than  $\pm 10\%$ .
- 4.2.4** Catastrophic failure of one LED light source in Man & Hand icons shall not result in the loss of more than the light from that one LED.
- 4.2.5** To prevent the appearance of flicker, the module circuitry shall drive the LEDs at frequencies greater than 100 Hz when modulated, or at DC, over the voltage range specified in Section 4.2.1.
- 4.2.6** Low Voltage Turn Off: There should be no illumination of the module when the applied voltage is less than 35 VAC RMS. To test for this condition, each icon must first be fully illuminated at the nominal operating voltage. The applied voltage shall then be reduced to the point where there is no illumination. This point must be greater than 35 VAC RMS.
- 4.2.7** Turn-ON and Turn-OFF Time: A module shall reach 90% of full illumination (turn-ON) within 75 msec of the application of the nominal operating voltage. The signal shall cease emitting visible illumination (turn-OFF) within 75 msec of the removal of the nominal operating voltage.
- 4.2.8** Default Condition: For abnormal conditions when nominal voltage is applied to the unit across the two-phase wires (rather than being applied to the phase wire and the neutral wire) the pedestrian signal unit shall default to the hand symbol.
- 4.2.9** Icon Power Supplies: LED pedestrian countdown modules shall have two separate power supplies for powering the Walking Person and Upraised Hand icons. The circuitry shall be unrelated to power the LED Walking Person icon and the LED Upraised Hand icon, in order to virtually eliminate the risk of displaying the wrong icon

## **4.3 Transient Voltage Protection**

The on-board circuitry of a module shall include voltage surge protection:

- To withstand high-repetition noise transients and low-repetition high-energy transients as specified in NEMA Standard TS-2 2003; Section 2.1.8
- Section 8.2 IEC 1000-4-5 & Section 6.1.2 ANSI/IEEE C62.41.2-2002, 3kV, 2 ohm
- Section 8.0 IEC 1000-4-12 & Section 6.1.1 ANSI/IEEE C62.41.2-2002, 6kV, 30 ohm

#### 4.4 Electronic Noise

The LED signal and associated on-board circuitry shall meet the requirements of the Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 regulations concerning the emission of electronic noise by Class A digital devices.

#### 4.5 Power Factor (PF) and AC Harmonics

4.5.1 The modules shall provide a power factor of 0.90 or greater when operated at nominal operating voltage, and 25°C (77°F).

4.5.2 Total harmonic distortion induced into an AC power line by the module, operated at nominal operating voltage, and at 25°C (77°F) shall not exceed 20%.

#### 4.6 Controller assembly Compatibility

4.6.1 The current draw shall be sufficient to ensure compatibility and proper triggering and operation of load current switches and conflict monitors in signal controller units.

4.6.2 Off State Voltage Decay: When the module is switched from the On state to the Off state the terminal voltage shall decay to a value less than 10 VAC RMS in less than 100 milliseconds when driven by a maximum allowed load switch leakage current of 10 milliamps peak (7.1 milliamps AC)

#### 4.7 Constant Current Drive

The countdown digits shall be driven by constant current to improve LED efficiency and lifespan.

#### 4.8 Power Consumption

Maximum power consumption requirements for the modules are as follows:

	<u>25°C</u>
"Hand"	11.0 Watts
"Walking Person"	8.0 Watts
"Count-Down Display"	6.0 Watts (when display shows "88")

### 5.0 MODULE FUNCTIONS

#### 5.1 Cycle

The module shall operate in one mode: *Clearance Cycle Countdown Mode Only*. The module shall start counting when the flashing don't walk turns on and will countdown to "0" and turn off when the steady "Don't Walk" signal turns on. The module shall not have user accessible switches or controls for the purpose of modifying the cycle, icons or digits.

#### 5.2 Learning Cycle

At power on, the module enters a single automatic learning cycle. During the automatic learning cycle, the countdown display shall remain dark.

#### 5.3 Cycle Modification

The unit shall re-program itself if it detects any increase or decrease of Pedestrian Timing. The digits shall go blank once a change is detected and then take one complete pedestrian cycle (with no counter during this cycle) to adjust its buffer timer.

#### **5.4 Recycling**

The module shall allow for consecutive cycles without displaying the steady Hand icon (“Don’t Walk”).

#### **5.5 Pre-Emption**

**The module shall recognize preemption events and temporarily modify the crossing cycle accordingly.**

- **If the controller preempts during the walking man, the countdown shall follow the controller's directions and shall adjust from walking man to flashing hand. It shall start to count down during the flashing hand.**
- If the controller preempts during the flashing hand, the countdown shall continue to count down without interruption.

The next cycle, following the preemption event, shall use the correct, initially programmed values. This specification is worded such that the flashing don’t walk time is not modified.

#### **5.6 “Don’t Walk” Steady**

If the controller output displays Don’t Walk steady condition or if both the hand /person go dark and the unit has not arrived to zero, the unit suspends any timing and the digits shall go dark.

#### **5.7 Power Outage**

The digits will go dark for one pedestrian cycle after loss of power of more than 2.0 seconds.

#### **5.8 Digit Operation**

The digits shall remain continuously lit during the clearance cycle and shall not flash in conjunction with the Hand/Don’t Walk icon.

### **6.0 QUALITY ASSURANCE**

#### **6.1 General**

Unless otherwise specified all of the test will be conducted at an ambient temperature of 25°C and at the nominal operating voltage of 120 VAC RMS.

- 6.1.1** The modules shall be manufactured in accordance with a vendor quality assurance (QA) program.
- 6.1.2** QA process and test result documentation shall be kept on file for a minimum period of seven years

## **6.2 Conformance**

All lamps manufactured shall be affixed with an Intertek ETL Verified label or from a 3<sup>rd</sup> Party “Nationally Recognized Testing Laboratory(NRTL)” to demonstrate compliance to Section 6.3 (Production Tests & Inspections) of the latest ITE VTCSH Full Ball specification dated June 27 2005(for LED Ball modules). 3<sup>rd</sup> Party lab must have “Nationally Recognized Testing Laboratory(NRTL)” status. All lamps shall be certified in an LED Traffic Signal Module Certification Program by a 3<sup>rd</sup> Party NRTL. Proof of certification must be documented and submitted.

## **6.3 Design Qualification Testing**

- 6.3.1** Design Qualification testing shall be performed on new module designs, and when a major design change has been implemented on an existing design.
- 6.3.2** High Temperature High Humidity (HTHH): 1000 hours at +60°C (+140°F), 90% Relative Humidity with cycling starting at 30 down to 0. This will ensure that each symbol is properly tested.
- 6.3.3** Unless otherwise specified, all of the tests shall be conducted on the same set of randomly selected modules, hereafter called the sample set, at an ambient temperature of 25°C and at the nominal operating voltage of 120 VAC RMS.
- 6.3.4** Testing shall be performed once every 5 years or when the module design or LED technology has been changed. The module manufacturer shall retain test data for a minimum period of 7 years and for a period of at least 5 years beyond the last date of manufacture of that model type.
- 6.3.5** Conditioning: The module shall be energized for a minimum of 24 hours in an ambient temperature of +60°C (+140°F), 0% Relative Humidity with cycling starting at 99 down to 0. This will ensure that each symbol is properly conditioned.
- 6.3.6** Mechanical Vibration: Mechanical vibration testing shall be performed per MIL-STD-883, Test Method 2007.
- 6.3.7** Temperature Cycling: Temperature cycling shall be performed per MIL-STD-883, Test method 1010. The temperature range shall include the full ambient operating temperature range specified in Section 2.3.2.
- 6.3.8** Moisture Resistance: Moisture resistance testing shall be performed per MIL-STD-810F, Test Method 506.4, Procedure I, Rain and Blowing Rain. The test shall be conducted on stand-alone modules, without a protective housing. The modules shall be vertically oriented, such that the lens is directed towards the wind source when at a zero rotation angle. The modules shall be energized throughout the test. The water shall be at  $25^{\circ} \pm 5^{\circ}\text{C}$  ( $77^{\circ} \pm 9^{\circ}\text{F}$ ). The wind velocity shall be 80 km/hr (50 mph).

## **7.0 WARRANTY**

Manufacturers will provide the following warranty provisions. Replacement or repair of an LED signal module that fails to function as intended due to workmanship or material defects within the first 5 years (60 months) from the date of delivery.

### **Proposed Purchase Specification for Pedestrian Actuation Buttons**

Pedestrian actuation buttons shall meet current A.D.A. requirements as to button size, actuation pressure, mounting height and orientation, have all APS features and be painted federal yellow in color. Pedestrian actuation buttons shall be listed on the MassDOT's QCML.

**ITEM 12. – Posts, Bases and Foundations**

Pedestal signal posts shall have steel shafts, 8 feet or 10 feet in height, with steel octagonal bases, and be painted yellow. Signal base foundations shall not obstruct sidewalks or crosswalks.

### **ITEM 13. - Mast Arm Structures and Foundations**

The mast arm structures and foundations shall be fabricated and constructed in conformance with the MassDOT, **December 2015 Overhead Signal Structure and Foundation Standard Drawings**.

Mast arms shall be galvanized steel structures. Longhand design calculations and shop drawings shall be submitted by the Contractor for all mast arms. As part of these long-hand calculations, the moment shall be calculated with respect to the elevation of the proposed mast arm foundation top, the roadway clearance requirements, and the resultant mast arm height(s).

Mast arm base foundations shall not obstruct sidewalks or crosswalks.

Signal heads and signs shall be rigidly mounted at the same height, with hangers varying in depth as required.

The mast arm foundation sizes and depths shall be selected from the Foundation Design charts for the calculated moment at existing ground. The Contractor should assume wet sandy soils, unless directed by the Engineer who is present during the auguring for the foundation and determines otherwise based on the soils encountered.

All measurements to determine the exact dimensions and clearances between the mast arm structures and existing overhead utility lines shall be made in the field by the Contractor in the presence of the Engineer for incorporation into the erection plans and shop drawings which are submitted for approval.

Mast arm foundations shall be installed in accordance with the detail shown on page 5 of 7 of the Overhead Signal Structure & Foundation Standard Drawings. Please note that a mast arm foundation protruding above sidewalk grade will not be accepted and the Contractor will be responsible to replace or reset the foundations at no additional cost.

All appurtenances must be rigidly mounted and not allowed to “hang” below the mast arm. All signs installed to mast arms shall have a secondary restraint system to prevent the sign from falling onto traffic below. The secondary restraint system will be submitted to the Engineer as a shop drawing for approval.



## **ITEM 19 - Warranty and Service**

The Contractor shall troubleshoot, repair, and/or replace any equipment installed in conjunction with this contract at his own expense if found to be defective in workmanship, material, or manner of functioning within a period of six months from the date of final acceptance of this contract by MassDOT or the local municipality.

### **Maintenance and Support**

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the video detection system. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.

The supplier shall maintain an ongoing program of technical support for the video detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on site technical support services.

Installation or training support shall be provided by a factory authorized representative.

All product documentation shall be written in the English language.

## **ITEM 20 - Compensation**

Payment for TRAFFIC CONTROL SIGNAL shall be included in the lump sum unit price for Item 815.4, and payment for TRAFFIC SIGNAL RECONSTRUCTION shall be included in the lump sum unit price for Item 816.01, 816.02, 816.03, 816.05, 816.06 and 816.07 and shall constitute full compensation for all equipment, labor, materials, maintenance, software, training, set up, incidental costs and all other ancillary labor and materials of any description needed to make a functioning traffic control system with all elements integrated with the specified local controllers, all as described in previous sections herein or as shown on the plans.

**ITEM 859.1****REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING  
WARNING LIGHTS****DAY****Description**

Work under this Section consists of furnishing installing, maintaining in proper operating conditions, and removing reflectorized drums, and any necessary ballast, equipped with sequential flashing warning lights.

**Materials**

Reflectorized drums shall be listed on the MassDOT Qualified Traffic Control Equipment List.

Reflective sheeting on drums shall meet or exceed ASTM D4956 Type VIII. All drums shall be maintained in a satisfactory manner including the removal of oils, dirt, and debris that may cause reduced retroreflectivity.

The Contractor shall use one of the following sequential flashing warning light systems unless otherwise approved by the Engineer:

- Empco-Lite LWCSO.
- pi-Lit Sequential Barricade-Style Lamp; or
- Unipart Dorman SynchroGUIDE.

Sequential flashing warning lights shall be secured to reflectorized drums per the light manufacturer's specifications.

**Construction Methods**

The first ten drums in any merging or shifting taper as designated in the Temporary Traffic Control Plan shall be equipped with sequential flashing warning lights. These lights shall be operating, at a minimum, between dusk and dawn when the taper is deployed.

The successive flashing of the sequential warning lights shall occur from the upstream end of the merging or shifting taper to the downstream end of the taper in order to identify the desired vehicle path. Each warning light in the sequence shall be flashed at a rate of not less than 55, nor more than 75 times per minute.

Warning lights shall be powered off when drums are not deployed in a taper.

**Method of Measurement**

A group of ten (10) reflectorized drums with sequential flashing warning lights is considered one (1) unit and will be measured by the day. Each period of up to 24 hours during which this unit is in use will be measured as one day regardless of the number of times that the drums are positioned, repositioned, removed, or returned to service.

**Basis of Payment**

Reflectorized Drums with Sequential Flashing Warning Lights will be paid for at the contract unit price per day, which shall include full compensation for furnishing, positioning, repositioning, and removing the group of ten (10) drums as directed by the Engineer.

<b><u>ITEM 874.2</u></b>	<b><u>TRAFFIC SIGN REMOVED AND RESET</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 874.2</u></b>	<b><u>TRAFFIC SIGN REMOVED AND RESET</u></b>	<b><u>EACH</u></b>

The work under these items shall conform to the relevant provisions of Section 840 of the Standard Specifications and the following:

The Contractor shall carefully remove and reset at new locations all existing signs, attachment hardware, and sign support posts not included under other sign items as shown on the drawings and as directed by the Engineer.

Signs, attachment hardware, and sign support posts shall be satisfactorily stored and protected until reset in the proposed work.

Signs, attachment hardware, and sign support posts lost, damaged or otherwise made unsuitable for reuse while being removed, transported, stored, or reset shall be replaced with new materials at no additional cost to the Owner. New attachment hardware shall be furnished and installed as necessary to replace any missing or unusable existing hardware.

Traffic signs to be removed and stacked will be striped of any posts or other hardware and stacked at a location determined by the engineer and/or designated to be disposed of at which time they will become the Contractors property and legally disposed of.

#### Method of Measurement

Signs removed and reset will be measured, complete in place, one unit for each complete sign group removed and reset regardless of how many posts and or individual signs are in the group.

Signs removed and stacked will be measured, as one unit for each complete sign group removed and stacked regardless of how many individual signs are in the group.

#### Basis of Payment

Traffic Signs Removed and Reset will be paid for at the unit bid price, which price shall include all costs for labor, materials, and equipment required to complete the work.

Traffic Signs Removed and Stacked will be paid for at the unit bid price, which price shall include all costs for labor, materials, and equipment required to complete the work and dispose of hardware components.

**ITEM 999****CONSTRUCTION STAKING****LUMP SUM**

Under this item, the Contractor shall lay out and set all lines, grades, and measurements necessary for construction of the work. The Engineer shall obtain information on the baseline system and elevation control from the surveyor for the Contractor's use.

All staking shall be directed and performed by qualified engineering or surveying personnel who are trained, experienced, and skilled in construction layout of the type required under this contract. The Contractor shall submit the qualifications of the survey personnel to the Owner for review and approval. The Owner reserves the right to reject any personnel which, in the Owner's judgment, are not adequately qualified. The Owner also reserves the right to evaluate the performance of the survey personnel during the course of the work and to require the replacement of any personnel whose work, in the judgment of the Owner, is unsatisfactory.

The Engineer may check the layout as established by the Contractor at any time as the work progresses. The Contractor shall be informed of the results of these checks, but the Engineer by doing so in no way relieves the Contractor of his responsibility for the accuracy of the layout work. The Contractor shall correct or replace any deficient layout and construction work which may be the result of inaccuracies in the Contractor's layout at no addition cost to the Owner.

The Contractor shall obtain accurate elevations of the existing pavements and compare them with the proposed elevations shown on the drawings to determine the extent and depth of cold planing required to provide for the minimum 1-3/4"-inch overlay and the extent and depth of leveling course required within the proposed pavement overlay areas.

Construction staking will be included in the unit lump sum bid price, which price shall include all labor, material, equipment, and incidental costs required to complete the work.

**ITEM 999.1****POLICE SERVICES****ALLOWANCE**

The Contractor shall furnish police services required to direct traffic on existing roadways where traffic is maintained.

The Contractor shall provide such police officers as may be deemed necessary by the Engineer, the Municipality, or the Commonwealth for the direction and control of all traffic traveling within and through the project area. The police officers shall be obtained from the Municipality Police Department as applicable. The police officers shall be paid by the Contractor at the prevailing rate of wages established by the Municipality.

**Allowance for Police Services**

This allowance is determined by multiplying the number of hours estimated as necessary by the prevailing hourly rate of wages established for such services. The Contractor shall submit certified copies of itemized bills of services rendered for review and approval by the Engineer. The allowance will be adjusted to the actual amount paid for authorized and approved police services as stipulated and shall include other payments due to any legal requirements of the State and Federal governments.

**Payments**

The quantity to be paid for under this item shall be the actual amount paid by the Contractor to provide satisfactory police services as stipulated and required. Any allowance for overhead shall be considered to be included in the prices bid for the other items of the contract.

**ITEM 999.9****MATERIAL TESTING****LUMP SUM**

The work under this item shall conform to the relevant provisions of Sections 150, 400 and 901 of the Standard Specifications and the following:

**Description**

The contractor shall secure the services of an independent full-service testing agency specializing in testing, inspection of construction materials and practices. The testing agency shall provide testing of the borrow materials, base and sub-base, hot mix asphalt (HMA) pavements, and concrete foundations to document conformance with MassDOT requirements.

Testing shall include, but is not limited to, the following:

Shop Drawing Approval of Borrow Materials - Samples, sieve analysis and proctor results shall be provided for all materials to be used on the project. This information will be submitted as part of the Shop Drawings for said materials.

Controlled Fills – Tests for compaction of Gravel, Reclaimed Base Course and Dense Graded Crushed Stone. The materials shall be field-tested utilizing a nuclear densometer (ASTM D2922) or Sand Cone Method (ASTM D1556). These tests shall confirm that the minimum required compaction has been reached prior to placing additional fill above the tested material.

HMA pavements (machine placed) – Tests for temperature, thickness and bulk density using a nuclear densometer. These tests shall confirm that HMA material is being placed within MassDOT's standard requirements and that the minimum required compaction has been reached prior to completion of rolling/back rolling. The required compaction is 95%  $\pm$  2.5%".

Concrete foundations (for traffic signal mast arms) – MCIB and ACI certified technicians shall perform standard slump, temperature, and air content tests during the placement of concrete for each of the proposed mast arm foundations. The technicians shall also fabricate five (5) test cylinders for compressive strength tests. Test cylinders shall be transported to a concrete laboratory and stored in a curing room until compressive strength tests are performed at seven (7) days, fourteen (14) days and twenty eight (28) days. Tests shall confirm that a minimum of 90% compressive strength has been achieved before loading the mast arms with traffic signal equipment.

**Method of Measurement**

Material Testing shall be measured as one lump sum and shall include all testing required for the duration of the project.

**Basis of Payment**

Material Testing will be paid for at the contract unit price per lump sum, which price shall include all labor, materials, equipment and incidental costs required to complete the work. The first 30 percent payment shall be made upon completion of the first testing performed for controlled fills. A second 35 percent payment shall be made upon completion of the first testing performed for HMA pavements. The final 35 percent payment shall be made upon completion of all testing, and submittal of acceptable results.

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## APPENDIX A – PREVAILING WAGE RATES





CHARLES D. BAKER  
Governor

KARYN E. POLITO  
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**

ROSALIN ACOSTA  
Secretary

MICHAEL FLANAGAN  
Director

**Awarding Authority:** Town of Hanover DPW  
**Contract Number:** **City/Town:** HANOVER  
**Description of Work:** Intersection & roadway corridor improvement project on Route 53 in Hanover, MA  
**Job Location:** Hanover, MA

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**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 annual update requirement is not applicable to 27F "rental of equipment" contracts. **The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.**
- 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>	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</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>	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2020	\$38.10	\$12.80	\$9.45	\$0.00	\$60.35
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15

**Apprentice - BOILERMAKER - Local 29**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
2	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
3	70	\$32.27	\$7.07	\$12.59	\$0.00	\$51.93
4	75	\$34.58	\$7.07	\$13.49	\$0.00	\$55.14
5	80	\$36.88	\$7.07	\$14.38	\$0.00	\$58.33
6	85	\$39.19	\$7.07	\$15.29	\$0.00	\$61.55
7	90	\$41.49	\$7.07	\$16.18	\$0.00	\$64.74
8	95	\$43.80	\$7.07	\$17.09	\$0.00	\$67.96

**Notes:**

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

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (QUINCY)</i>	02/01/2022	\$57.15	\$11.39	\$22.34	\$0.00	\$90.88
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**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Quincy**

**Effective Date - 02/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.58	\$11.39	\$22.34	\$0.00	\$62.31
2	60	\$34.29	\$11.39	\$22.34	\$0.00	\$68.02
3	70	\$40.01	\$11.39	\$22.34	\$0.00	\$73.74
4	80	\$45.72	\$11.39	\$22.34	\$0.00	\$79.45
5	90	\$51.44	\$11.39	\$22.34	\$0.00	\$85.17

**Notes:**

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

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$42.33	\$9.10	\$17.72	\$0.00	\$69.15
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For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
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For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
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For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						

CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2022	\$44.53	\$8.68	\$19.97	\$0.00	\$73.18
	09/01/2022	\$45.18	\$8.68	\$19.97	\$0.00	\$73.83
	03/01/2023	\$45.78	\$8.68	\$19.97	\$0.00	\$74.43

#### Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.27	\$8.68	\$1.73	\$0.00	\$32.68
2	60	\$26.72	\$8.68	\$1.73	\$0.00	\$37.13
3	70	\$31.17	\$8.68	\$14.78	\$0.00	\$54.63
4	75	\$33.40	\$8.68	\$14.78	\$0.00	\$56.86
5	80	\$35.62	\$8.68	\$16.51	\$0.00	\$60.81
6	80	\$35.62	\$8.68	\$16.51	\$0.00	\$60.81
7	90	\$40.08	\$8.68	\$18.24	\$0.00	\$67.00
8	90	\$40.08	\$8.68	\$18.24	\$0.00	\$67.00

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.59	\$8.68	\$1.73	\$0.00	\$33.00
2	60	\$27.11	\$8.68	\$1.73	\$0.00	\$37.52
3	70	\$31.63	\$8.68	\$14.78	\$0.00	\$55.09
4	75	\$33.89	\$8.68	\$14.78	\$0.00	\$57.35
5	80	\$36.14	\$8.68	\$16.51	\$0.00	\$61.33
6	80	\$36.14	\$8.68	\$16.51	\$0.00	\$61.33
7	90	\$40.66	\$8.68	\$18.24	\$0.00	\$67.58
8	90	\$40.66	\$8.68	\$18.24	\$0.00	\$67.58

#### Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
Step 1&2 \$30.45/ 3&4 \$36.57/ 5&6 \$56.36/ 7&8 \$62.54

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME <i>CARPENTERS-ZONE 3 (Wood Frame)</i>	04/01/2022	\$23.66	\$7.21	\$4.80	\$0.00	\$35.67
	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17
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 - 04/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
2	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
3	65	\$15.38	\$7.21	\$0.00	\$0.00	\$22.59
4	70	\$16.56	\$7.21	\$0.00	\$0.00	\$23.77
5	75	\$17.75	\$7.21	\$3.80	\$0.00	\$28.76
6	80	\$18.93	\$7.21	\$3.80	\$0.00	\$29.94
7	85	\$20.11	\$7.21	\$3.80	\$0.00	\$31.12
8	90	\$21.29	\$7.21	\$3.80	\$0.00	\$32.30

**Effective Date - 04/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71
2	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71
3	65	\$15.70	\$7.21	\$0.00	\$0.00	\$22.91
4	70	\$16.91	\$7.21	\$0.00	\$0.00	\$24.12
5	75	\$18.12	\$7.21	\$3.80	\$0.00	\$29.13
6	80	\$19.33	\$7.21	\$3.80	\$0.00	\$30.34
7	85	\$20.54	\$7.21	\$3.80	\$0.00	\$31.55
8	90	\$21.74	\$7.21	\$3.80	\$0.00	\$32.75

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$17.86/ 3&4 \$20.22/ 5&6 \$27.57/ 7&8 \$29.94

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

CEMENT MASONRY/PLASTERING

01/01/2020

\$49.07

\$12.75

\$22.41

\$0.62

\$84.85

BRICKLAYERS LOCAL 3 (QUINCY)

**Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Quincy)****Effective Date - 01/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$12.75	\$15.41	\$0.00	\$52.70
2	60	\$29.44	\$12.75	\$17.41	\$0.62	\$60.22
3	65	\$31.90	\$12.75	\$18.41	\$0.62	\$63.68
4	70	\$34.35	\$12.75	\$19.41	\$0.62	\$67.13
5	75	\$36.80	\$12.75	\$20.41	\$0.62	\$70.58
6	80	\$39.26	\$12.75	\$21.41	\$0.62	\$74.04
7	90	\$44.16	\$12.75	\$22.41	\$0.62	\$79.94

**Notes:**

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

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$52.38	\$14.00	\$16.05	\$0.00	\$82.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2022	\$54.86	\$8.65	\$23.05	\$0.00	\$86.56
	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

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

**Effective Date - 07/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.43	\$8.65	\$0.00	\$0.00	\$36.08
2	55	\$30.17	\$8.65	\$6.27	\$0.00	\$45.09
3	60	\$32.92	\$8.65	\$6.84	\$0.00	\$48.41
4	65	\$35.66	\$8.65	\$7.41	\$0.00	\$51.72
5	70	\$38.40	\$8.65	\$19.63	\$0.00	\$66.68
6	75	\$41.15	\$8.65	\$20.20	\$0.00	\$70.00
7	80	\$43.89	\$8.65	\$20.77	\$0.00	\$73.31
8	90	\$49.37	\$8.65	\$21.91	\$0.00	\$79.93

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$8.65	\$0.00	\$0.00	\$36.68
2	55	\$30.83	\$8.65	\$6.27	\$0.00	\$45.75
3	60	\$33.64	\$8.65	\$6.84	\$0.00	\$49.13
4	65	\$36.44	\$8.65	\$7.41	\$0.00	\$52.50
5	70	\$39.24	\$8.65	\$19.63	\$0.00	\$67.52
6	75	\$42.05	\$8.65	\$20.20	\$0.00	\$70.90
7	80	\$44.85	\$8.65	\$20.77	\$0.00	\$74.27
8	90	\$50.45	\$8.65	\$21.91	\$0.00	\$81.01

**Notes:**

Steps are 750 hrs.

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: ADZEMAN <i>LABORERS - ZONE 2</i>	06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS <i>LABORERS - ZONE 2</i>	06/01/2022	\$43.08	\$9.10	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	06/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2022	\$43.08	\$9.10	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</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 1)</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 1)</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 1)</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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ELECTRICIAN	03/01/2022	\$44.89	\$11.25	\$15.51	\$0.00	\$71.65
<i>ELECTRICIANS LOCAL 223</i>	09/01/2022	\$46.35	\$11.50	\$16.18	\$0.00	\$74.03
	09/01/2023	\$47.87	\$11.75	\$16.86	\$0.00	\$76.48

**Apprentice -** *ELECTRICIAN - Local 223*

**Effective Date -** 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.96	\$11.25	\$0.54	\$0.00	\$29.75
2	45	\$20.20	\$11.25	\$0.61	\$0.00	\$32.06
3	50	\$22.45	\$11.25	\$0.67	\$0.00	\$34.37
4	55	\$24.69	\$11.25	\$0.93	\$0.00	\$42.87
5	60	\$26.93	\$11.25	\$0.92	\$0.00	\$45.60
6	65	\$29.18	\$11.25	\$0.98	\$0.00	\$48.31
7	70	\$31.42	\$11.25	\$0.99	\$0.00	\$51.08
8	75	\$33.67	\$11.25	\$0.99	\$0.00	\$53.83

**Effective Date -** 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.54	\$11.50	\$0.56	\$0.00	\$30.60
2	45	\$20.86	\$11.50	\$0.63	\$0.00	\$32.99
3	50	\$23.18	\$11.50	\$0.70	\$0.00	\$35.38
4	55	\$25.49	\$11.50	\$0.75	\$0.00	\$44.34
5	60	\$27.81	\$11.50	\$0.76	\$0.00	\$47.17
6	65	\$30.13	\$11.50	\$0.87	\$0.00	\$50.00
7	70	\$32.45	\$11.50	\$0.89	\$0.00	\$52.84
8	75	\$34.76	\$11.50	\$0.94	\$0.00	\$55.66

**Notes:**

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

ELEVATOR CONSTRUCTOR	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86
<i>ELEVATOR CONSTRUCTORS LOCAL 4</i>						



**Apprentice - ELEVATOR CONSTRUCTOR - Local 4**

**Effective Date - 01/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74

**Notes:**

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

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

ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2022	\$47.18	\$14.00	\$16.05	\$0.00	\$77.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2022	\$48.72	\$14.00	\$16.05	\$0.00	\$78.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2022	\$23.33	\$14.00	\$16.05	\$0.00	\$53.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$36.86	\$10.90	\$12.45	\$0.00	\$60.21
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$41.76	\$14.00	\$16.05	\$0.00	\$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$24.50	\$9.10	\$16.64	\$0.00	\$50.24
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2022	\$49.93	\$8.68	\$20.27	\$0.00	\$78.88

**Apprentice - FLOORCOVERER - Local 2168 Zone I**

**Effective Date - 03/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.97	\$8.68	\$1.79	\$0.00	\$35.44
2	55	\$27.46	\$8.68	\$1.79	\$0.00	\$37.93
3	60	\$29.96	\$8.68	\$14.90	\$0.00	\$53.54
4	65	\$32.45	\$8.68	\$14.90	\$0.00	\$56.03
5	70	\$34.95	\$8.68	\$16.69	\$0.00	\$60.32
6	75	\$37.45	\$8.68	\$16.69	\$0.00	\$62.82
7	80	\$39.94	\$8.68	\$18.48	\$0.00	\$67.10
8	85	\$42.44	\$8.68	\$18.48	\$0.00	\$69.60

**Notes:** Steps are 750 hrs.

% After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)

Step 1&2 \$32.94/ 3&4 \$39.66/ 5&6 \$60.32/ 7&8 \$67.10

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

FORK LIFT/CHERRY PICKER OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS OPERATING ENGINEERS LOCAL 4	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 35 (ZONE 2)	07/01/2022	\$44.36	\$8.65	\$23.05	\$0.00	\$76.06
	01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
	07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
	01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
	07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
	01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06

**Classification**

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

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

**Effective Date -    07/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$8.65	\$0.00	\$0.00	\$30.83
2	55	\$24.40	\$8.65	\$6.27	\$0.00	\$39.32
3	60	\$26.62	\$8.65	\$6.84	\$0.00	\$42.11
4	65	\$28.83	\$8.65	\$7.41	\$0.00	\$44.89
5	70	\$31.05	\$8.65	\$19.63	\$0.00	\$59.33
6	75	\$33.27	\$8.65	\$20.20	\$0.00	\$62.12
7	80	\$35.49	\$8.65	\$20.77	\$0.00	\$64.91
8	90	\$39.92	\$8.65	\$21.91	\$0.00	\$70.48

**Effective Date -    01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.78	\$8.65	\$0.00	\$0.00	\$31.43
2	55	\$25.06	\$8.65	\$6.27	\$0.00	\$39.98
3	60	\$27.34	\$8.65	\$6.84	\$0.00	\$42.83
4	65	\$29.61	\$8.65	\$7.41	\$0.00	\$45.67
5	70	\$31.89	\$8.65	\$19.63	\$0.00	\$60.17
6	75	\$34.17	\$8.65	\$20.20	\$0.00	\$63.02
7	80	\$36.45	\$8.65	\$20.77	\$0.00	\$65.87
8	90	\$41.00	\$8.65	\$21.91	\$0.00	\$71.56

**Notes:**

Steps are 750 hrs.

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

HOISTING ENGINEER/CRANES/GRADALLS OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - OPERATING ENGINEERS - Local 4</b>						
<b>Effective Date - 12/01/2021</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$28.26	\$14.00	\$0.00	\$0.00	\$42.26
2	60	\$30.83	\$14.00	\$16.05	\$0.00	\$60.88
3	65	\$33.40	\$14.00	\$16.05	\$0.00	\$63.45
4	70	\$35.97	\$14.00	\$16.05	\$0.00	\$66.02
5	75	\$38.54	\$14.00	\$16.05	\$0.00	\$68.59
6	80	\$41.10	\$14.00	\$16.05	\$0.00	\$71.15
7	85	\$43.67	\$14.00	\$16.05	\$0.00	\$73.72
8	90	\$46.24	\$14.00	\$16.05	\$0.00	\$76.29
<b>Notes:</b>						
<b>Apprentice to Journeyworker Ratio:1:6</b>						
HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2021	\$51.40	\$13.80	\$17.14	\$0.00	\$82.34
	09/01/2022	\$53.85	\$13.80	\$17.14	\$0.00	\$84.79

Classification			Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston								
Effective Date - 09/01/2021								
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	50	\$25.70		\$13.80	\$12.42	\$0.00	\$51.92	
2	60	\$30.84		\$13.80	\$13.36	\$0.00	\$58.00	
3	70	\$35.98		\$13.80	\$14.31	\$0.00	\$64.09	
4	80	\$41.12		\$13.80	\$15.25	\$0.00	\$70.17	
Effective Date - 09/01/2022								
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	50	\$26.93		\$13.80	\$12.42	\$0.00	\$53.15	
2	60	\$32.31		\$13.80	\$13.36	\$0.00	\$59.47	
3	70	\$37.70		\$13.80	\$14.31	\$0.00	\$65.81	
4	80	\$43.08		\$13.80	\$15.25	\$0.00	\$72.13	
Notes:								
Steps are 1 year								
Apprentice to Journeyworker Ratio:1:4								
IRONWORKER/WELDER			03/16/2022	\$50.60	\$8.20	\$26.50	\$0.00	\$85.30
IRONWORKERS LOCAL 7 (BOSTON AREA)								
Apprentice - IRONWORKER - Local 7 Boston								
Effective Date - 03/16/2022								
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	60	\$30.36		\$8.20	\$26.50	\$0.00	\$65.06	
2	70	\$35.42		\$8.20	\$26.50	\$0.00	\$70.12	
3	75	\$37.95		\$8.20	\$26.50	\$0.00	\$72.65	
4	80	\$40.48		\$8.20	\$26.50	\$0.00	\$75.18	
5	85	\$43.01		\$8.20	\$26.50	\$0.00	\$77.71	
6	90	\$45.54		\$8.20	\$26.50	\$0.00	\$80.24	
Notes:								
** Structural 1:6; Ornamental 1:4								
Apprentice to Journeyworker Ratio:**								
JACKHAMMER & PAVING BREAKER OPERATOR			06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
LABORERS - ZONE 2			12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
			06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
			12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"								
LABORER			06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
LABORERS - ZONE 2			12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
			06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
			12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
Issue Date: 08/08/2022								
Wage Request Number:				20220808-004				
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - LABORER - Zone 2</b>						
<b>Effective Date - 06/01/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.79	\$9.10	\$16.64	\$0.00	\$47.53
2	70	\$25.42	\$9.10	\$16.64	\$0.00	\$51.16
3	80	\$29.05	\$9.10	\$16.64	\$0.00	\$54.79
4	90	\$32.68	\$9.10	\$16.64	\$0.00	\$58.42
<b>Effective Date - 12/01/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.30	\$9.10	\$16.64	\$0.00	\$48.04
2	70	\$26.01	\$9.10	\$16.64	\$0.00	\$51.75
3	80	\$29.73	\$9.10	\$16.64	\$0.00	\$55.47
4	90	\$33.44	\$9.10	\$16.64	\$0.00	\$59.18
<b>Notes:</b>						
<b>Apprentice to Journeyworker Ratio:1:5</b>						
LABORER (HEAVY & HIGHWAY)	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
LABORERS - ZONE 2 (HEAVY & HIGHWAY)						

<b>Apprentice - LABORER (Heavy &amp; Highway) - Zone 2</b>						
<b>Effective Date - 12/01/2021</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.25	\$9.10	\$16.64	\$0.00	\$46.99
2	70	\$24.79	\$9.10	\$16.64	\$0.00	\$50.53
3	80	\$28.33	\$9.10	\$16.64	\$0.00	\$54.07
4	90	\$31.87	\$9.10	\$16.64	\$0.00	\$57.61
<b>Notes:</b>						
<b>Apprentice to Journeyworker Ratio:1:5</b>						
LABORER: CARPENTER TENDER	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
LABORERS - ZONE 2						
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
LABORERS - ZONE 2						
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.40	\$9.10	\$16.70	\$0.00	\$62.20
	12/01/2022	\$37.25	\$9.10	\$16.70	\$0.00	\$63.05
	06/01/2023	\$38.15	\$9.10	\$16.70	\$0.00	\$63.95
	12/01/2023	\$39.05	\$9.10	\$16.70	\$0.00	\$64.85
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
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>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2022	\$43.69	\$11.39	\$20.37	\$0.00	\$75.45

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

**Effective Date -** 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.85	\$11.39	\$20.37	\$0.00	\$53.61
2	60	\$26.21	\$11.39	\$20.37	\$0.00	\$57.97
3	70	\$30.58	\$11.39	\$20.37	\$0.00	\$62.34
4	80	\$34.95	\$11.39	\$20.37	\$0.00	\$66.71
5	90	\$39.32	\$11.39	\$20.37	\$0.00	\$71.08

**Notes:**

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MARBLE MASONS,TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2022	\$57.17	\$11.39	\$22.31	\$0.00	\$90.87

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

**Effective Date -** 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.59	\$11.39	\$22.31	\$0.00	\$62.29
2	60	\$34.30	\$11.39	\$22.31	\$0.00	\$68.00
3	70	\$40.02	\$11.39	\$22.31	\$0.00	\$73.72
4	80	\$45.74	\$11.39	\$22.31	\$0.00	\$79.44
5	90	\$51.45	\$11.39	\$22.31	\$0.00	\$85.15

**Notes:**

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

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	01/03/2022	\$40.67	\$8.58	\$21.57	\$0.00	\$70.82
	01/02/2023	\$41.92	\$8.58	\$21.57	\$0.00	\$72.07

**Apprentice - MILLWRIGHT - Local 1121 Zone 2**

**Effective Date -** 01/03/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.37	\$8.58	\$5.72	\$0.00	\$36.67
2	65	\$26.44	\$8.58	\$17.93	\$0.00	\$52.95
3	75	\$30.50	\$8.58	\$18.98	\$0.00	\$58.06
4	85	\$34.57	\$8.58	\$20.01	\$0.00	\$63.16

**Effective Date -** 01/02/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.06	\$8.58	\$5.72	\$0.00	\$37.36
2	65	\$27.25	\$8.58	\$17.93	\$0.00	\$53.76
3	75	\$31.44	\$8.58	\$18.98	\$0.00	\$59.00
4	85	\$35.63	\$8.58	\$20.01	\$0.00	\$64.22

**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**



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MORTAR MIXER <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$23.48	\$14.00	\$16.05	\$0.00	\$53.53
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$28.44	\$14.00	\$16.05	\$0.00	\$58.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2022	\$54.86	\$8.65	\$23.05	\$0.00	\$86.56
	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS****Effective Date - 07/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.43	\$8.65	\$0.00	\$0.00	\$36.08
2	55	\$30.17	\$8.65	\$6.27	\$0.00	\$45.09
3	60	\$32.92	\$8.65	\$6.84	\$0.00	\$48.41
4	65	\$35.66	\$8.65	\$7.41	\$0.00	\$51.72
5	70	\$38.40	\$8.65	\$19.63	\$0.00	\$66.68
6	75	\$41.15	\$8.65	\$20.20	\$0.00	\$70.00
7	80	\$43.89	\$8.65	\$20.77	\$0.00	\$73.31
8	90	\$49.37	\$8.65	\$21.91	\$0.00	\$79.93

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$8.65	\$0.00	\$0.00	\$36.68
2	55	\$30.83	\$8.65	\$6.27	\$0.00	\$45.75
3	60	\$33.64	\$8.65	\$6.84	\$0.00	\$49.13
4	65	\$36.44	\$8.65	\$7.41	\$0.00	\$52.50
5	70	\$39.24	\$8.65	\$19.63	\$0.00	\$67.52
6	75	\$42.05	\$8.65	\$20.20	\$0.00	\$70.90
7	80	\$44.85	\$8.65	\$20.77	\$0.00	\$74.27
8	90	\$50.45	\$8.65	\$21.91	\$0.00	\$81.01

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, NEW) \*

\* If 30% or more of surfaces to be painted are new construction,  
NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 2*

07/01/2022	\$45.76	\$8.65	\$23.05	\$0.00	\$77.46
01/01/2023	\$46.96	\$8.65	\$23.05	\$0.00	\$78.66
07/01/2023	\$48.16	\$8.65	\$23.05	\$0.00	\$79.86
01/01/2024	\$49.36	\$8.65	\$23.05	\$0.00	\$81.06
07/01/2024	\$50.56	\$8.65	\$23.05	\$0.00	\$82.26
01/01/2025	\$51.76	\$8.65	\$23.05	\$0.00	\$83.46

**Classification**

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

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

**Effective Date - 07/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.88	\$8.65	\$0.00	\$0.00	\$31.53
2	55	\$25.17	\$8.65	\$6.27	\$0.00	\$40.09
3	60	\$27.46	\$8.65	\$6.84	\$0.00	\$42.95
4	65	\$29.74	\$8.65	\$7.41	\$0.00	\$45.80
5	70	\$32.03	\$8.65	\$19.63	\$0.00	\$60.31
6	75	\$34.32	\$8.65	\$20.20	\$0.00	\$63.17
7	80	\$36.61	\$8.65	\$20.77	\$0.00	\$66.03
8	90	\$41.18	\$8.65	\$21.91	\$0.00	\$71.74

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.48	\$8.65	\$0.00	\$0.00	\$32.13
2	55	\$25.83	\$8.65	\$6.27	\$0.00	\$40.75
3	60	\$28.18	\$8.65	\$6.84	\$0.00	\$43.67
4	65	\$30.52	\$8.65	\$7.41	\$0.00	\$46.58
5	70	\$32.87	\$8.65	\$19.63	\$0.00	\$61.15
6	75	\$35.22	\$8.65	\$20.20	\$0.00	\$64.07
7	80	\$37.57	\$8.65	\$20.77	\$0.00	\$66.99
8	90	\$42.26	\$8.65	\$21.91	\$0.00	\$72.82

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, REPAINT)	07/01/2022	\$43.82	\$8.65	\$23.05	\$0.00	\$75.52
PAINTERS LOCAL 35 - ZONE 2	01/01/2023	\$45.02	\$8.65	\$23.05	\$0.00	\$76.72
	07/01/2023	\$46.22	\$8.65	\$23.05	\$0.00	\$77.92
	01/01/2024	\$47.42	\$8.65	\$23.05	\$0.00	\$79.12
	07/01/2024	\$48.62	\$8.65	\$23.05	\$0.00	\$80.32
	01/01/2025	\$49.82	\$8.65	\$23.05	\$0.00	\$81.52

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint****Effective Date - 07/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.91	\$8.65	\$0.00	\$0.00	\$30.56
2	55	\$24.10	\$8.65	\$6.27	\$0.00	\$39.02
3	60	\$26.29	\$8.65	\$6.84	\$0.00	\$41.78
4	65	\$28.48	\$8.65	\$7.41	\$0.00	\$44.54
5	70	\$30.67	\$8.65	\$19.63	\$0.00	\$58.95
6	75	\$32.87	\$8.65	\$20.20	\$0.00	\$61.72
7	80	\$35.06	\$8.65	\$20.77	\$0.00	\$64.48
8	90	\$39.44	\$8.65	\$21.91	\$0.00	\$70.00

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$8.65	\$0.00	\$0.00	\$31.16
2	55	\$24.76	\$8.65	\$6.27	\$0.00	\$39.68
3	60	\$27.01	\$8.65	\$6.84	\$0.00	\$42.50
4	65	\$29.26	\$8.65	\$7.41	\$0.00	\$45.32
5	70	\$31.51	\$8.65	\$19.63	\$0.00	\$59.79
6	75	\$33.77	\$8.65	\$20.20	\$0.00	\$62.62
7	80	\$36.02	\$8.65	\$20.77	\$0.00	\$65.44
8	90	\$40.52	\$8.65	\$21.91	\$0.00	\$71.08

**Notes:**

Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, NEW) \*

\* If 30% or more of surfaces to be painted are new construction,  
NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 2*

07/01/2022	\$44.36	\$8.65	\$23.05	\$0.00	\$76.06
01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06

**Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW****Effective Date - 07/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$8.65	\$0.00	\$0.00	\$30.83
2	55	\$24.40	\$8.65	\$6.27	\$0.00	\$39.32
3	60	\$26.62	\$8.65	\$6.84	\$0.00	\$42.11
4	65	\$28.83	\$8.65	\$7.41	\$0.00	\$44.89
5	70	\$31.05	\$8.65	\$19.63	\$0.00	\$59.33
6	75	\$33.27	\$8.65	\$20.20	\$0.00	\$62.12
7	80	\$35.49	\$8.65	\$20.77	\$0.00	\$64.91
8	90	\$39.92	\$8.65	\$21.91	\$0.00	\$70.48

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.78	\$8.65	\$0.00	\$0.00	\$31.43
2	55	\$25.06	\$8.65	\$6.27	\$0.00	\$39.98
3	60	\$27.34	\$8.65	\$6.84	\$0.00	\$42.83
4	65	\$29.61	\$8.65	\$7.41	\$0.00	\$45.67
5	70	\$31.89	\$8.65	\$19.63	\$0.00	\$60.17
6	75	\$34.17	\$8.65	\$20.20	\$0.00	\$63.02
7	80	\$36.45	\$8.65	\$20.77	\$0.00	\$65.87
8	90	\$41.00	\$8.65	\$21.91	\$0.00	\$71.56

**Notes:**

Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, REPAINT)

PAINTERS LOCAL 35 - ZONE 2

07/01/2022	\$42.42	\$8.65	\$23.05	\$0.00	\$74.12
01/01/2023	\$43.62	\$8.65	\$23.05	\$0.00	\$75.32
07/01/2023	\$44.82	\$8.65	\$23.05	\$0.00	\$76.52
01/01/2024	\$46.02	\$8.65	\$23.05	\$0.00	\$77.72
07/01/2024	\$47.22	\$8.65	\$23.05	\$0.00	\$78.92
01/01/2025	\$48.42	\$8.65	\$23.05	\$0.00	\$80.12

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

**Effective Date - 07/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.21	\$8.65	\$0.00	\$0.00	\$29.86
2	55	\$23.33	\$8.65	\$6.27	\$0.00	\$38.25
3	60	\$25.45	\$8.65	\$6.84	\$0.00	\$40.94
4	65	\$27.57	\$8.65	\$7.41	\$0.00	\$43.63
5	70	\$29.69	\$8.65	\$19.63	\$0.00	\$57.97
6	75	\$31.82	\$8.65	\$20.20	\$0.00	\$60.67
7	80	\$33.94	\$8.65	\$20.77	\$0.00	\$63.36
8	90	\$38.18	\$8.65	\$21.91	\$0.00	\$68.74

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.81	\$8.65	\$0.00	\$0.00	\$30.46
2	55	\$23.99	\$8.65	\$6.27	\$0.00	\$38.91
3	60	\$26.17	\$8.65	\$6.84	\$0.00	\$41.66
4	65	\$28.35	\$8.65	\$7.41	\$0.00	\$44.41
5	70	\$30.53	\$8.65	\$19.63	\$0.00	\$58.81
6	75	\$32.72	\$8.65	\$20.20	\$0.00	\$61.57
7	80	\$34.90	\$8.65	\$20.77	\$0.00	\$64.32
8	90	\$39.26	\$8.65	\$21.91	\$0.00	\$69.82

**Notes:**

Steps are 750 hrs.

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

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

Apprentice to Journeyworker Ratio:1:5

PIPELAYER	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
LABORERS - ZONE 2	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY)	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
LABORERS - ZONE 2 (HEAVY & HIGHWAY)						

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

PLUMBER & PIPEFITTER	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
PLUMBERS & PIPEFITTERS LOCAL 51						

Apprentice - PLUMBER/PIPEFITTER - Local 51

Effective Date - 08/30/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.60	\$10.15	\$2.50	\$0.00	\$31.25
2	50	\$23.25	\$10.15	\$2.50	\$0.00	\$35.90
3	60	\$27.89	\$10.15	\$8.80	\$0.00	\$46.84
4	70	\$32.54	\$10.15	\$14.08	\$0.00	\$56.77
5	80	\$37.19	\$10.15	\$17.60	\$0.00	\$64.94

Notes:

Steps 2000hrs. Prior 9/1/05; 40/40/45/50/55/60/65/75/80/85

Apprentice to Journeyworker Ratio:1:3

PNEUMATIC CONTROLS (TEMP.)	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
PLUMBERS & PIPEFITTERS LOCAL 51						

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	06/01/2022	\$37.31	\$9.10	\$16.64	\$0.00	\$63.05
	12/01/2022	\$38.16	\$9.10	\$16.64	\$0.00	\$63.90
	06/01/2023	\$39.06	\$9.10	\$16.64	\$0.00	\$64.80
	12/01/2023	\$39.96	\$9.10	\$16.64	\$0.00	\$65.70
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$36.41	\$9.10	\$16.64	\$0.00	\$62.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 653 - Southeastern Concrete (Weymouth)</i>	08/01/2022	\$24.50	\$13.41	\$6.90	\$0.00	\$44.81
	05/01/2023	\$25.00	\$13.41	\$6.90	\$0.00	\$45.31
	08/01/2023	\$25.00	\$13.91	\$6.90	\$0.00	\$45.81
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofers Waterproofing &Roofers Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2022	\$47.03	\$12.28	\$19.45	\$0.00	\$78.76



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - ROOFER - Local 33**

**Effective Date -** 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.52	\$12.28	\$5.21	\$0.00	\$41.01
2	60	\$28.22	\$12.28	\$19.45	\$0.00	\$59.95
3	65	\$30.57	\$12.28	\$19.45	\$0.00	\$62.30
4	75	\$35.27	\$12.28	\$19.45	\$0.00	\$67.00
5	85	\$39.98	\$12.28	\$19.45	\$0.00	\$71.71

**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 ROOFERS LOCAL 33	02/01/2022	\$47.28	\$12.28	\$19.45	\$0.00	\$79.01
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For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
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**Apprentice - SHEET METAL WORKER - Local 17-A**

**Effective Date -** 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
2	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
3	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
4	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
5	52	\$27.92	\$13.80	\$12.23	\$1.62	\$55.57
6	52	\$27.92	\$13.80	\$12.48	\$1.63	\$55.83
7	60	\$32.22	\$13.80	\$13.87	\$1.80	\$61.69
8	65	\$34.91	\$13.80	\$14.84	\$1.91	\$65.46
9	75	\$40.28	\$13.80	\$16.77	\$2.13	\$72.98
10	85	\$45.65	\$13.80	\$18.20	\$2.33	\$79.98

**Notes:**  
Steps are 6 mos.

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

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
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SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2021	\$36.53	\$13.41	\$16.01	\$0.00	\$65.95
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPRINKLER FITTER	03/01/2022	\$64.36	\$10.44	\$22.10	\$0.00	\$96.90
SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1	10/01/2022	\$66.06	\$10.44	\$22.10	\$0.00	\$98.60
	03/01/2023	\$67.76	\$10.44	\$22.10	\$0.00	\$100.30
	10/01/2023	\$69.51	\$10.44	\$22.10	\$0.00	\$102.05
	03/01/2024	\$71.31	\$10.44	\$22.10	\$0.00	\$103.85
	10/01/2024	\$73.11	\$10.44	\$22.10	\$0.00	\$105.65
	03/01/2025	\$74.91	\$10.44	\$22.10	\$0.00	\$107.45

**Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1**

**Effective Date -** 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.53	\$10.44	\$12.35	\$0.00	\$45.32
2	40	\$25.74	\$10.44	\$13.10	\$0.00	\$49.28
3	45	\$28.96	\$10.44	\$13.85	\$0.00	\$53.25
4	50	\$32.18	\$10.44	\$14.60	\$0.00	\$57.22
5	55	\$35.40	\$10.44	\$15.35	\$0.00	\$61.19
6	60	\$38.62	\$10.44	\$16.10	\$0.00	\$65.16
7	65	\$41.83	\$10.44	\$16.85	\$0.00	\$69.12
8	70	\$45.05	\$10.44	\$17.60	\$0.00	\$73.09
9	75	\$48.27	\$10.44	\$18.35	\$0.00	\$77.06
10	80	\$51.49	\$10.44	\$19.10	\$0.00	\$81.03

**Effective Date -** 10/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.12	\$10.44	\$12.35	\$0.00	\$45.91
2	40	\$26.42	\$10.44	\$13.10	\$0.00	\$49.96
3	45	\$29.73	\$10.44	\$13.85	\$0.00	\$54.02
4	50	\$33.03	\$10.44	\$14.60	\$0.00	\$58.07
5	55	\$36.33	\$10.44	\$15.35	\$0.00	\$62.12
6	60	\$39.64	\$10.44	\$16.10	\$0.00	\$66.18
7	65	\$42.94	\$10.44	\$16.85	\$0.00	\$70.23
8	70	\$46.24	\$10.44	\$17.60	\$0.00	\$74.28
9	75	\$49.55	\$10.44	\$18.35	\$0.00	\$78.34
10	80	\$52.85	\$10.44	\$19.10	\$0.00	\$82.39

**Notes:** Apprentice entered prior 9/30/10:  
40/45/50/55/60/65/70/75/80/85  
Steps are 850 hours

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

STEAM BOILER OPERATOR	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
OPERATING ENGINEERS LOCAL 4						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
OPERATING ENGINEERS LOCAL 4						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2021	\$37.63	\$11.25	\$13.17	\$0.00	\$62.05
	09/01/2022	\$38.16	\$11.25	\$13.31	\$0.00	\$62.72
	09/01/2023	\$39.40	\$11.50	\$13.91	\$0.00	\$64.81
	09/01/2024	\$40.69	\$11.75	\$14.53	\$0.00	\$66.97

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223**

**Effective Date -** 09/01/2021

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

**Notes:** See Electrician Apprentice Wages

Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages

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

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2022	\$56.09	\$11.39	\$22.34	\$0.00	\$89.82
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**Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile**

**Effective Date -** 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.05	\$11.39	\$22.34	\$0.00	\$61.78
2	60	\$33.65	\$11.39	\$22.34	\$0.00	\$67.38
3	70	\$39.26	\$11.39	\$22.34	\$0.00	\$72.99
4	80	\$44.87	\$11.39	\$22.34	\$0.00	\$78.60
5	90	\$50.48	\$11.39	\$22.34	\$0.00	\$84.21

**Notes:**

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

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$42.58	\$9.10	\$17.72	\$0.00	\$69.40
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For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.30	\$9.10	\$17.72	\$0.00	\$68.12
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For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
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For apprentice rates see "Apprentice- LABORER"

TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
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TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2021	\$53.41	\$9.10	\$18.17	\$0.00	\$80.68
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For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2021	\$55.41	\$9.10	\$18.17	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2021	\$45.48	\$9.10	\$18.17	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2021	\$47.48	\$9.10	\$18.17	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
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.